# A Global Perspective on Patent Subject Matter Eligibility and Software-Related Inventions

## Court cases, legislation and regulations are described along with practice hints for navigating patent eligibility in Australia, Canada, China, Europe, Japan, Korea and the United States.

*This paper/spreadsheet was created by the authors for the Intellectual Property Owners Association IPO Patent Eligibility Subcommittee of the Software Related Inventions Committee to provide background to IPO members.  It should not be construed as providing legal advice or as representing the views of IPO, the authors, or their employers.*

**Authors[1]:**

B. Delano Jordan, Jordan IP Law, LLC

Shahrzad Esmaili, Gowling WLG (Canada) LLP

Y. Artemis Lai, Smart & Biggar

Nicholas Malden, D Young & Co LLP

Dibi Yao, Advance China IP Law Office

Lili Wu, Han Kun Law Offices

Keisaku Ishihara, Nagoya International Patent Firm

Jesung Ahn, Ank Intellectual Property

Paul Mahony, Blackwattle IP

---

[1] Opinions stated in this paper may not be consistent with the firms, corporations, or clients affiliated with the authors.

# Introduction

In January of 2019, the IPO Software Related Inventions Committee released a Patent Eligibility Tool and White Paper, which described eligible and ineligible U.S. Court of Appeals for the Federal Circuit (CAFC) cases involving software related inventions.[2] The Tool and White Paper also provided practice hints on how to be consistent with the eligible cases and distinguish the ineligible cases. This White Paper is a follow-on to that effort from a global perspective. The covered jurisdictions are Australia, Canada, China, Europe, Japan and Korea, with an emphasis on distinctions between those jurisdictions and the United States.

## Summary

While there may be no "one size fits all" approach to globally satisfying the criteria for patent eligibility, there are a number of common threads, such as the existence or lack of a technical impact, to take into consideration. Below is a brief summary of the jurisdictions covered in this White Paper.

In Australia, the *"manner of manufacture"* threshold for patent eligible subject matter is substantially equivalent to the USC § 101 requirement under U.S. patent law. Abstract schemes, pure business methods, and algorithms, of themselves, are not patent eligible subject matter. Computer-implemented inventions that address a technical problem outside the computer or that result in improved functionality of the computer itself are patent eligible subject matter.

In Canada, the key consideration for patent-eligiblity is whether the "essential elements" of a claim satisfy the "physicality requirement." Under the Canadian Patent Office guidelines, the essential elements of a claim will be determined using a "problem" and "solution" approach. Under Canadian legal principles, the essential elements of a claim are determined using a different purposive claim construction approach. Once the essential elements are determined, the claim is considered to satisfy the "physicality requirement" when the essential elements have physical existence (i.e., are a physical object) or produce discernible changes or effects (ie. produce a physical effect in an art or a process).

In China, the principal legal standard of subject matter eligibility is a "three technical elements approach," which requires a claimed invention to utilize technical means to address a technical problem and produce technical effects. The claimed invention is analyzed as a whole and both technical and non-technical contents are considered. The standard is generally satisfied when there is a clear roadmap for identifying the three technical elements in the description and the claims recite specified computer components related to the technical effect as disclosed.

With regard to software-related inventions, in Europe, a key characteristic which is necessary before the EPO is that the software must produce a "further technical effect" when executed. A "further technical effect" is a technical effect which goes beyond the "normal" physical interactions between the program (software) and the computer (hardware) on which it is run. This can often be demonstrated to be present when the software exerts control over a physical system.

---

[2] The terms "software related," "computer related" and "computer implemented" are used herein interchangeably.

In Japan, the claimed invention **<u>as a whole</u>** is required to meet the following standard, in order to fulfill Eligibility for Patent: Those in which information processing by the software is specifically realized by using hardware resources, in other words, a specific information processor or an operation method thereof depending on intended use is constructed through cooperation of the software and the hardware resources.

In Korea, The KIPO Examination Guidelines provide specific guidance/examples by providing that a computer-related invention may be patentably eligible if a patent claim describes information processing by software concretely realized by utilizing hardware.  While pure software or computer program may not be allowed under the above rules/guidance, such invention may be patentably eligible if it is claimed in one of apparatus (device), process (method), computer-readable medium (e.g., a compact disc, a memory), and computer program stored on a medium.

In the United States, patents and/or patent applications that claim "technical" or features and provide specification support for the contention that those technical features solve a problem in the prior art, generally tend to fare better with regard to patent eligibility than patents/applications that do not. Of particular note is that this analysis currently incorporates prior art considerations into the patent eligibility determination.

# Instructions

Mappings: The mappings table can be used to quickly index into the patent eligibility analysis on the basis of technology (e.g., position in the software stack). Simply selecting the "X" in a given column/row intersection will jump you to the relevant portion of the discussion.

Contributors: B. Delano Jordan, Jordan IP Law, LLC

Shahrzad Esmaili, Gowling WLG (Canada) LLP

Y. Artemis Lai, Smart & Biggar

Nicholas Malden, D Young & Co LLP

Dibi Yao, Advance China IP Law Office

Lili Wu, Han Kun Law Offices

Keisaku Ishihara, Nagoya International Patent Firm

Jesung Ahn, Ank Intellectual Property

Paul Mahony, Blackwattle IP

Additional Info: IPO Software Related Inventions Committee released a Patent Eligibility Tool and White Paper, January 2019 (https://www.ipo.org/wp-content/uploads/2019/01/IPO-Patent-Eligibility-Tool-and-White-Paper_final-1-1.pdf)

# Mappings

| Jurisdiction | Software Category | | | | |
|---|---|---|---|---|---|
| | User Interface | Data Structure | Data Transfer/Network Transfer | Data Storage | Data Processing/Other |
| Australia | X | X | X | X | X |
| Canada | X | X | X | X | X |
| China | X | X | X | X | X |
| Europe | X | X | X | X | X |
| Japan | X | X | X | X | X |
| Korea | X | X | X | X | X |
| United States | X | X | X | X | X |

# Australia
by Paul Mahony

## I. Overview

### A. Summary

The legal requirement for patent eligible subject matter in Australia is that a claimed invention must be a "manner of manufacture". This requirement is consistent across all technologies and there are no separate requirements or exclusions pertaining to computer-implemented inventions. The Courts have made clear that the claim as a whole is to be assessed when considering manner of manufacture requirements, and it is inappropriate to break a claim down into constituent components and disregard non-technical features or known technical features.

The *"manner of manufacture"* threshold for patent eligible subject matter is substantially equivalent to the USC §101 requirement under US patent law. Abstract schemes, pure business methods, and algorithms, of themselves, are not patent eligible subject matter. Computer-implemented inventions that address a technical problem outside the computer or that result in improved functionality of the computer itself are patent eligible subject matter.

### B. Statutory Framework

The relevant legislation governing patents in Australia is the Patents Act 1990 (the Patents Act) and its accompanying regulations, the Patents Regulations 1991.

Section 18 of the Patents Act defines the requirements for patentable inventions.

**PATENTS ACT 1990 - SECT 18**

**Patentable inventions**

Patentable inventions for the purposes of a standard patent
(1) Subject to subsection (2), an invention is a patentable invention for the purposes of a standard patent if the invention, so far as claimed in any claim:
    (a) is a **manner of manufacture** within the meaning of section 6 of the Statute of Monopolies; and
    (b) when compared with the prior art base as it existed before the priority date of that claim:
        (i) is novel; and
        (ii) involves an inventive step; and
    (c) is useful; and
    (d) was not secretly used in the patent area before the priority date of that claim by, or on behalf of, or with the authority of, the patentee or nominated person or the patentee's or nominated person's predecessor in title to the invention.

Thus, the requirements for patent eligible subject matter are governed by the construction and interpretation of *"manner of manufacture"*, which is a term derived from the English 1623 Statute of Monopolies. Notably, the Statute of Monopolies refers to a *"manner of new manufacture"*. When codifying the requirements for patentability in the Patents Act 1990, the *"new"* was dropped from the patent eligibility criterion and the newness requirement is now captured in s18(1)(b)(i) and s18(1)(b)(ii)

in relation to the separate requirements for novelty and inventive step, as compared to the relevant prior art bases.

The Explanatory Memorandum to the Patents Bill 1990, which was the draft of the proposed legislation before it came into law, indicated that the requirement for manner of manufacture *"means little more than that an invention must belong to the useful arts rather than the fine arts"*.

Section 40 of the Patents Act sets out other requirements in relation to specifications, including those relating to clarity, succinctness, and support.

## C. Judicial Exceptions

Section 18 of the Patents Act 1990 explicitly recites subject matter that is excluded from patentability:

(2)  Human beings, and the biological processes for their generation, are not patentable inventions.

There is no legislated exclusion to computer implemented inventions and all technologies are to be considered and assessed in the same way; namely, is the claimed invention a "manner of manufacture".

Judicial precedent has long held that the requirement for manner of manufacture implicitly excludes discoveries, mere schemes, plans, and abstract ideas.

## D. Judicial Guidance

Australia is a common law jurisdiction, with decisions of the Courts forming part of the legal framework. Contentious matters and appeals from decisions of the Australian Patent Office are heard by a single judge of the Federal Court. Decisions of the Federal Court are appealable to the Full Federal Court, which generally sits with a bench of three judges, but a larger bench may sit for matters of great importance. Leave must be sought to the High Court, Australia's highest appellate court, in order to appeal any decision of the Full Federal Court.

There is much judicial guidance on what constitutes a "manner of manufacture". However, there is no simple test or protocol by which to determine whether or not a claimed invention is a manner of manufacture. The principles laid down by the Courts provide guidance that must be applied on a case by case basis.

### *National Research Development Corporation v Commissioner of Patents [1959] HCA 67 (NRDC)*

The leading case on manner of manufacture for many years has been the decision in *NRDC*, in which the High Court (Australia's highest appellate court) posed the question as:

*"Is this a **proper subject of letters patent** according to the principles which have been developed for the application of s. 6 of the Statute of Monopolies?"*

and indicated that a manner of manufacture was that which was *"an **artificially created state of affairs** in a field of economic endeavour"*.

Recent decisions by the High Court and the Full Federal Court have affirmed this approach, but indicated that the approach from *NRDC* is not prescriptive. Each case is to be assessed on its own. Nevertheless, *NRDC* still provides valuable guidance and has not been overturned.

*International Business Machines Corporation v Commissioner of Patents (1991) 22 IPR 417 (IBM2)*

In *IBM2*, the Court found the use of a mathematical formula in a computer to produce an improved curve image to be patentable, since the production of the improved curve image is a commercially useful effect in computer graphics.  Burchett J found:

> *"... it is not suggested there is anything new about the mathematics of the invention. What is new is the application of the selected mathematical methods to computers, and in particular, to the production of the desired curve by the computer.  This is said to involve steps which are foreign to the normal use of computers and, for that reason, to be inventive.  … Similarly here, the formula is applied to achieve an end, the production of the improved curve image.  A method of producing that by computer, which is novel and inventive, is entitled to the protection of the patent laws."*

*CCOM Pty Ltd v Jiejing Pty Ltd [1994] FCA 1168 (CCOM)*

The *CCOM* case was directed to a computer implemented method for producing Chinese characters using a conventional keyboard.  The claimed invention was found to be patentable subject matter, as the end result of the retrieval of graphic representations in the field of word processing was deemed to be an artificially created state of affairs in a field of economic endeavour, as per *NRDC*.

*Grant v Commissioner of Patents [2006] FCAFC 120 (Grant)*

In *Grant*, the Full Federal Court affirmed that *"Business, commercial and financial schemes as such have never been considered patentable"* and pointed out that patents have been refused for methods of calculation, theoretical schemes, including business schemes and abstract plans.  The Full Court noted that:

> *"A physical effect in the sense of a concrete effect or phenomenon or manifestation or transformation is required. In NRDC, an artificial effect was physically created on the land. In Catuity and CCOM as in State Street and AT&T, there was a component that was physically affected or a change in state or information in a part of a machine. These can all be regarded as physical effects."*

Recent decisions of the Full Federal Court have focussed on assessing the claimed invention as a matter of substance over form, such that business methods dressed up as computer-implemented methods will not be considered patent eligible subject matter.

*Research Affiliates LLC v Commissioner of Patents [2014] FCAFC 150 (10 November 2014) (Research Affiliates)*

In *Research Affiliates*, a three judge panel of the Federal Court considered whether a computer-implemented method for generating an index was patent eligible subject matter.  The Court ultimately found that the claimed invention was in substance a scheme that had been implemented using generic computer technology and was thus unpatentable.

The claim under consideration was:

> *A computer-implemented method for generating an index, the method including steps of:*
> *(a)    accessing data relating to a plurality of assets;*

7

*(b)    processing the data thereby to identify a selection of the assets for inclusion in the index based on an objective measure of scale other than share price, market capitalization and any combination thereof;*

*(c)    accessing a weighting function configured to weight the selected assets;*

*(d)    applying the weighting function, thereby to assign to each of the selected assets a respective weighting, wherein the weighting:*

> *(i) is based on an objective measure of scale other than share price, market capitalization and any combination thereof; and*

> *(ii) is not based on market capitalization weighting, equal weighting, share price weighting and any combination thereof;*

*thereby to generate the index.*

In its judgment, the Court canvassed approaches to patent eligibility for computer implemented inventions from around the world, particularly in relation to the United Kingdom, Europe, and the United States.  However, the Court was explicit that while consideration of foreign approaches could be helpful, they could not be used if in conflict with Australian legislation and case law.

The Court directed that claims were to be considered as a matter of substance over form.  In this case, the Court found that simply putting a business method or scheme into a generic, unspecified computer is not patentable unless there is an invention in the way the computer carries out the scheme or method.

### *Commissioner of Patents v RPL Central Pty Ltd [2015] FCAFC 177 (11 December 2015) (RPL Central)*

In *RPL Central*, the same three judge panel from *Research Affiliates* considered a claim to a method of gathering evidence relevant to an assessment of an individual's competency relative to a recognised qualification standard.  Unsurprisingly, the Court agreed with the approach from *Research Affiliates* and found that the claimed invention, when considered as a matter of substance over form, was directed to a business method or scheme in which the computer implementation was not integral to the invention.

The Court stated:

> *"There must be more than an abstract idea; it must involve the creation of an artificial state of affairs where the computer is integral to the invention, rather than a mere tool in which the invention is performed. Where the claimed invention is to a computerised business method, the invention must lie in that computerisation. It is not a patentable invention simply to "put" a business method "into" a computer to implement the business method using the computer for its well- known and understood functions."*

### *D'Arcy v Myriad Genetics Inc [2015] HCA 35 (Myriad)*

The most recent decision of the High Court in relation to patent eligible subject matter is *D'Arcy v Myriad Genetics Inc* [2015] HCA 35.  While the subject matter of the claims in dispute related to genetic material, principles regarding the assessment of patent eligible subject matter were revisited and affirmed.

The High Court affirmed that a claim is to be assessed as a matter of substance over form, commenting at 145:

> "care must be taken to examine the form of claim actually made to see if it is in fact an attempt to establish a monopoly for the manufacture of a substance for a purpose for which a monopoly cannot be claimed. More generally, an "invention is to be understood as a matter of substance and not merely as a matter of form". If a claim drafted as a product claim is in truth a "'disguised' process claim", it will be treated as such."

Importantly, the High Court approved its earlier decision in *Advanced Building Systems Pty Ltd v Ramset Fasteners (Aust) Pty Ltd* [1998] HCA 19 and affirmed that an assessment of patent eligible subject matter is a distinct and separate enquiry from those of novelty and inventive step and that it is incorrect to consider any "inventive merit" in light of prior art when assessing manner of manufacture.

The High Court affirmed that any assessment of ingenuity or inventiveness when considering manner of manufacture is to be performed on the face of the specification (as per *NV Philips Gloeilampenfabrieken v Mirabella International Pty Ltd [1995] HCA 15*), without any consideration of external sources, and that the quality of inventiveness must distinguish the claimed invention from a mere discovery or law of nature.

### *Rokt Pte Ltd v Commissioner of Patents [2018] FCA 1988 (12 December 2018) (Rokt)*

In the most recent decision to issue from the Australian courts in relation to computer-implemented inventions, *Rokt Pte Ltd v Commissioner of Patents* [2018] FCA 1988 (12 December 2018), a single judge of the Federal Court overturned a decision of the Australian Patent Office to refuse grant of a patent on claims directed to a computer implemented method for linking a computer user to an advertising message by way of an intermediate engagement offer.

The claim under consideration in Rokt was:

> 1.   A computer implemented method for linking a computer user to an advertising message by way of an intermediate engagement offer which is operable to drive a higher level of engagement with the advertising message than if the advertising message was presented without the offer, the method comprising:
>
> providing computer program code to be delivered with publisher content to a computing device operated by the computer user and which computing device comprises an interface arranged to display the publisher content, the computer program code operable to be implemented by a processor of the computing device to perform the additional steps of:
>
> > gathering engagement data associated with the user, the engagement data derived from interactions made by the user with the interface and related to at least one of the following:
> >
> > > an attribute of the publisher content;
> > > an interaction with the publisher content by the computer user; and
> > > an attribute of the user;
> >
> > communicating the engagement data as it is gathered to a remote advertising system implementing an engagement engine, the engagement engine operable to:

*continuously evaluate the engagement data to determine whether a predefined engagement trigger has occurred, the predefined engagement trigger being representative of a user response or action that is contextually relevant for presentation of the engagement offer;*

*responsive to determining that the predefined engagement trigger has occurred, selecting an engagement offer from a pool of different engagement offers stored by the remote advertising system that is relevant to the evaluated engagement data and wherein, where multiple engagement offers are deemed to be relevant, the engagement engine implements a ranking algorithm operable to dynamically rank the relevant engagement offers based on at least one of:*

*(a) an engagement score determined from one or [more] performance metrics recorded from past user interactions with the corresponding engagement offers;*

*(b) a revenue score determined from one or more revenue metrics recorded from past user interactions with the corresponding engagement offers, and*

*wherein the engagement engine selects which engagement offer to present based [on] the rankings;*

*causing the interface to insert the selected engagement offer into the publisher content for displaying to the computer user;*

*implementing the computer program code to determine an acceptance of the engagement offer by the computer user based on a user interaction with the engagement offer; and*

*following the determined acceptance, presenting an advertising message comprising one or more advertisements selected from a pool of different advertisements on the interface and wherein user interactions with each of the presented advertisements are gathered by the widget script and communicated to the remote advertising system for use in selecting subsequent advertisements, and whereby the selection of engagement offer is additionally made such that there is no direct advertising benefit to the subsequent advertisers of the selected advertisements through presentation of the selected engagement offer to the computer user other than encouraging positive engagement by the user with the advertising system prior to presentation of the advertising message.*

In *Rokt*, at 202, the Court criticized a focus on individual elements and emphasized the importance of assessing the claimed invention as a combination of claimed components.

At 207, Justice Robertson stated:

> *"I find that there was a business problem of attracting the attention of the user and having the user choose to interact with the advertiser, but **this problem was translated into the technical problem of how to utilise computer technology to address the business problem**."*

The Court at 208 found that:

> "the computer was not merely acting as an "intermediary" but [that] the substance of the invention involved the new functioning given to the computer",

then, at 212, stated that:

> "The invention brought together some new elements and some known elements to form a working combination that had not previously been achieved and involved the use of computers in a way that was foreign to their normal use …".

### Encompass Corporation Pty Ltd v InfoTrack Pty Ltd [2019] FCAFC 161 (13 September 2019)(Encompass)

In the most recent Australian Court decision regarding a computer-implemented invention *(Encompass v Infotrack)*, an enlarged bench of five judges handed down a unanimous judgment, finding that the claimed invention, directed to the field of information retrieval and data management, was not patent eligible subject matter.

The Court noted that when determining whether a claimed invention is a manner of manufacture, and thus patent eligible subject matter, a question of characterisation is involved. Characterisation of the invention is determined by whether the invention is proper subject matter for the grant of a patent and is to be addressed as a matter of substance, not merely as a matter of claim form.

In rejecting the claimed invention, the Court applied well-established principles and held that *"the method claims in suit are, in truth, no more than an instruction to apply an abstract idea (the steps of the method) using generic computer technology"*.  This finding is consistent with earlier decisions, which have found that generic computer implementation of otherwise unpatentable abstract ideas is insufficient to confer patentability on such ideas.

As this case was an appeal from an decision of a single judge, the Court was limited to considering whether the primary judge had erred in his application of the law and noted *"This appeal does not provide the occasion for this Court to set out the metes and bounds of patentable computer-implemented inventions, assuming that be an appropriate task"*.  The Court affirmed many well understood principles for assessing patent eligible subject matter, without clarifying areas of interpretation that are particular to assessing the eligibility of computer-implemented invention for patents in Australia.

Notably, it remains the case in Australia that there are no exclusions to granting patents on computer-implemented inventions. However, merely automating an unpatentable abstract idea, using unspecified, generic computing technology without any other technical features or contribution to the invention, will not satisfy the threshold.  Further, there was no consideration by the Court of any contribution made by the invention to the prior art base.

### E. Australian Patent Office Practice

The Australian Patent Office has interpreted the decisions of *Research Affiliates*, *RPL Central* and *Myriad* and made significant changes to the Australian Patent Office Manual of Practice and Procedure in August 2018.  The Manual has no legal status, but nevertheless sets out the methodology to be

followed by examiners when examining patent applications.  The Manual provides significant insight into how the Australian Patent Office interprets the case law and the approach that will be undertaken when examining patent applications and adjudicating on appeals and opposition matters.

In relation to identifying the substance of the invention in order to assess whether a claim is directed to patent eligible subject matter, the Manual recites:

> *In order to determine the substance, examiners must identify the central underlying invention embodied in the claim, rather than merely consider the literal form of the claim.  This is the contribution the claimed invention makes to the art and is determined based on a reading of the specification as a whole and examiners' understanding of the common general knowledge and prior art.*
>
> *Relevant factors to consider when identifying the substance of the claimed invention include:*
>
> - *The form of words, breadth and emphasis of the claim.*
> - *How does the invention work?*
> - *What problem does it address?*
> - *What are the advantages of the invention?*
> - *What does the invention add to the state of the art as at the priority date?*

In doing so, the Australian Patent Office is relying on UK decisions that follow the *Aerotel* case, which was referred to in the *Research Affiliates* case.  Notably, in *Research Affiliates*, the Full Court concluded its consideration of the *Aerotel* case by noting that it related to excluded subject matter (rather than manner of manufacture), but could be useful in analysis of an *"artificial effect"*.

In applying the above approach to assessing manner of manufacture, the Australian Patent Office has introduced a temporal component to assessing patent eligible subject matter, considering the contribution made by the invention <u>to the art</u>.  This practice is presently the subject of ongoing discussion between IPTA and the Australian Patent Office and is also the main point of contention in a number of cases that have been appealed to the Federal Court from decisions of the Australian Patent Office.

Despite concerns over the practice adopted by the Australian Patent Office, claims directed to computer-implemented inventions are frequently being granted, particularly if it can be shown that the claimed invention addresses a technical problem and results in an improvement to computer technology.

## II. Analysis by Software Category ([return to mapping](#))

### A. User Interface

As a general principle, an invention that results in an improvement to a computer is patent eligible subject matter.  The most relevant decision relating to user interfaces is the Patent Office Decision of *[Aristocrat Technologies Australia Pty Limited](#)* [2016] APO 49, in which a user interface that provided an icon that enabled a user to select both a game and a bet denomination in a single action was considered to provide a more efficient interface for operating the gaming machine and thus was an

improvement to the computing device.  Consequently, the claimed invention was found to be a manner of manufacture and, thus, patentable subject matter.

The allowed claim in *Aristocrat* was:

> *A gaming machine including a controller and a touch sensitive electronic display, the controller being arranged to cause a game selection image to be displayed on the electronic display, the game selection image including a plurality of separate image elements including:*
>
> > *a) a name of a game that is available for play on the gaming machine; and*
> > *b) a set of different bet denominations for the game, wherein at least one of the sets of denominations of at least one of the separate image elements is different to the set of bet denominations of at least one other of the separate image elements, the gaming machine being further arranged to allow a player to select a game and a denomination by touching the touch sensitive electronic display where a respective denomination is displayed.*

### B. Data Structure

A data structure of itself may not be patentable subject matter, if it can be considered merely to be an abstract scheme or presentation of data. Data structures that can be shown to provide a more efficient construct for organizing data can be the basis of patent eligible subject matter and applications of the data structures to particular environments are likely to be patent eligible subject matter.

Application of a data structure to a produce a tangible or concrete result (i.e., an "artificially created state of affairs") may well constitute patent eligible subject matter. Thus, a binary tree of itself is not patent eligible subject matter, but a database implemented using a binary tree that results in more efficient data retrieval may well be patent eligible subject matter.

It is important to highlight the features, constraints, and benefits of the structure, in order to be able to argue that the implementation of the data structure to a particular scenario results in an improvement beyond ordinary computer functionality.

### C. Data Transfer/Network Transfer

When considering data transfer/network transfer related applications, the Australian Patent Office will consider whether the claim relates to mere presentation of information or whether the claim relates to a new method or system for data transfer. Allowable methods or systems may relate, for example, to new transmission protocols, redundancy checks, encryption, or the like which can be considered to result in an improvement in computer technology as a result of being more efficient, more secure, or similar.

### D. Data Storage

Claims directed to data storage may be patentable if it can be shown that the method or system of storage is more efficient (e.g., using compression algorithms) or secure or if the data storage enables data retrieval to be more efficient.

### E. Data Processing/Other

Data processing claims are often considered by the Australian Patent Office to be schemes or mere manipulation of data, which do not result in an "artificially created state of affairs". The prospects of claims directed to data processing may be improved by embodying the data processing to a practical application. For example, a data processing claim that generates an index may be considered a mere

scheme or algorithm, but extending the claim to include a step of utilizing the index to produce a practical result may result in an allowable claim.  A practical result may be, for example, control of a machine or device based on the generated index.

## III. Other Considerations

### A. General Comments

The Courts in Australia have made clear that there are no judicial exceptions to computer-implemented inventions in Australia.  Further, there are no legislative provisions directed solely to computer-implemented inventions, so the rules for assessing patent eligible subject matter are agnostic across different technologies.

As indicated above, despite concerns over some interpretations of case law, claims directed to computer-implemented inventions are routinely being granted in Australia.  However, claims directed to business methods, when implemented using generic computer technology, are routinely being rejected if there is no ingenuity in the computer implementation itself.

The *"manner of manufacture"* threshold for patent eligible subject matter is substantially equivalent to the USC §101 requirement under US patent law.  As for US law, Australian practice is in a state of flux, as the practice of the Australian Patent Office has conflated the separate grounds of manner of manufacture, novelty, and inventive step (non-obviousness).  Unlike US practice, the Australian Patent Office has not provided worked examples to assist in determining what is an abstract scheme.

The decision of the Full Court in *Encompass v Infotrack* affirmed that merely automating an unpatentable abstract idea, using unspecified, generic computing technology without any other technical features or contribution to the invention, will not satisfy the threshold for patent eligible subject matter. There are a number of other cases on appeal to the Federal Court from the Australian Patent Office and there is great expectation that these decisions will clarify the correct approach for patent eligible subject matter in Australia and provide practitioners, applicants, and patentees with greater certainty.

### B. Drafting Suggestions

In order to provide the best chance of having a claim directed to a computer implemented invention be considered patent eligible subject matter in Australia, it is helpful for the specification to describe a technical problem that is being addressed or sought to be ameliorated by the invention.  Whilst this is not a requirement from the legislation, the Australian Patent Office Manual of Practice and Procedure, which is followed by the examiners, puts great weight on this consideration.  Where relevant, it is also helpful to describe any improvement to the computer that results from the claimed invention.

It is useful to place system or apparatus claims first, rather than method claims.  This practice may result in an application being assessed by a different examination unit that is more favorable to computer-implemented inventions.  It is often easier to make an argument that a physical system or apparatus having identified functional components is a "manner of manufacture", which has arisen from the contribution of the inventor(s).  In contrast, a computer-implemented method may draw an

objection that the method of itself is not patent eligible subject matter and has been merely implemented using generic computer functionality.

# Canada
by Shahrzad Esmaili and Y. Artemis Lai

## I. Overview

### A. Summary

In Canada, the key consideration for patent-eligible claims is whether the "essential elements" of the claim satisfy the "physicality requirement."

Under the Canadian Patent Office guidelines, the essential elements of a claim will be determined using a "problem" and "solution" approach, which identifies as essential those elements required to solve a problem described by the application as a whole. Under Canadian legal principles, the essential elements of a claim are determined using a different purposive claim construction approach, which considers the intention of the inventors and whether substitution, variation or omission of a particular element would have a material effect on the way the invention works.

Once the essential elements of a claim are construed, these essential elements will be considered to satisfy the "physicality requirement" when the elements have physical existence (i.e., a physical object) or produce discernible changes or effects (i.e., a physical effect in an art or a process). If the physicality requirement is satisfied, the claim will generally be considered to fall within one of the Canadian statutory categories of invention (art, process, machine, manufacture or composition of matter) and be patent-eligible.

### B. Statutory Framework

In Canada, the relevant legislation governing patents in Canada is the Patent Act, R.S.C. 1985, c. P-4, hereinafter the "Patent Act" and its accompanying regulations, the Patent Rules, hereinafter the "Patent Rules".

Pursuant to subsection 27(1) of the Patent Act, the Commissioner of Patents must grant a patent for an "invention" if the patent application meets all statutory conditions.

Section 2 of the Patent Act defines the requirements for an "invention" and states:

"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.

While the subject matter under consideration may fall within this definition of an invention, there are several exclusions that are particularly applicable to claims for computer-implemented inventions. For instance, s. 27(8) of the Patent Act defines what may not be patented as: "(n)o patent shall be granted for any mere scientific principle or abstract theorem."

## C. Judicial Guidance

There is much judicial guidance on other types of subject matter that are specifically precluded by statute from patent protection and this includes fine arts or works of art, as well as mental operations and processes (see *Canada (Attorney General) v Amazon.com Inc*., 2011 FCA 328 [*Amazon*] and *Schlumberger Canada Ltd. v Canada (Commissioner of Patents), [1982] 1 FC 845 (CA) [Schlumberger*]).

The leading case on patentability of software and computer-implemented inventions is the 2011 Federal Court of Appeal's decision in *Amazon* (also generally referred to as the one-click patent) and previously the 1982 decision in *Schlumberger*.

Initially, in *Schlumberger*, the application generally related to aggregating and processing measurements from boreholes using a computer program and displaying the results. The Court considered the patentability of software inventions and generally appeared to indicate that the computerization of a mathematical method in a claim may not be sufficient to render the claim statutory. According to this case, "the fact that a computer is or should be used to implement discovery does not change the nature of that discovery", and that if the mere use of a computer in an invention would render the invention patent eligible, then "[t]he invention of the computer would then have the unexpected result of giving a new dimension to the Patent Act by rendering patentable what, under the Act as enacted, was clearly not patentable."(See *Schlumberger* at 847).

Later in 2011, the Federal Court of Appeal in *Amazon* stated that determining the subject matter eligibility must commence with a **purposive construction** of the patent claims. There are three elements in the test for determining whether those claims fall within the definition of "art": (a) it must not be a disembodied idea but have a method of practical application; (b) it must be a new and inventive method of applying skill and knowledge; and (c) it must have a commercially useful result.

The Court in *Amazon*, addressed the earlier case of *Schlumberger* by stating at para 62 that:

*Schlumberger* exemplifies an unsuccessful attempt to patent a method of collecting, recording and analyzing seismic data using a computer programmed according to a mathematical formula. That use of the computer was a practical application, and the resulting information was useful. But the patent application failed for want of patentable subject matter because the Court concluded that the only novel aspect of the claimed invention was the mathematical formula which, as a "mere scientific principle of abstract theorem", cannot be the subject of a patent because of the prohibition in subsection 27(8).

The Court in *Amazon* further stated at para 63 that:

"In my view, the task of purposive construction of the claims in this case should be undertaken anew by the Commissioner, with a mind open to the possibility **that a novel business method may be an essential element of a valid patent claim**."

Thus, this decision made it clear that business methods would not necessary be precluded from patent protection and that purposive construction was the **first step** in analyzing whether a claim was statutory subject matter.

To perform **purposive construction***,* the Supreme Court of Canada in *Free World Trust v Électro-Santé Inc.* 2000 SCC 66 [*Free World* Trust] stated that a purposive construction of the claims **should be**

**undertaken in order to determine what elements of the claim are essential and what elements are non-essential**. The Court in *Amazon FCA* further provided at para 44 that "what appears on its face to be a claim for an 'art' or 'process' may, on a proper construction, be a claim for a mathematical formula and therefore not patentable subject matter."

According to the Court in *Free World Trust* at para 55:

"(f)or an element to be considered non-essential and thus substitutable, it must be shown either (i) that on a purposive construction of the words of the claim it was clearly not intended to be essential, or (ii) that at the date of publication of the patent, the skilled addressees would have appreciated that a particular element could be substituted without affecting the working of the invention."

The approach used for determining whether an element is "essential" was also set out in the Supreme Court decision *Whirlpool Corp v. Camco Inc*, 2000 SCC 67 at paras 44-48. Relying on the analysis set out in the House of Lords decision *Catnic Components Ltd. v. Hill & Smith Ltd*, [1982] RPC 183, [1983] FSR 512 Justice Binnie writes at para 48:

"…the scope of the monopoly remains a function of the written claims but, as before, flexibility and fairness is achieved by <u>differentiating the essential features ('the pith and marrow') from the unessential, based on a knowledgeable reading of the whole specification through the eyes of the skilled addressee rather than on the basis of 'the kind of meticulous verbal analysis in which lawyers are too often tempted by their training to indulge.'</u>" [Emphasis added.]

Generally speaking, as will be discussed below, the Canadian Patent Office considers that where **a recited computer feature** is an essential element of the claim, e.g. cannot be varied, substituted or omitted, without affecting the way the invention works, it may be argued that the claimed subject matter is statutory and falls within the definition of an invention.

### D. CIPO Guidance

In 2013, the Canadian Intellectual Property Office ("CIPO") released practice guidelines[3] clarifying CIPO's position on patent-eligible subject matter, and CIPO's interpretation of *Amazon FCA*. The substance of these guidelines were incorporated into Chapter 13 CIPO's Manual of Patent Office Practice ("MOPOP") in 2015.

In the guidelines and MOPOP, CIPO has asserted that different rules of claim construction should be used by patent examiners during prosecution of the patent application when compared to the rules used by courts when analyzing validity and infringement of an issued patent. CIPO relies on *Genencor International Inc v Commissioner of Patents*, 2008 FC 608 [*Genecor*] for this assertion. There is disagreement in the Canadian patent bar as to whether *Genecor* should be applicable to claim construction, and whether *Genecor* should be considered overruled by the Federal Court of Appeal decision in *Amazon FCA*.

---

[3] "Examination Practice Respecting Computer-Implemented Inventions - PN 2013-03",
and "Examination Practice Respecting Purposive Construction - PN2013-02".

However, the effect of CIPO's asserted position is that pending claims of an application during prosecution will be analyzed using CIPO's "problem" and "solution" framework for claim construction noted below rather than the Canadian legal principles for claim construction identified in *Free World Trust*, *Whirlpool*, and *Amazon FCA*.

CIPO's "problem" and "solution" framework involve the following steps:

1. Identifying a person of ordinary skill in the art (POSITA), and identifying the common general knowledge (CGK) of the POSITA, based on the disclosure of the application.

2. Identifying a "problem" that the inventors set out to solve based, on the disclosure of the application.

3. Identifying a "solution" to the problem previously identified, by identifying which elements of the claims of the application are required for the successful resolution of the problem. Generally, the problem that the inventors set out to solve should be an improvement over the CGK.

**Superfluous non-essential elements.** Based on this "solution", CIPO may identify elements of the claim which are not required for the successful resolution of the problem as "non-essential elements" that are excluded when analyzing whether the claims define statutory subject matter. These "non-essential elements" are commonly characterized as elements of the claim which "define the context or the environment of a specific working embodiment" and which may "have a material effect on the operation of a given embodiment", but which does not affect the nature of the solution and is not necessarily essential to the solution.

**Omitted essential elements.** On the other hand, although rare, CIPO can also identify elements described in the description which are not recited in the claims as being required for the successful resolution of the problem, and require their inclusion in the claims as "essential elements".

Many members of the Canadian patent bar are of the view that CIPO's "problem" and "solution" approach allows CIPO and Canadian Examiners to more easily <u>disregard explicitly recited</u> elements of claims on the basis that they are "superfluous non-essential elements".

Once the essential elements are identified, the claims are analyzed to determine if the essential elements define subject-matter in compliance with the Canadian *Patent Act* and *Patent Rules.*

In this respect, whether the essential elements define statutory subject matter is generally analyzed <u>positively</u>, by applying a legal test to determine whether the essential elements fall <u>within</u> one of the statutory categories of "art, process, machine, manufacture, or composition of matter" listed in section 2 of the *Patent Act.* There are only two defined exclusions from patentability under Canadian law: (1) the statutory exclusion of any mere scientific principle or abstract theorem found in section 27(8) of the *Patent Act*; and (2) the judicial exclusion of methods of medical treatment.

E. Computer Problems and Computer as an Essential Element

Computer-implemented inventions may claimed be in the form of a method (falling within the categories of art, process or method of manufacture), machine (generally, a device that relies on a computer for its operation), or product (an article of manufacture).

CIPO will typically consider computer-implemented inventions and related claims to be statutory **when a computer, or an analogous computer element, is found to be an essential element of the claims**. However, CIPO takes the position that "the fact that a computer is or should be used to implement a discovery does not change the nature of that discovery", and also that the presence of a computer cannot effect the "transforming into patentable subject-matter [of] what would, otherwise, be clearly not patentable" (and cites to *Schlumberger* for this position).

More specifically, CIPO provides the following guidance with respect to computer-implemented methods and apparatuses:

1.  **Method.** Methods that would be considered non-statutory do not become statutory by virtue of some part of the methods being carried out on or by a computer. However, where a method involves controlling a computer's operation to provide a solution which satisfy a physical requirement (at least one act performed by a physical agent on a physical object, producing a change of condition in that physical object), the method may be considered statutory.

2.  **Apparatus.** A device, such as a computer, or an apparatus including a computer, is statutory subject matter. However, such a computer will only be considered essential to the claims when the computer is required to provide the solution to the identified problem. If the computer is required to provide the solution, the patentability of the computer may be from new hardware, or controlling existing hardware in a particular manner by the additional of software or firmware.[4]

Given the "problem" and "solution" framework, CIPO further indicates that a key step for determining whether a computer-implement invention requires a computer as an essential element involves **determining whether the problem that the inventor set out to solve was a "computer problem" (i.e., a problem with the operation of a computer) as opposed to not being a "computer problem" (i.e., a problem whose solution may be implemented using a computer)**[5].

---

[4] Examples include: (a) a computer programmed to allow its speakers to simulate "surround sound" (known hardware controlled by new software); (b) a computer adapted to operate using two central processing units (new arrangement of known hardware, controlled by new software); (c) a computer programmed to allocate memory to video processing in a manner that increases the efficiency of the device when running several applications (known hardware controlled by new software), and (d) a computer whose motherboard has an inventive new video card slot with a faster data transfer rate (new hardware).

[5] Factors that may indicate the existence of a "computer problem" include : the description details a specific problem with the operation of a computer; the solution to the problem involves controlling a chip, system component or technical architecture element such as through firmware (embedded software); the description emphasizes challenges or deficiencies in prior computers; and a significant level of detail is devoted to describing technical details, such as the algorithm or logic performed by the computer.

Factors that may suggest that the problem was not a "computer problem" include: explicit statements in the description suggesting a problem other than a "computer problem"; the absence of any explicit indication in the

F. Computer-Related Inventions if/when the Computer is not an Essential Element

Rather, what is fundamentally required is that the essential elements of the claims (i.e. the "solution"):

1. have <u>physicality</u> or <u>manifest discernible changes or effects</u> (i.e., the "physicality requirement"), whether the essential elements of the claims meet this "physicality requirement" is what differentiates *a disembodied idea, concept or discovery* (not statutory) from *an invention having practical form* (statutory); and

2. fall within one of the statutory categories of invention (see section A. Statutory Framework).

The point of contention between an applicant and a Canadian Examiner for computer-related inventions will, more often than not, characterizing the "solution" solved by an application and whether such a "solution" satisfies (1) above.

Guidance from Canadian courts on what is sufficient to meet the "physicality requirement" is sparse. The Federal Court of Appeal in *Amazon FCA* indicated that our understanding of the nature of the "physicality requirement" may change because of advances in knowledge.

CIPO has generally taken the position that to satisfy the "physicality requirement", the "solution":

"must be in a form that <u>can interact directly with the physical world</u> and, hence, that will itself enable a person skilled in the art to <u>obtain the intended result or benefit.</u> [...] These means must consist of one or several elements, where an element in this sense could be either <u>a physical object (a machine, article of manufacture or composition of matter)</u> or <u>a step leading to a physical effect in an art or process</u>" (MOPOP, Chapter 9.03)

## II. Analysis by Software Category ([return to mapping](#))

Examples provided by CIPO (some of which have been adapted to better correspond to the "problem" and "solution" framework) and some Canadian Patent Appeal Board decisions respecting computer-implemented inventions are summarized below.

Examples marked with an "*" below are older examples from MOPOP which utilize a "contribution" approach. This contribution approach is no longer allowed to be used by CIPO after *Amazon FCA*; however, these examples are informative because, even under the "problem" and "solution" framework, elements that are merely CGK (i.e., not a part of the "contribution" of the invention) <u>will generally</u> (depending slightly on how the "problem" is characterized) <u>not be considered to an essential to the "solution"</u>.

### A. User Interface

CIPO will consider a graphical user interface ("GUI") to be unpatentable if the "solution" provided by the GUI is the specific arrangement of visual elements that are displayed on a screen or the information

---

application that any practical problems relating to the operation of a computer were overcome; and a relative absence of technical details, despite an indication in the description that the solution be implemented on a computer.

which would be provided by visual elements. An analogy is often drawn to unpatentable "printed matter" or mere "information". However, computer-implemented inventions which involve a GUI may be patentable if there are additional essential elements which satisfy the physicality requirement.

Canadian courts have not articulated a special or different patent eligibility test for GUIs. GUIs which are inventive only in an "artistic" or "aesthetic sense" are generally not patentable (*Amazon FCA* at para. 58). However, where the essential elements of a claimed GUI are functional (has utility), and satisfy other requirements of patentability (novelty, non-obviousness, section 27(8) of the *Patent Act*, the "physicality requirement", and categories of section 2 of the *Patent Act*), a Canadian court may come to a different conclusion regarding patent eligibility than CIPO.

### MOPOP Chapter 16.09.01 – Example 1*

A portable device that allows a user to read an electronic book. The device includes a touch screen, and displays the electronic book using an efficient graphical user interface. The device also allows the user to enter personal notes at any location within the content of the electronic book. The personal notes are stored within XML tags that are embedded within the content, and a graphical icon is displayed at the location of each XML tag. The touch screen is also able to recognize advanced user touch commands, and the device comprises software to interpret such touch commands and perform specific functions.

**CGK/prior art** does not disclose (1) the efficient GUI arrangement, (2) storing personal notes using XML, or (3) recognizing advanced touch commands.

**Claims:**

*1. A graphical user interface for a portable electronic book reading device having a touch screen, the graphical user interface displaying on the touch screen:*
> *a series of buttons appearing at the top of the screen representing frequently performed operations;*
> *a region appearing at the left hand side of the screen containing a plurality of hyperlinks to other content within the electronic book;*
> *a scrollbar appearing at the right hand side of the screen;*
> *a central frame displaying a page of content from the electronic book;*
> *an input box appearing at the bottom of the screen for accepting user input.*

**NOT STATUTORY (per CIPO); computer elements not essential, no other essential element satisfies the "physicality requirement";** the "essential elements" define a GUI only and will be considered by CIPO to be mere "information" or "printed matter". A Canadian court may come to a different conclusion regarding essentiality of the claimed "portable electronic reading device", the "touch screen" under the test of *Free World Trust*.

*3.	A computer readable medium comprising computer instructions that when executed by a portable electronic book reading device having a touch screen displays the GUI of claim 1.*

*4.	The computer readable medium of claim 3 further comprising instructions that when executed* enable the portable electronic book reading device *to:*
> ***accept a text input from the input box*** *representing a user's personal notes;*
> *identify a specific location within the page currently being displayed on the screen;*

*embed the personal notes within the content of the electronic book at the identified location using predefined XML tags;*
*parse the content of the electronic book to identify all embedded XML tags and to <u>display a graphical icon at the location of each XML tag</u>; and*
*<u>display the personal notes</u> embedded within an XML tag **upon user request**.*

**STATUTORY (per CIPO); computer elements essential;** "electronic book reading device" (satisfies the "physicality requirement") having the above embedding and display functionality would be essential to a "solution" to the "problem" of *enabling user to store and retrieve personal notes at specific locations within the content of an electronic book*.

*5.       The portable electronic book reading device of claim 2, wherein the <u>touch screen is configured to recognize a pinching motion touch command by the user</u>, and wherein the touch command enables the user to flip to the next or previous page of content by performing the touch command and dragging the page to the right or left hand side of the touch screen.*

**STATUTORY (per CIPO); touch screen essential;** "touch screen" (satisfies the "physicality requirement") recognizing the specific pinching motion would be essential to a "solution" to the "problem" of *providing functionality to enable the user to conveniently browse through an electronic book using normal hand gestures*.

## B.   Data Structures

A data structure is a format that collects, organizes, manages and stores related data items to suit a specific purpose. A data structure may, for example, improve the performance of computer programs by allowing a set of operations to be efficiently performed on the data items. A data structure itself is considered by CIPO to be unpatentable. A data structure can have an impact on the patentability of a claimed invention if it limits the technological nature of the claimed statutory element.

**[Patent Appeal Board Decision - CD 1462, re: Application no. 2409631 - Example](#)**

The application proposes an improved way of analyzing web usage to extrapolate user demographic information: a multi-dimensional vector representing a user's web page access pattern is compared to multi-dimensional vectors representing web page access patterns of users with certain demographic attributes.

**According to the Commissioner's Decision, CGK/ PRIOR art** does disclose:

* conventional techniques for providing business services and advertisements to web users;

* conventional marketing strategies, and the concepts of targeting marketing at specific demographics and personalizing product messages for individuals at a large scale (mass customization);

* conventional techniques for data mining and machine learning;

* the profiling of Internet users;

* the collection of demographic information from Internet users;

* the extrapolation of user demographic information;

* the use of cookies, IP addresses, session IDs, etc. to identify users;

* the use of client-server communication devices, and networking and appropriate programming techniques; and

* the detection of a set of web pages accessed by a user having an unknown user profile attribute and analysing the access to determine the profile.

Claim 1.

A machine-implemented method for extrapolating user profile information from user web page access patterns, comprising:

detecting a set of web pages accessed by a test user having an unknown user profile attribute;

mapping at least a subset of said detected web pages to a first data structure, said first data structure representing a web page access pattern of said test user;

comparing said first data structure to a plurality of a second data structure to obtain a comparison result, the plurality of said second data structure representing clusters of web page access patterns of a sample data set of users having a known user profile attribute in common;

evaluating based on said comparison result the plurality of said second data structure and said first data structure to identify a second data structure matching the web page access pattern of the first data structure; and

assigning said unknown user profile attribute of said test user from the matching second data structure to said test user;

wherein the known user profile attribute in common of the sample data set of users corresponds to the unknown user profile attribute of said test user;

wherein said first and second data structures are multi-dimensional vectors; and

wherein each dimension of said first and said second multi-dimensional vectors corresponds to a separate web page.

Claims 1-24 shared the same essential elements.

**The claims were considered NOT STATUTORY as per the decision** because the only inventive aspect of the essential elements is the rules for an improved algorithm for analyzing data. The rules do not manifest a discernible effect or change of character or condition in a physical object. They merely involve the carrying out of a plan or theory of action without the production of any physical results proceeding directly from the operation of the theory or plan itself.


C. Data Transfer and Signals

CIPO considers signals to be transitory in nature. Electromagnetic and acoustic signals and waveforms are not seen as patentable subject-matter even if the signal is transmitted through a physical medium.

Methods, processed, machines or manufactures involved in the generation, reception, transmission or processing of a signal may be patentable subject matter if all other criteria for patentability are satisfied.

An application discloses a transmission system to transmit video data over short distances. The system uses a carrierless ultra-wideband signal, where the video data is encoded into multi-phase wavelets. The system allows for transmission at high data rates over short distances and can be used to transmit video from a security camera to a recording device, for example. When transmitted at low power, such carrierless transmissions do not interfere with narrowband or spread spectrum signals.

**CGK/prior art** does disclose (1) Wireless security system including security video cameras (2) Wireless transmission of video data over short distances

Claims:

1. A data signal for transmission of video data over short distances, the signal being embodied in a carrierless ultra wideband waveform wherein the data is encoded into multi-phase wavelets, the signal being transmitted from a transmitting antenna to a receiving antenna.


**NOT STATUTORY (per CIPO)** because the claim defines a signal it is directed to non-statutory subject matter and does not fit within section 2 of the *Patent Act*


*2.* A physical transmission medium carrying the signal of claim 1.

**NOT STATUTORY (per CIPO)** because the signal does not provide any technological limitation to the transmission medium this claim includes two discrete elements, the medium and the signal. As the physical transmission medium is not included, the claim does not include a statutory contribution. The inventive aspect of the claim is the signal in claim one, therefore, in light of the contribution analysis, an objection is made under s.2 of the *Patent Act*.


3. A transceiver for transmitting and receiving data signals comprising:

means for encoding video data into multi-phase wavelets;

means for transmitting the encoded data as a data signal embodied in a carrierless ultra wideband waveform; and

means for receiving and decoding the transmitted signal to retrieve the original video data.


**STATUTORY (per CIPO);** For this example, it is presumed that the description makes it clear that means for encoding, transmitting and receiving and decoding data signals relate to hardware components and others to software stored on a physical memory. By encoding the data into multi-phase wavelets the

transceiver can transmit the data at a high rate with minimal interference of other signals. Therefore, the software enabled coding modifies the technological character of the device. If the use of multi-phase wavelets is novel and inventive, the claim would be allowable.

### D. Databases/Data Storage

CIPO will generally consider the content and organization of a particular database to be unpatentable if the "solution" provided by the database involves merely the content of the data (i.e., information) or the organization of the data. However, database and data storage management systems (which control and manage access to the data in the databases for example), may be patentable as a computer program.

Canadian courts have not articulated a specific or different patent eligibility test for databases or data storage. Where the essential elements of a claimed database or database management system satisfies the requirements of patentability (utility, novelty, non-obviousness, section 27(8) of the *Patent Act,* the "physicality requirement" and within one of the categories of section 2 of the *Patent Act*), a Canadian court may come to a different conclusion regarding patent eligibility than CIPO.

### MOPOP Chapter 16.09.03 – Example*

A distributed database system which reduces the load on database servers in a network. The same database is stored on multiple database servers. A common control server receives database access requests and distributes the requests among the multiple database servers. The control server keeps track of the load on each database server, and distributes requests in order to evenly distribute the load on the servers. The control server also periodically synchronises the data across the database servers during periods of lighter load.

**CGK/prior art** <u>does disclose</u> (1) database access requests distributed across a system, and (2) synchronisation performed at set intervals; but <u>does not disclose</u> a common control server keeping track of the load on the database servers in order to evenly distribute access requests and scheduling database synchronisation during periods of light server load.

Claims:

*1. A distributed database system comprising:*
*a plurality of database servers, each of which stores a copy of a database;*
*a control server for controlling the distributed database system, wherein the control server comprises:*
*means for distributing received database access requests among the plurality of database servers; and*
*means for performing database synchronisation to synchronise the content of the databases stored on the database servers.*

**STATUTORY (per CIPO); computer elements essential;** "control server" (and "database server" likely as well under CIPO's 2013 revised guidelines) having the distribution and synchronization

functionality will likely be considered to be essential to a "solution" to a "problem" of how to maximize performance of the overall distributed database system.

*3. The system of claim 2, wherein the control server further comprises:*
*means for tracking the load of each of the plurality of database servers,*
*wherein the database access requests are distributed among the plurality of database servers according to the load of each server in order to evenly distribute the load among the database servers, and*
*wherein the database synchronisation is performed during periods where the database servers are experiencing a lighter than normal load.*

**STATUTORY (per CIPO); computer elements essential;** "control server" (and "database server" likely as well under CIPO's 2013 revised guidelines) having the tracking and more specific synchronization functionality considered to be essential to a "solution" to a "problem" of maximizing performance of the overall distributed database system.

**CD 1341, re: Application no. 2222229** **(aspects applicable under "d. Data Storage", but also applicable under "e. Data Processing")**

A system and method for electronic commerce (e-commerce) that separates stored detailed merchant content from transaction functionality over separate servers. A transaction server is connected over a network to one or more merchant servers. The transaction server provides purchasers with summary information on merchants and the products they offer. Purchasers desiring to obtain more detailed information about a specific product offered by a certain merchant can link directly to the corresponding merchant server through the transaction server. Once the purchaser selects an item for purchase from the merchant site, a purchase request is transmitted from the merchant server to the transaction server which processes the transaction for the selected item.

**"Problem"** characterized as "traditionally, merchants were faced with the choice of either having to operate their own commerce server or purchase e-commerce services from a commerce service provider. The former option resulted in merchants having to operate complex and expensive servers that provided both content and transaction functionality. The latter option caused the merchant to lose control over the manner in which […] information is presented by relinquishing it to the provider"

**"Solution"** characterized as "splitting e-commerce functionality over multiple servers […] by separating transaction functionality from detailed merchant content over separate servers, merchants and providers can each dedicate themselves to offering services within their areas of expertise".

Claims:

*1. A method for conducting electronic commerce transactions in a transaction server storing merchant summary information connected over a network to a merchant server, said method comprising the steps of:*
*searching for general merchant information in the merchant summary information based on a received information request;*
*displaying results of the search;*
*providing reference to detailed merchant information stored on the merchant server;*

*receiving a purchase request from the merchant server for a selected product; and*

*processing the purchase request to form a purchase transaction.*

**STATUTORY (per PAB); computer elements essential;** "transaction server" storing the general merchant information and capable of processing the purchase request and a separate "merchant server" storing detailed merchant information considered to be essential to the "solution" above.

E. Data Processing

CIPO will typically consider data processing functionality as "computer programs", and patentability of such computer programs will depend on whether CIPO considers **the patent application to disclose a "computer problem"** and whether CIPO considers **the computer elements recited in the claim to be essential for a "solution" to that "problem"** (see section "A. Computer Problems and Computer as an Essential Element"). Claims involving data processing may also be patentable if there are essential elements aside from the computer elements which satisfy the "physicality requirement" (see section "B. Computer-Related Inventions if/when the Computer is not an Essential Element").

Canadian courts have not articulated a specific or different patent eligibility test for data processing methods or systems. Where the essential elements of a claimed data processing method or system satisfies the requirements of patentability (utility, novelty, non-obviousness, section 27(8) of the Patent Act, the "physicality requirement", and the categories of section 2 of the Patent Act), a Canadian court will likely consider such a system or method patentable.

However, Canadian courts have provided some explicit guidance that claims which merely recite use of a computer to more efficiently make certain novel calculations is not patentable (*Schlumberger* at 205-206). Stated in other terms, where the invention is "essentially" an algorithm, mathematical formula or calculation, the recital of a general purpose computer which performs such an algorithm, mathematical formula or calculation will not make the invention patentable (*Amazon FCA* at para. 63, 69). Such inventions would either be contrary to section 27(8) of the *Patent Act* or fail to satisfy the "physicality requirement".

### [MOPOP Chapter 16.03.03 – Example 2*](#)

A vehicle wheel alignment system comprising a vehicle station used for vehicle testing, a set of optical sensors for measuring vehicle wheel alignment angles, an automated tool for adjusting wheel angles, and a computer. The computer runs software which compares angles measured by the optical sensors with manufacturer-recommended specifications stored in a database and produces an output signal which instructs the automated tool to perform a synchronized adjustment of any wheel angles that are outside predetermined limits. The automated tool is a single unit comprising several modules, with each module being capable of adjusting one of the wheel angles.

CGK/prior art <u>does disclose</u> (1) a vehicle station used for alignment of vehicle wheels, (2) measuring wheel alignment angles using a set of optical sensors, (3) inputting the measured values to a computer, (4) searching a database to determine if the measured angles meet manufacturer recommendations, (5) use of a computer to calculate required wheel angle corrections; and (6) a tool for adjusting wheel angles; <u>does not disclose</u> an automated tool for the synchronized adjustment of multiple wheel angles, including several modules in a single unit wherein each module adjusts a specific wheel angle.

Claims:

*1. A method for vehicle wheel alignment comprising the steps of:*
*measuring vehicle wheel alignment angles using a set of optical sensors,*
*inputting the measured alignment angle values into a computer,*
*searching for corresponding manufacturer recommended wheel angles stored in an electronic database,*
*calculating differences between the measured values and the corresponding manufacturer recommended angles,*
*producing a signal to actuate an automated tool for angle alignment, said signal being based on the calculated differences, and*
*synchronously aligning wheel angles on the vehicle using the actuated tool.*

**STATUTORY (per CIPO); computer elements not essential but other essential elements satisfy the "physicality requirement";** "actuated tool" which aligns the wheel angles considered to be essential to a "solution" to a "problem" of how to adjust more than one wheel on a vehicle when the wheels may all be aligned at different alignment angles after normal vehicle use, for example.

*3. A method for calculating a vehicle wheel angle condition comprising the steps of:*
*inputting measured values of vehicle wheel angles into a computer,*
*searching for corresponding manufacturer recommended wheel angles stored in an electronic database,*
*calculating differences between the measured values and the recommended values, and*
*displaying the calculated angle differences on a computer display.*

*4. A system for calculating a vehicle wheel angle condition comprising:*
*an input means for inputting measured values of vehicle wheel angles,*
*a processor means for searching for corresponding manufacturer recommended angles stored in an electronic database and for calculating differences between the measured values and the manufacturer recommended angles, and*
*an output means for displaying the calculated angle differences on a computer display.*

**NOT STATUTORY (per CIPO); computer elements not essential, other essential elements also lack physicality;** each of the method steps are CGK, and thus <u>there is a presumption that these physical steps do not form a part of the "solution" facing the inventors</u>; rather the "solution" appears to rely on the specific manipulation of the measured values, the recommended values and the angle differences. The addition of a computer would not be considered by CIPO to make the claim statutory. A Canadian court may come to a different conclusion regarding essentiality of the "computer", "electronic database" and "computer display" recited in claim 3 and the "input means", "processor means" and "output means" recited in claim 4 under the test of *Free World Trust.*

### CD 1345, re: Application no. 2333184

A plant embryo classification process which relied on automated analyses of plant embryos while in culture. Analytical methods included extracting as much data from a digital image or spectral analysis as possible, and the data is then analyzed by applying classification algorithms in order to develop a

classification model that, in turn, was used for more accurate identification and sorting of plant embryos with suitable germination potential.

"**Problem**" characterized as how "the process of manually selecting suitable embryos is inherently subjective, labour intensive, tedious, time consuming, expensive and poses a major obstacle to production on a mass scale", which involves "(i) the problem of streamlining and automating a tedious task (page 2, lines 10-12); (ii) the existence of a "major production bottleneck" when embryos are classified visually by technicians (page 2, line 18); (iii) the problem of subjectively attempting to distinguish between subtle morphological differences that exist between plant embryos within a given plant species (page 3, lines 3-7); and, (iv) the problem of the subjective pre-judgement of features considered important during embryo selection (page 2, lines 26-28; page 3, lines 6-7)."

"**Solution**" was characterized as an "a plant embryo classification process that relies on automated analyses of plant embryos while in culture"

Claim:

*1. A method for classifying plant embryos according to their germination potential comprising:*
*a.        developing a classification model by*
*i.        using a scanning device, acquiring raw digital image data of reference samples of whole plant embryos or of embryo organs of known germination potential;*
*ii.        using a computer coupled to the scanning device, performing a data analysis by applying one or more classification algorithms to the acquired raw digital image data, wherein at least one of the classification algorithms uses more than an embryo perimeter from the acquired raw digital image data, the data analysis resulting in development of a classification model for classifying plant embryos by their germination potential; and*
*iii.        storing the developed classification model in computer memory;*
*b.        using the scanning device, acquiring raw digital image data of a plant embryo or a plant embryo organ of unknown germination potential; and*
*c.        using the computer, applying the developed classification model stored in the computer memory to the raw digital image data of step (b) to classify the plant embryo of unknown germination potential according to its presumed germination potential.*

**STATUTORY (per PAB); computer elements not essential but other essential elements satisfy the "physicality requirement";** performing data analyses or mathematical calculations of the type mentioned in the claims may not satisfy the "physicality requirement", however, a purposive construction of the claims "[did] not support the conclusion that the invention consisted solely of data analyses or mathematical calculations". The "separation of a population of embryos" achieved a physical result because it generated distinct sub-populations and "physical acquisition of digital image data at sufficiently high resolutions" were also essential because discrimination between plant embryos could not be performed without physically acquiring such digital image data.

# People's Republic of China

Dibi Yao, Advance China IP Law Office

Lili Wu, Han Kun Law Offices

## I. Overview

### A. Summary

The principal legal standard of subject matter eligibility in China is a "three technical elements approach," which requires a claimed invention to utilize technical means to address a technical problem and produce technical effects. The claimed invention is analyzed as a whole and both technical and non-technical contents are considered. Both judicial decisions rendered by People's Courts and IP Courts of China as well as administrative decisions rendered by the Reexamination Department of the Patent Office, CNIPA show that the standard is generally satisfied when there is a clear roadmap for identifying the three technical elements in the description and the claims recite specified computer components related to the technical effect as disclosed. The current standard in China is generally friendly to software patents since the focus relies more on formality rather than substance, however, further attention on the impact by the I.P. Court of the Supreme People's Court is warranted.

### B. Differences between China and the United States

Codified laws and regulations with respect to patent subject-matter eligibility for computer-implemented inventions consist of Articles 2 and 25 of the *Patent Law of P.R. China* and Chapters 1 and 9 of the *Guidelines for Patent Examination, Part II*. Cases issued by the Supreme People's Court of China and other IP courts as well as decisions issued by the Patent Reexamination Board of CNIPA (now named Reexamination and Invalidation Department of the Patent Office, CNIPA) are informative as to how the codified laws and regulations should be interpreted. Unlike the United States, legal decisions rendered by the Supreme People's Court and other IP courts, usually have no binding effects on the Patent Reexamination Board or the patent examiners of CNIPA. However, with the inaugural of the Intellectual Property Court of the Supreme People's Court of China on Jan 1, 2019, which now has exclusive rights to hear cases on appeal over patent, it is expected that future cases rendered by the I.P. Court of the Supreme People's Court will have more influence and improve a more unified legal standard regarding subject matter eligibility.

Also, unlike the United States, invalidity defense is not available to a defendant in a patent infringement lawsuit in China. One may invalidate an issued patent in China only through filing an invalidity application to the Reexamination Board. The Reexamination Board also renders decisions on reexamination applications when an applicant challenges an examiner's rejection of a claimed invention. Decisions by the Reexamination Board on reexamination and invalidity applications may be challenged in an IP court following the administrative proceeding, different from the civil proceeding. Our research on court cases shows that it is very rare to see a court disagrees with the Reexamination Board on whether a patent/patent application satisfies the requirements of subject matter eligibility. In this regard, the Reexamination Board's determinations on the issue of subject matter eligibility is decisive *de facto*. Also, the Reexamination Board shows a strong presumption that all issued patents meet all patentability requirements including subject matter eligibility, and it is very rare to see the Reexamination Board invalidate an issued patent under Articles 2 or 25 of the Patent Law. Therefore, the decisions by the

Reexamination Board on reexamination applications are mostly instructive on interpreting the legal standard of subject matter eligibility.

### C. Statutory Framework

Articles 2 and 25 of the Patent Law of P.R. China and Chapters 1 and 9 of the Guidelines for Patent Examination, Part II, are generally relevant to the eligibility of a computer-implemented invention.

As an umbrella principle set forth in Article 2, a claimed invention must utilize technical means (sometimes called the laws of nature) to address a technical problem and produce technical effects. This umbrella principle is also referred as "three technical elements approach", i.e., "technical problem-technical means-technical effects."

When determining the eligibility of a claimed invention, it must be analyzed as a whole to determine whether it in fact utilizes technical means to solve technical problems and produces technical effects. Specifically, the mere presence of some technical parameters or technical terminologies is not sufficient to prove technical means. However, the analysis cannot ignore the technical content contained in the claimed invention as a whole and focus only on those non-technical content. The focus of the analysis should be the features as utilized by the claimed invention viewed as a whole, and is not limited to the related subject or the problem to be solved of the claimed invention as described in the specification or the preamble of the claim. In practice, clearly indicating the three technical elements in the specification is helpful in guiding examiners.

Article 25 enumerates examples for which patent rights shall not be granted. Specifically, scientific discoveries and rules and methods for mental activities are more relevant to software-related inventions. Scientific discoveries refer to materials, phenomena, changes, and characteristics, that exist in the nature and are extensions from human cognitions. For example, the Board in the Invalidity Decision 9918 concludes that a claimed method of using yellow papers for an exercising book to prevent near-sightedness is patent-eligible, because the claimed invention does not seek to protect the scientific discovery of the fact that reflective lights from yellow papers could be used to prevent near-sightedness, but rather seeks to protect the product manufactured according to this scientific discovery. Rules and methods for mental activities refer to rules and methods for directing humans to think, express, judge, and memorize, which do not use technical means or apply the laws of the nature. For example, traditional methods and regulations of business transactions are considered mental activities and therefore are patent-ineligible. But if a business method is combined with computer technologies to utilize technical means to solve technical problems and bring technical effects, then the combination may be patent-eligible.

### D. Judicial Guidance

Specifically, utilizing technical means requires more than merely utilizing generic computer components to perform generic functions. For instance, in a legal decision, *Zhi Xing Zi No. 68 (2011)*, the Supreme People's Court maintains the Reexamination Board's rejection on a claimed invention of a cellphone-based payment system, because the system merely utilizes generic mobile communication network and devices to realize a pre-established set of transferring rules among a mobile service provider,

a payer, a payee, and a bank.  The Court reasons that the system makes no technical improvement to current device or network with respect to their internal functionality or structure, and the problem solved by the claimed invention is merely a realization of commercial cooperation.  In another legal decision, *Zhi Xing Zi No. 73 (2014)*, the Supreme People's Court maintains the Reexamination Board's rejection on a claimed invention of a digital currency data saving and loading system, because the system does not utilize technical means or the laws of nature.  The Court reasons that the claimed invention seeks to solve the problem of transforming the changes created during currency transaction into targets for e-commerce, and it merely applies currency transaction rules set up by humans to well-known computer and network devices.

## II. Analysis by Software Category ([return to mapping](#))

### A. User Interface
[Reexamination Decision No. 53309](#) on Dec 17, 2012 (Eligible, Application No. 200780020698):

1. A workstation for presenting a system management graphical human-machine interface (HMI), the system management graphical HMI comprising a multi-pane human-machine interface window on a display, the workstation presenting information related to an operating state of a control system component within the multi-pane human-machine interface window, the multi-pane interface comprising:

a navigation pane of a graphically displaying hierarchy tree, the hierarchy tree including nodes corresponding to control system devices; and

a component-specific information area for providing detailed information corresponding to a selected node on the hierarchical tree of the navigation pane, wherein the detailed information comprises diagnostic information,

wherein the hierarchy tree comprises a logic monitor node display element at the highest level of the hierarchy tree, a status indicator in a vicinity of the logic monitor node display element, and the state of a lower node propagates upward from the lower node to the state indicator of the logic monitor node display element.

The Board overrules the examiner's rejection of claim 1, which states that claim 1 merely recites the structure of a multi-pane human-machine interface window for presenting information and is therefore merely utilizing generic computer components.  The Board reasons that claim 1 recites specified technical details of displaying a multi-pane human-machine interface window and correlating the information as shown on the multi-pane human-machine interface window with the operating status of the control system component.  Claim 1 also recites specified technical details of the hierarchy tree and the component-specific information area.  As such, claim 1, as a whole, combines controlling techniques and graphical interface design techniques to monitor the control system component, which cannot practically be achieved by human mind only.  Therefore, claim 1 is patent eligible.

Take away: a mere recitation of the design of a GUI might not be considered a technical solution under Article 2.  But a combination of the design of a GUI with associated specified technical means is patent eligible.

## B. Data Structure

Reexamination Decision No. 58746 on Oct 12, 2013 (Ineligible, Application No. 200910084033):

1. A signal structure integrated in navigation and communication, comprising a message, a spreading code, and a carrier, wherein the message comprises a communication message to be transmitted, satellite orbital position and navigation information of time and coordinate required for positioning, and correlated parameters of an error correction model (the rest is omitted).

The Board reasons that the claimed invention of an integrated signal structure is in fact an electrical communication signal containing communication information and navigation information. While the integrated signal structure is not the same as signals existent in the nature (e.g., acoustic, light, magnetic, and electrical signals), however, the claimed signal structure does not fall within the meaning of a product or a method as specified under Article 2, and therefore is patent-ineligible.

Take-away: inventions related to signal structure or frame structure (e.g., compositions and characteristics of spreading codes and serial codes) are generally artificially-determined contents, and therefore are not technical solutions.  But inventions that apply the signal or frame structure to signal communication may combine other technical means to solve technical problems and produce technical effects such that the inventions as a whole are patent-eligible.

## C. Data Transfer/Network Transfer

Reexamination Decision No. 29176 on Dec 15, 2010 (Eligible, Application No. 200410049846):

1. A system for providing a straight banking financial service, comprising:

a remote terminal connected to a security device, the remote terminal transmitting and receiving an identity identifier and transaction information of an individual user of a bank;

a security device connected to a financial application server via a wired transmission network for encrypting and decrypting received information;

wherein the wired transmission network is connected to the secret device and the financial application server for information transmission between the secret device and the financial application server; and

the financial application server is connected to the security device via the wired transmission network for controlling and processing information from the security device.

The Board reasons that, despite the fact that the specification describes the purpose of the invention as providing ad-hoc RMB currency transferring service for financial institutions and companies, the focus of the analysis should be the technical means as utilized by the claimed invention as a whole. The Board concludes that the claimed invention utilizes a wired transmission network and a security device to overcome the problems of identity theft and vulnerability of using public network. Utilizing the wired transmission network and the security device is a use of the laws of the nature, because the functions of these may be realized without accounting for a human's mental state. The claimed invention also improves the efficiency and security of data transmission, so is directed to patent-eligible subject matter.

Take-away: For business method related invention, the specification should describe in details how a specific technical problem is solved by specified technical means, and the claim should actively recite these specified technical means so as to make the invention patent eligible.

### D. Data Storage
Reexamination Decision No. 79547 on Dec 16, 2014 (Eligible, Application No. 200780005722):

1. A system for facilitating distribution of services, comprising:

a client device comprising:

a transceiver;

a first logic that is configured to establish at least one primary account applied to a first service, wherein the at least one primary account represents a periodic charge periodically charged to a booking account; and

a second logic that is configured to establish at least one secondary account applied to a second service, wherein the at least one secondary account represents an amount of prepaid service for the booking account.

The Board overrules the examiner's rejection of claim 1, which states that the problem to be solved is a pure financial problem and not a technical problem. The Board reasons that claim 1 at least recite technical features of a transceiver, a user interface, a first logic, a second logic, and a booking account manager. These technical features in a combination at least solve the technical problem of how to configure the transceiver to provide controlling capabilities to different services (such as providing periodic charges booking to the primary account and prepaid service booking to the secondary account). As such, the Board concludes that claim 1 is patent eligible under Article 2.

Take away: reciting technical features expressly in the claim set, indicating the technical problem and technical effect in the specification clearly are helpful for establishing the eligibility of business method related invention.

## E. Data Processing

on Sep 14, 2015 (Eligible, Application No. 200880013544):

1. A machine-implemented system for constructing a real-time interactive online social shopping network, comprising:

a portal component that receives data of a product of interest to a user from a client device running remotely relative to the portal component;

transmitting the data to a merchant device of a retailer providing the product of interest, the merchant device running remotely with respect to the portal component;

and facilitating an interactive connection between the user and the retailer by establishing a web page in real-time, wherein the web page is used to simultaneously display a user interacting with the client device and a retailer interacting with the merchant device, the web page comprising content that enables the user and the retailer to communicate with each other about the product of interest.

The Board primarily relies on the specification that describes the problem to be solved as providing a real-time interactive way for online shopping that is similar to that of shopping on-site. The Board characterizes the problem to be solved as a technical problem, and measures as recited in the claimed invention (portal component, transmitting the data, facilitating an interactive connection, etc.) as technical means to solve the technical problem. The Board concludes that the claimed invention realizes auto-matching between users and retailers such that they can have real-time interactions, so the claimed invention is patent-eligible.

Take-away: the specification should describe the invention like "problem-solution-effect" to provide a clear roadmap for identifying technical means and linking technical means to specified technical problems and technical effects, in order to make the business method related invention eligible.

### F. Recently granted software-related invention patents

**1. Computer performance enhancement or improvements in traditional industries should be patent eligible.**

Patent examiners rarely challenge the patentability of traditional software-related inventions which seek to make improvements to computers or in traditional industries, because Chapter 9 of the *Guidelines for Patent Examination, Part II* clearly stipulate that inventions in these categories are patent eligible. For example, the *Guidelines for Patent Examination* expressly provide that a software-related invention is patent eligible if it (i) serves to extend the useful storage of a computer, (ii) reduces noise in images so as to increase the quality of the images, and (iii) is a method for testing the density of liquid in real time to improve the efficiency of manufacturing process.

Granted patents also show that software is usually patent eligible once it is integrated into products in certain industries. For example, a software-related invention is patentable if it is used to

control certain components in an automobile to complete certain tasks.  A software-related invention is also patent eligible if it precisely controls certain elements of a medical device.


**2. Software-related inventions involving online services are patent eligible, so long as they have technical effects.**

The importance of online services in the everyday lives of Chinese people has increased with the widespread use of smartphones and other mobile devices.  Innovations relating to online services have sharply increased in this area and more and more applications have been filed to safeguard the competitiveness of market players.

Recently granted patents regarding online services show that China is quite friendly towards applicants and generously grants patents in this category.  However, the threshold for patentability still needs to be satisfied.  As explained before, technical effect is the key for the inventions in this category to be patentable.  A pure business method which makes no technical contribution is not patentable according to Chapter 9 of the *Guidelines for Patent Examination, Part II*.  The following are some of examples of inventions that are eligible to be protected in China.

Example 1: CN201380064629.6 with the title "Adjusting content delivery based on user submissions" issued on April 26, 2019 to Google Inc.  Prosecution history of this Chinese patent shows that patentability was not challenged.  Claim 1 in the granted patent is:

1. A computer-implemented method, comprising:

analyzing user posts to an online social network, wherein each of the user posts is from a member of the social network and comprises a photograph, the analyzing comprising:

for each of the user posts:

identifying a time the user post was posted;

identifying one or more objects represented in the photograph from the user post based on content of the user post;

determining a subject matter of the user post based at least in part on a subject matter of the one or more objects identified from the user post;

determining a geographic location associated with the user post based at least in part on a geographic location associated with the one or more objects;

determining, by one or more processors, clusters of the user posts, wherein each user post in a particular cluster is similar to each other user post in the particular cluster based at least in part on the times the user posts were posted, the subject matters of the user posts, and the geographic locations associated with the user posts; and

determining which content to delivery to members of the social network based on the subject matters of the user posts from one or more of the clusters.

As described in the description, the technical effects of the patent include that it "leads to an additional layer of information gain … and can also be used to provide a better semantic understanding of search queries submitted to a search system."

Example 2: CN201510163063.3 with the title "Method and device for processing orders" issued on August 3, 2018 to Beijing Didi.  Prosecution history of this Chinese patent shows that patentability was not challenged.  Claim 1 in the granted patent is:

Claim 1. A method for processing orders, comprising:

obtaining a distance between an origin and a destination of a current order;

obtaining a probability of order-grabbing of the user of historical orders based on a number of times that the user receives the historical orders and a number of times that the user grabbed orders for the historical orders, wherein distances between origins and destinations of the historical orders are related to the distance between the origin and the destination of the current order; and

sending the current order to the user based on the probability of order-grabbing.

As described in the description, the technical effects of the patent include "quickly and precisely sending of orders of high value to the user can be ensured."

These two examples are typical cases which reflect the patent eligibility trend of business method related inventions in China.  That is, CNIPA is quite generous in granting business method-related inventions, so long as the description reasonably describes objective technical effects.

**3. Software-related to artificial intelligence is patentable, so long as it has technical effect.**

CNIPA treats the examination of Artificial intelligence (AI)-related inventions the same as ordinary software-related inventions.  Thus, AI-related inventions are eligible so long as they have technical effect. Although a pure algorithm itself is not patentable according to Chapter 9 of the *Guidelines for Patent Examination, Part II*, an algorithm combined with a specific scenario which has technical effect is usually patentable.

The following example shows a patentable subject matter in China.

Example 1: 201610707579.4 with the title "The gesture detection network training, the gesture detection and control method, system and terminal" issued on March 8, 2019 to Beijing Sensetime Development Ltd.  Prosecution history of this Chinese patent shows that patentability was not challenged. Claim 1 in the granted patent is:

The gesture detection network training method, comprises the following steps:

training a first convolutional neural network according to a sample image containing human hand tagging information to obtain the prediction information of the human hand candidate regions of the first convolutional neural network to the sample image;

correcting the prediction information of the human hand candidate regions, by inputting the predication information into a third convolutional neural network; and

training a second convolutional neural network according to the corrected prediction information of the human hand candidate regions and the sample image, wherein the second convolutional neural network and first convolutional neural network share a feature extraction

layer, and the parameters of the feature extraction layer are kept unchanged in the training process of the second convolutional neural network.

As described in the description, the technical effects of the patent include: "The accuracy of training the second convolutional neural network is improved; the false detection rate of the gesture detection by means of the second convolutional neural network is further reduced; the convenience for training the second convolutional neural network is provided; and the calculation amount of training the second convolutional neural network is reduced."

## III. Other Considerations

The current trend in China is to strengthen patentee protections and to promote innovation, as evidenced by the on-going project of amending the Patent Law to include punitive damages for willful infringement and consolidating patent appeal cases in the Supreme People's Court. Further, China is promoting the digital economy, which is definitely supported by software-related innovations. For example, AI is regarded as a strategic tool in building up a strong digital economy.

As discussed above, China has shown a very favorable attitude towards granting patents to software-related inventions. Therefore, it is quite certain that the next decade will prove to be an opportune time to obtain software-related patents in China.

Applicants are thus advised to strategically consider China as an important target country to file software-related invention patent applications. In practice, it is advisable to monitor the eligibility requirements for software-related inventions. For example, patent applications filed in China must meet the three technical elements, especially technical effect. One best practice is to add the technical effect description in the corresponding embodiment, so as to aid the determination of patentability of the subject matter.

# Europe
by Nicholas Malden

## I. Overview

### A. Summary

The European Patent Convention (EPC) contains specific categories of subject matter, which are not considered to be inventions for the purpose of the granting of patents. One of these is "programs for computers". These exclusions are qualified however in the EPC as only applying to the extent to which the patent relates to such subject-matter or activities "as such". On the one hand the subsequent case law has clearly established that this exclusion in fact is only very narrowly applied, whereby any claim feature present which has "technical character" (and this may be as simple as almost any individual item of hardware, for example) is sufficient to escape the exclusion. However, on the other hand the case law has also established an approach according to which any claimed features which are not considered to be "technical" may be excluded from an assessment of inventive step. Consequently, an application which fails in another jurisdiction due to "patent ineligibility" may similarly fail before the EPO, although the formal rejection will almost always be formulated as a lack of an inventive step, rather than due to exclusion from patentability.

With regard to software-related inventions, a key characteristic which is necessary before the EPO is that the software must produce a "further technical effect" when executed. A "further technical effect" is a technical effect which goes beyond the "normal" physical interactions between the program (software) and the computer (hardware) on which it is run. This can often be demonstrated to be present when the software exerts control over a physical system. The EPO gives the examples of software for: controlling an anti-lock braking system in a car; determining emissions by an X-ray device; compressing video; restoring a distorted digital image; or encrypting electronic communications which all bring about a further technical effect when run on a computer. Nevertheless, even effects which manifest themselves within the internal functioning of the executing hardware may also bring about a "further technical effect".

An important feature of this EPO approach to such subject matter is how claim features may be compared, or not, with the prior art. When features which are deemed to be "non-technical" are omitted from the claim for the assessment of inventive step, this may in some cases strike out a large proportion of what the applicant in fact considers to be inventive, and leave only a highly reduced set of features with a very broad and generalized scope, which it can be very challenging to defend. It is therefore advisable to ensure that sufficient claim features have a good chance of being considered "technical" before a claim is assessed by the EPO, even at the search stage, since this can greatly assist an application by resulting in an appropriately scoped search being carried out. On this basis appropriate prior art should then be cited, relative to which a substantive argument can be made, rather than merely arguing against an examiner's choice to exclude certain features.

B. Statutory Framework

In Europe, national patents may be granted by the respective patent offices of individual countries or a "European patent" may be granted by the European Patent Office (EPO) in accordance with the European Patent Convention (EPC), a multilateral treaty instituting the EPO.  A granted European patent must be validated in selected states to result in one or more national rights.  It is important to note in this era of the United Kingdom laboriously trying to exit the European Union that "Brexit" has no effect on the procedure for grant of a European patent or the option to select the UK for validation of granted European patent, since the EPC is not part of EU law.  Further, for simplicity and broadest applicability, only the law, jurisprudence, and office guidance relating to the EPC / EPO (rather than any individual national considerations) are discussed here.

Article 52(1) EPC states (emphasis added) that:

"*European patents shall be granted for **any inventions, in all fields of technology**, provided that they are new, involve an inventive step and are susceptible of industrial application*".

However, this is then immediately qualified by Article 52(2) EPC, which states (emphasis added) that:

"The following in particular **shall not be regarded as inventions** within the meaning of paragraph 1:

(a) discoveries, scientific theories and mathematical methods;

(b) aesthetic creations;

(c) schemes, rules and methods for performing mental acts, playing games or doing business, and **programs for computers**;

(d) presentations of information.

Yet even this is then further qualified by Article 52(3), which states that:

"***Paragraph 2 shall exclude the patentability*** *of the subject-matter or activities referred to therein **only to the extent to which** a European patent application or European patent relates to such subject-matter or activities **as such**"*.

Initially this latter restriction can be the source of some lack of comprehension, but it has been in place since 1973, and considerable EPO Board of Appeal jurisprudence and the EPO's "*Guidelines for Examination in the European Patent Office*" (the "*Guidelines*") have clarified the boundaries of what is excluded and what is not.  This chapter focusses on the EPO jurisprudence and the guidance that pertains to the exclusion (or not) of "programs for computers" (software).

C. Limits on the Statutory Exception (technical character / further technical effect)

A central tenet of the limit established by EPO jurisprudence on the exclusion of computer programs from patentability is that the exclusion does not apply to computer programs having a "technical character".

The *Guidelines* set out ([here](#)) that:

"*In order to have a technical character, and thus not be excluded from patentability, a computer program must produce a "further technical effect" when run on a computer. A "further technical effect" is a technical effect going beyond the "normal" physical interactions between the program (software) and the computer (hardware) on which it is run. The normal physical effects of the execution of a program, e.g. the circulation of electrical currents in the computer, are not in themselves sufficient to confer technical character to a computer program*".

Reference is made to the decision [T 1173/97](#) ("*Computer program product / IBM*") of the Technical Board of Appeal and the decision [G 3/08](#) of the Enlarged Board of Appeal.

Nevertheless, it turns out that in in practice this hurdle for "technical character", i.e. producing a "further technical effect", is remarkably easy to overcome. A claim directed to a computer-implemented method, a computer-readable storage medium, or a device is deemed to have technical character and thus to represent an invention in the sense of [Article 52(1) EPC](#). This interpretation of the EPC has long been established following the Technical Board of Appeal decisions [T 258/03](#) ("*Auction method / Hitachi*") and [T 424/03](#) ("*Clipboard formats I / Microsoft*") and confirmed by the above-mentioned decision [G 3/08](#) of the Enlarged Board of Appeal.

## D. Enforcement of the patentability exclusion (technical / non-technical features)

The summary thus far should not however lull the reader into a false sense of security that software patents are trivially easy to obtain before the EPO. In fact the EPO jurisprudence has further made clear that although few claims (suitably worded) need be rejected under the definitions and interpretations of [Article 52(1) EPC](#) discussed above, for a claim to be determined to involve an inventive step (under [Article 56 EPC](#)), it must present a non-obvious solution to a technical problem – Technical Board of Appeal decisions [T 0641/00](#) ("*Two identities / COMVIK*") and [T 1784/06](#) ("*Classification method / COMPTEL*").

When assessing whether a claim involves an inventive step, the established approach taken by the EPO is to assess which claim features are deemed to be "technical" and which are deemed to be "non-technical". It is often the case that claims to software inventions to comprise a mix of technical and non-technical features.

Most significantly of all, here the *Guidelines* set out ([here](#)) that:

"*When assessing the inventive step of such a mixed-type invention, all those features which contribute to the technical character of the invention are taken into account. These also include the features which, when taken in isolation, are non-technical, but do, in the context of the invention, contribute to producing a technical effect serving a technical purpose, thereby contributing to the technical character of the invention. **However, features which do not contribute to the technical character of the invention cannot support the presence of an inventive step** ([T 641/00](#)). Such a situation may arise, for instance, if a feature contributes only to the solution of a non-technical problem, e.g. a problem in a field excluded from patentability*" (emphasis added).

43

This latter feature of EPO examination can be a brutal filter on the claim features, striking out those features which are deemed to be "non-technical" and in some instances leaving only a highly reduced set of features, together forming a definition which is barely recognizable to the author of the claim set or the applicant, and on the basis of which it can at times be significantly challenging – to the point of impossibility – to successfully argue for the presence of an inventive step.

One way in which this can be problematic for applicants is when this analysis is applied at the search stage. For example, consider a set of claims which relate to a manner of data processing, but where the claims recite relatively standard hardware features (e.g. a memory for storing data values; and a processor for performing data operations on data values retrieved from the memory) as well as further aspects of the data processing carried out. In the situation where the EPO examiner concludes that those further aspects of the data processing carried out are non-technical (e.g. relate solely to subject matter which is excluded by the EPC, such as a mathematical method, a method of doing business, or a program for a computer) and do not contribute to the technical character of the claimed invention (by, in the context of the invention, contributing to the production of a technical effect serving a technical purpose), then these features may be excluded from the search (see the Guidelines, Part B-VIII, 2.2). In the extreme case when all claim features suffer this fate other than the above-mentioned standard hardware features, then it can result that no search results are presented (other than a reference to "notoriously well known" hardware components). This can make subsequent prosecution of the application particularly difficult, since without prior art to compare against, the argumentation presented has no reference point. It is much easier to make forward progress with an application when there is prior art to compare against, and relative to which one or more distinctions can often be highlighted.

In this light it is therefore recommended to review the claims of a European application before filing, to consider if they could fall foul of this feature of EPO practice, and to modify them where possible to relate to features which will, at least partially, be considered to be "technical".

## II. Analysis by Software Category (return to mapping)

### A. User Interface

Reference is made here to the *Guidelines, Part G-II, 3.7.1 – User Interfaces*, where it should be noted that that User Interfaces (in particular GUIs) are usually examined with reference to the exclusion of Article 52(2)(d) EPC to "presentations of information", though as in the case of "programs for computers" under Article 52(2)(e) EPC such claims are usually rejected via the "technical" / "non-technical" categorization of claim features and the ensuing effect on an analysis of inventive step under Article 56 EPC.

A useful distinction which is made in the *Guidelines* here is between features relating to mechanisms for enabling user input, such as entering text, making a selection or submitting a command, which are normally considered to make a technical contribution, and features which merely reflect subjective user preferences, conventions or game rules and from which a physical ergonomic advantage cannot be objectively established, do not make a technical contribution.

### B. Data Structure

Reference is made here to the *Guidelines, Part G-II, 3.6.3 – Data retrieval, formats and structures*.

In this section a particularly useful yardstick here is the distinction that is made between "functional data" and "cognitive data" – following T 1194/97 ("*Data structure product / PHILIPS*"). As set out in the *Guidelines*:

> "**Functional data** *serve to control the operation of a device processing the data. They inherently comprise, or reflect, corresponding technical features of the device.* **Cognitive data,** *on the other hand, are those data whose content and meaning are only relevant to human users. Functional data contribute to producing a technical effect whereas cognitive data do not*".

Hence note the parallel with the examination of user interfaces (see above), in that in both subject areas a key consideration is the underlying purpose of a given feature, namely is it essentially provides "for the user" or the "for the device / apparatus / machine". The latter in both subject areas stands a much greater chance of success.

### C. Data Transfer/Network Transfer

The same section of the Guidelines as referenced above in B is also made here, namely to the *Guidelines, Part G-II, 3.6.3 – Data retrieval, formats and structures*.

It is of particular note that this section opens with the statement that "A computer-implemented data structure or data format embodied on a medium or as an electromagnetic carrier wave has technical character as a whole and thus is an invention in the sense of Art. 52(1)". Accordingly, the well-known US restriction that "transitory signals" are not patent-eligible subject matter does not apply, or at least not in the same manner, in Europe. Essentially, as long as the claimed subject matter relating to "data transfer" is determined to comprise "functional data" then this will likely be considered to be "technical" (and not excluded). Of course the claimed features also then need to be shown to be inventive over the prior art in the usual manner.

### D. Data Storage

Data storage mechanisms, methods, and associated data formats will also be considered "technical" according to the same yardstick as discussed above. As long as the claims comprise features which relate to "functional" aspects, as opposed to "cognitive" aspects, then the debate can focus on non-obviousness over the prior art of record, rather than whether the features are excluded.

### E. Data Processing/Other

Of further note in the European context are the comments in the *Guidelines, Part G-II, 3.6.2 – Information modelling, activity of programming and programming languages*, which begins with the blunt assessment that:

> "**Information modelling** *is an intellectual activity devoid of technical character and typically carried out by a systems analyst in a first stage of software development, to provide a formal description of a real-world system or process. Consequently, specifications of a modelling language, the structure of an information modelling process (e.g. use of a template) or the*

*maintenance of models likewise have no technical character (T 354/07) (Funktionspläne / SIEMENS AG). Similarly, properties inherent to information models, like re-usability, platform-independence or convenience for documentation, are not regarded as technical effects (T 1171/06) (Objekt-orientierte Modellierung / BOSCH)".*

The rescue here is that it is further commented that:

*"If an information model is purposively used in the context of an invention to solve a specific technical problem, it can contribute to the technical character of the invention (see also G-II, 3.3.2 and 3.5.1)".*

## III. Other Considerations

A recent development in this area is the referral of three questions relating to computer implemented simulations to the Enlarged Board of Appeal. It is relatively rare that questions are successfully referred to the Enlarged Board of Appeal, and naturally even less so specifically in this subject area. The referral of these questions comes from the Technical Board of Appeal case T 489/14 (Pedestrian simulation / CONNOR) in which the Board of Appeal considered the case law to date and considered that guidance from the Enlarged Board of Appeal was needed.

In this case the questions to be referred are:

1. In the assessment of inventive step, can the computer-implemented simulation of a technical system or process solve a technical problem by producing a technical effect which goes beyond the simulation's implementation on a computer, if the computer-implemented simulation is claimed as such?
2. If the answer to the first question is yes, what are the relevant criteria for assessing whether a computer-implemented simulation claimed as such solves a technical problem?     In particular, is it a sufficient condition that the simulation is based, at least in part, on technical principles underlying the simulated system or process?
3. What are the answers to the first and second questions if the computer-implemented simulation is claimed as part of a design process, in particular for verifying a design?

As ever more innovation, research and development takes place (or at least begins its genesis) within a computer-implemented simulation, the answers to these questions may have a significant effect on the ability of applicants to protect such innovations using European patents. It generally takes a few years for a referred case to be dealt with by the Enlarged Board of Appeal, so we must wait a while longer for the answers.

In summary, it will therefore be appreciated that in order to successfully argue for the allowability of software / computing inventions, it must be recognized that the battleground of the debate will likely be that of inventive step, though this is in many regards only a formal framework specific to the EPO's examination procedure, and the kinds of argument likely to be had with an examiner will often be more reminiscent of an "eligible subject matter" debate in other jurisdictions. Nevertheless, the particular approach taken by the EPO must be understood in order to be successful and a key part of arguing in support of an inventive step in the context of software / computing inventions before the EPO will be a clear and persuasive identification of the "specific technical problem" being solved.

# Japan
by Keisaku Ishihara

I. Overview

A. Summary

In Japan, in the case of drafting a claim with respect to business computer software, game computer software, or computer software for mathematical computation, etc., the claimed invention **as a whole** is required to meet the following standard, in order to fulfill Eligibility for Patent:

Those in which information processing by the software is specifically realized by using hardware resources, in other words, a specific information processor or an operation method thereof depending on intended use is constructed through cooperation of the software and the hardware resources.

"Cooperation of the software and the hardware resources" here means that recitation of the configuration and function of hardware, and clear indication of hardware, which is the subject of an operation of the processing step, in the claim are required at a specific level. Information processing by software should be recited in the claim specifically using hardware resources (e.g., a computing device such as a CPU, a storage device such as a memory). A mere indication of use of a computer is not regarded as "cooperation", and thus Eligibility for Patent is not fulfilled.

In this connection, what is meant by "a claimed invention **as a whole** meets the standard above" would be understood by referring to the following indication in a court decision:

"Even if creation of a technical idea for the purpose of solving a problem includes, in its configuration, mental activity, decision making, or action mode of a human, or has close relationship with mental activity of a human, or the like, the creation should not be denied to be an "invention" defined in Patent Act Article 2(1) solely for such reason; if it is interpreted that creation of a technical idea utilizing the laws of nature is shown as a major means for solving the problems in consideration of the entire recitation of the claim and also in view of the disclosure in the specification and other documents, the creation should be regarded as falling under an "invention" defined in the Article." (*Intellectual Property High Court Decision Aug./26/2008, Heisei 20 (Gyo-Ke)10001*)

Also, in the case of evaluating Novelty/Inventive Step with respect to a software-related invention, a claimed invention **as a whole** (specifically, both of technical features and non-technical features, if recited, in the claim) is the subject of the evaluation.

In Japan, therefore, if a non-technical feature recited in the claim (e.g., a configuration utilizing a business procedure or method) is not included in the prior art, Inventive Step can be recognized for such reason.

That is, in order to fulfill Eligibility for Patent in Japan, a technical feature should be recited in the claim to meet the standard described above; in addition, if a non-technical feature recited in the claim along with the technical feature is novel, and the non-technical feature solves a non-technical problem and achieves a non-technical effect, it is advantageous to also disclose such non-technical matters (non-technical problem, non-technical feature, non-technical effect) in the specification (it is required, however, to disclose the "non-technical feature" together with the "technical feature" so as to fulfill Eligibility for Patent).

As for the practices in other countries, the European Patent Office, for example, regards only technical features recited in the claim as the subject of evaluation of Inventive Step, and non-technical features are not the subject of evaluation. In China, "three technical elements approach", i.e., "technical problem-technical means-technical effects" is employed. In order to obtain patent rights for a software related invention in Europe or China, the claim(s) should be drafted to clearly specify a technical feature as means for solving a technical problem while achieving technical effects. In this case, the aforementioned technical problem and technical effects should be clearly disclosed in the specification as filed. In Japan, it is also possible to obtain patent rights based on the claim(s) and the specification drafted in this approach. However, if a non-technical feature is novel as described above, it is worth considering obtaining patent rights in Japan for a claim incorporating non-technical matters as described above.

### B. Statutory Framework

In Japan, in examinations and litigations prosecuted based on Japan Patent Act (hereinafter, simply referred to as "Patent Act"), an invention is evaluated as to whether it fulfills the requirements set forth in the main paragraph of Patent Act 29-1; assessment of patent subject matter eligibility of the invention is also included in this evaluation.

In particular, it is specified in the main paragraph of Patent Act Article 29-1 that "An inventor of an **invention** that is **industrially applicable** may be entitled to obtain a patent for the said invention,…".

The purpose of Patent Act, as set forth in Article 1, is to contribute to the "development of industry" through the protection of inventions. This purpose conforms with what is specified in the main paragraph of Patent Act Article 29-1.

Patent Act Article 2-1 defines that a statutory "Invention" in this Act is "**creation of technical ideas utilizing the laws of nature**".

Therefore, in Japan, patent subject matter eligibility of an invention is evaluated through confirming that an invention falls under the category of a statutory "invention" stipulated in Patent Act.

Considering the definition of a statutory "invention" in Patent Act 2-1, the following two issues are what should be evaluated based on the main paragraph of Patent Act Article 29-1 in Patent Act.

(1) Patent subject matter eligibility (whether the invention is "**a creation of technical ideas utilizing the laws of nature**").

(2) Whether the invention is "**industrially applicable**".

As mentioned later, the Examination Guidelines for Patent and Utility Model in Japan (hereinafter, simply referred to as "Examination Guidelines") and the Examination Handbook for Patent and Utility Model in Japan (hereinafter, simply referred to as "Examination Handbook") clearly state how to evaluate the above (1) and (2) of an invention. At least up until now, Japanese courts have been making judgements on the above (1) and (2) of an invention by confirming the content of the Examination Guidelines and the Examination Handbook.

### C. JP Guidance

The following is the outline of the content of the Examination Guidelines and the Examination Handbook.

### 1. "Industrial Applicability of the Invention"

Among the two issues, (1) and (2), we discussed in the above "A. Statutory Framework", the second issue (issue (2)) will be explained first for the convenience of explanation. To fulfill the issue (2), namely, "**industrially applicable invention**", it is required that the invention does <u>not</u> fall under any of the following (i) to (iii) (Examination Guidelines Part III, Chapter 1, Section 3.1).

(i)  Inventions of methods of surgery, therapy or diagnosis of humans

(ii)  Commercially inapplicable inventions

(iii)  Obviously impracticable inventions

Thus, similar to inventions of other fields, a software-related invention will not be allowed for patent as failing to meet the requirements of the main paragraph of Patent Act Article 29-1 no matter how well the invention appears to fulfill the above (1), namely "Patent Subject Matter Eligibility" (to be explained in detail later), if the software-related invention falls under any of the (i) to (iii) above.


### 2. "Patent Subject Matter Eligibility"

Secondly, following is how the first issue, "Patent Subject Matter Eligibility", of the two issues we discussed in the above "A. Statutory Framework" is evaluated in Japan.

To fulfill the "Patent Subject Matter Eligibility", in other words, to be considered as a statutory "invention", an invention needs to be a "creation of technical ideas utilizing the laws of nature". Since (i) to (vi) shown below are <u>not</u> a "creation of technical ideas utilizing the laws of nature", it is not considered as a statutory "invention" (Examination Guidelines, Part III, Chapter 1, Section 2.1).

(i)  The laws of nature as such

(ii)  Mere discoveries and not creations

(iii)  Those contrary to the laws of nature

(iv)  Those in which the laws of nature are not utilized

(v)  Those not regarded as technical ideas

(vi)  Those for which it is clearly impossible to solve the problem to be solved by any means presented in a claim

In an evaluation of the patent subject matter eligibility of a software-related invention, relatively important point of view is that whether the invention falls under the above "(iv) Those in which the laws of nature are not utilized" or "(v) Those not regarded as technical ideas".

Among the two, as regards (iv), if a claimed invention **as a whole** utilizes the laws of nature, the invention is considered as utilizing the laws of nature.

According to this perspective, an invention is considered as a statutory "invention" if a claimed invention as a whole utilizes the laws of nature even though a part of the matters specifying the claimed invention does not utilize the laws of nature. In the other way around, this perspective also suggests that an invention is not considered as a statutory "invention" if a claimed invention as a whole does not utilize

the laws of nature even though the matters specifying the invention partially includes those utilizing the laws of nature.

The following is a list of other examples suggested in the Examination Guidelines, Part III, Chapter 1, Section 2.1 as those not falling under a statutory "invention" since they are either "(iv) those in which the laws of nature are not utilized" or "(v) those not regarded as technical ideas".

(i)  Mere presentation of information (where the feature resides solely in the content of the information, and the main object is to present information)

Example: image data taken with a digital camera

(ii)  Arbitrary arrangements (e.g., a rule for playing a game as such)

(iii)  Mathematical formula

(iv)  Mental activities of humans

(v)  Personal skill (which is acquired through personal experience and cannot be shared with others as knowledge due to lack of objectivity)

(vi)  Mere aesthetic creations

Meanwhile, the Examination Guidelines also states that those utilizing the laws of nature as a whole and being considered as a "creation of a technical idea utilizing the laws of nature" are deemed to fulfill a requirement of patent subject matter eligibility without being examined as a computer software per se  even though they utilize computer software, such as the following (i) and (ii) (Examination Guidelines, Part III, Chapter 1, Section 2.2/ Examination Handbook, Appendix B, Chapter 1, Section2.1.1.1).

(i)  Those specifically performing control of an apparatus (e.g., rice cooker, washing machine, engine, hard disk drive, chemical reaction apparatus, nucleic acid amplifier), or processing with respect to the control.

(ii)  Those specifically performing information processing based on the technical properties such as physical, chemical, biological or electric properties of an object (e.g., rotation rate of engine, rolling temperature, relation between gene sequence and expression of a trait in a living body, physical or chemical relation of bound substances).

For inventions that cannot be determined whether they fall under the above (i) or (ii) but created to use computer software as a whole, such as those relating to a method for doing business, playing a game or calculating a mathematical formula, patent subject matter eligibility is evaluated as follows (Examination Guidelines, Part III, Chapter 1, Section 2.2/ Examination Handbook, Appendix B, Chapter 1, Section 2.1.1.2).

For software of a software-related invention,

(iii)  If "information processing by the software is specifically realized by using hardware resources",

said software is a "creation of a technical idea utilizing the laws of nature".

What is meant by "information processing by the software is specifically realized by using hardware resources" is that a specific information processor or an operation method thereof depending on intended use is constructed through cooperation of the software and the hardware resources.

Since these evaluation standards of (i) to (iii) are important factors in the evaluation of patent subject matter eligibility of a software-related invention in Japan, these evaluation standards (i) to (iii) are also shown in a flowchart below.



**<Example of a case falling under Step 1 (i) (Patent Subject Matter Eligibility: YES)>**
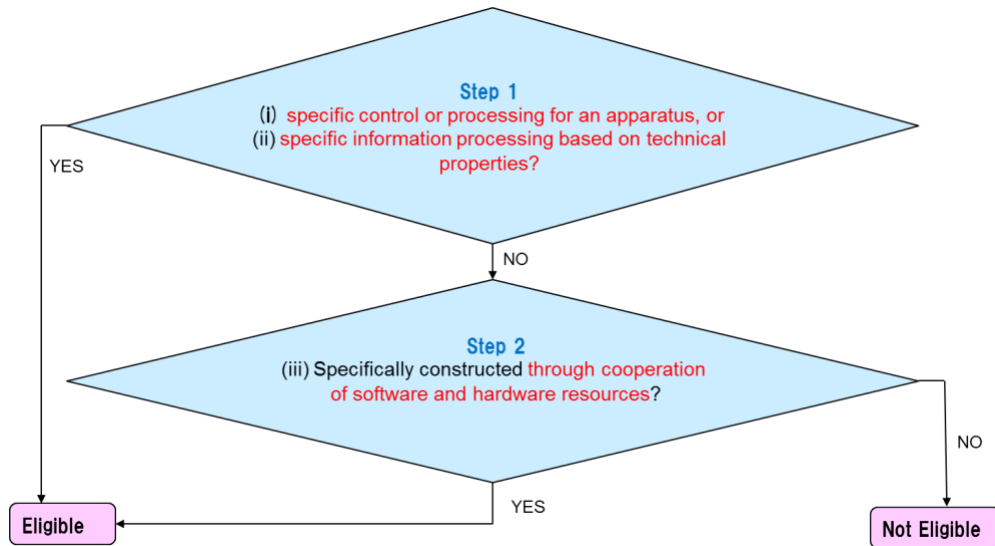
A server comprising:

a receiver for receiving from terminals of a plurality of users schedule information stored in the respective terminals;

an estimation device which estimates an estimated return time of each user based on the schedule information of the user; and

a setting device which sets cooking starting time such that a rice cooker completes cooking before the earliest return time based on the estimated return time of the plurality of users;

an instructing device which sends a command to the rice cooker to start cooking at the cooking starting time.


**<Example of a case falling under Step 1 (ii) (Patent Subject Matter Eligibility: YES)>**

A program for preventing a secondary vehicle accident, when executed by a computer, the program realizing functions of:

determining whether a vehicle has been subject to an impact and has stopped, based on acceleration and speed information of the vehicle received from a terminal of the vehicle;

subsequently determining whether there is a vehicle accident based on changes in speed of adjacent vehicles, the changes being obtained by analyzing the speed of the adjacent vehicles; and

transmitting a vehicle accident information to the adjacent vehicles if it is determined that there is a vehicle accident.


**<Example of a case falling under Step 2 (iii) (Patent Subject Matter Eligibility: YES)>**

A computer which generates an abstract of a specific document among a group of documents, configured to perform the steps of:

analyzing the specific document to extract at least one sentence in the specific document and to extract at least one word in each sentence;

computing a TF-IDF value for each extracted word based on frequency at which the extracted word appears in the specific document（TF）and an inverse of frequency at which the extracted word appears in the whole documents of the group of documents（IDF）; and

calculating the total amount of the TF-IDF values of the words in each sentence as a degree of importance of each sentence; and

generating an abstract from the specific document by selecting a predetermined number of sentences in descending order of importance of the sentence and arranging the selected sentences.


## 3. Category of Software-related Invention

According to Patent Act Article 2, Section 3, it is defined that there are three categories of inventions in the Japanese practice, namely, inventions of a "product", inventions of a "method", and inventions of a "process for producing a product". It is also defined that the "product" includes a "computer program", etc." (Patent Act Article 2, Section 3-1).

A "computer program, etc.," means a computer program and any other information that is to be processed by an electronic computer equivalent to a computer program (hereinafter referred to as "those equivalent to a computer program") (Patent Act Article 2, Section 4).

It is defined that a "computer program" in this Act means "a set of instructions given to an electronic computer which are combined in order to produce a specific result" (Patent Act Article 2, Section 4).

Furthermore, it is understood in the Act that "those equivalent to a computer program" cannot be called a computer program since they are not direct instructions to a computer, but have a similar properties to a computer program in that they specify processing performed by a computer.

In addition, in a case where the claimed invention is directed to "structured data" and "data structure", it is determined whether the claimed invention is equivalent to a computer program, in other words, whether the claimed invention has a similar properties to a computer program in that the structure of the data identifies the processing performed by a computer. And if the "structured data" and the "data structure" is equivalent to a computer program, they are evaluated as (computer) software. Patent

subject matter eligibility is evaluated by a method we mentioned in "2. Patent Subject Matter Eligibility" (Examination Handbook, Appendix B, Chapter 1, Section 2.1.2).

It is stated that an applicant can state these "program", "structured data", and "data structure" as follows in the claims (Examination Handbook, Appendix B, Chapter 1, Section 1.2.1.1).

(i)  A "program" that identifies a plurality of functions a computer serves can be stated as an "invention of a product" in the claims.

Example 1: A program for causing a computer to execute a step A, a step B, a step C, …

Example 2: A program for causing a computer to function as means A, means B, means C, …

Example 3: A program for causing a computer to implement a function A, a function B, a function C, …


(ii)  "Structured data" or a "data structure" in which information processing to be performed by a computer is identified by a structure of data can be stated as an "invention of a product" in the claims.

Example 4: Structured data including a data element A, a data element B, a data element C, …

Example 5: A data structure including a data element A, a data element B, a data element C, …


(iii)  A computer readable recording medium which records the "program" in (i) above or the "structured data" in (ii) above can be stated as an "invention of a product" in the claims.

Example 6: A computer readable recording medium which records a program for causing a computer to execute a process A, a process B, a process C, …

Example 7: A computer readable recording medium which records a program for causing a computer to function as means A, means B, means C, …

Example 8: A computer readable recording medium which records a program for causing a computer to implement a function A, a function B, a function C, …

Example 9: A computer readable recording medium which records structured data including a data element A, a data element B, a data element C, …

If the claims are written not according to the above rules, the category to which the claim belongs is unclear or may be none of the above categories.  Therefore, the application may receive objection for violating Patent Act Article 36, Section 6-2 (Examination Handbook, Appendix B, Chapter 1, Section 1.2.1.3).

## II. Analysis by Software Category ([return to mapping](#))

An invention needs to be a "creation of technical ideas utilizing the laws of nature" in order to fulfill the "patent subject matter eligibility of the invention", as stated above in I. B. 2., no matter which one of the following is the subject matter of a claim, namely, "User Interface", "Data Structure", "Data Transfer/Network Transfer", "Data Storage", or "Data Processing".

In principle, the invention fulfills the "patent subject matter eligibility of the invention" when the subject matter of the claim is "(i) Specific control or processing for an apparatus", "(ii) Specific information processing based on technical properties", or "(iii) Specifically constructed through cooperation of software and hardware resources".

### A. User Interface

As examples of "User Interface" in this paper, [Annex B, Case 2-13], [JP Patent No. 6010719 (JP Patent Application No. 2016-510838, Applicant: FiNC Co., Ltd.)], and [JP-T-No. 2017-524195 (JP Patent Application No.2017-505856, Applicant: Uber Technologies, Inc.)] are mentioned later for reference.

### B. Data Structure

As mentioned in the above I. B. 3.(ii), "Data Structure" is allowed to be recited in a claim as an "invention of a product" in a form such as "a data structure including a data element A, a data element B, a data element C, …".  As examples of "Data Structure" in this paper, [Annex B, Case 2-13], and [Annex B, Case 2-14] are mentioned later for reference.

### C. Data Transfer/Network Transfer

As examples of "Data Transfer/Network Transfer" in this paper, [Annex B, Case 2-14], and [JP Patent No. 6010719 (JP Patent Application No. 2016-510838, Applicant: FiNC Co., Ltd.)] are mentioned later for reference.

### D. Data Storage

As mentioned in the above I. B. 3.(iii), "Data Storage" is allowed to be recited in a claim as an "invention of a product" in a form such as "A computer readable recording medium which records a program for causing a computer to execute a process A, a process B, a process C, …" and "A computer readable recording medium which records structured data including a data element A, a data element B, a data element C, …".  As examples of "Data Storage" in this paper, [JP Patent No. 6010719 (JP Patent Application No. 2016-510838, Applicant: FiNC Co., Ltd.)], and [JP-T-No. 2017-524195 (JP Patent Application No.2017-505856, Applicant: Uber Technologies, Inc.)] are mentioned later for reference.

### E. Data Processing/Other

As examples of "Data Processing" in this paper, [Annex B, Case 2-13], [Annex B, Case 2-14], [JP Patent No. 6010719 (JP Patent Application No. 2016-510838, Applicant: FiNC Co., Ltd.)], and [JP-T-No. 2017-524195 (JP Patent Application No.2017-505856, Applicant: Uber Technologies, Inc.)] are mentioned later for reference.

In the mappings provided hereinafter, the categories A to E each case falls under are determined (given a mark X) at the discretion of the authors of the following case reports.

**Case Number:**

[***Annex B, Case 2-13***] Data Structure of Dialogue Scenarios in Voice Interactive System

(Technique related to data structure in voice interactive system)

**What is claimed is:**

[Claim 1]

A data structure of dialogue scenarios used in a voice interactive system composed of a client's device and a server, comprising:

unit IDs that identify dialogue units constituting dialogue scenarios;

messages including contents of utterances and information presented to users;

a plurality of candidate answers in response to answers from the users;

a plurality of pieces of information on communication mode; and

a plurality of pieces of branch information mapped to each of the candidate answers and the information on communication mode, the branch information indicating a next dialogue unit which contains messages corresponding to the said candidate answers and whose data size is corresponding to the said information on communication mode,

wherein the said data structure of dialogue scenarios is used for the following processing performed by the said client 's device:

(1) outputting a message included in the current dialogue unit;

(2) acquiring an answer from the user in response to the said message;

(3) identifying the said candidate answer based on the answer from the said user, and identifying the information on communication mode set in the client's device;

(4) selecting one branch information based on the identified candidate answer and information on communication mode; and

(5) receiving from the server a next dialogue unit indicated by the selected branch information.

**Drawing:**
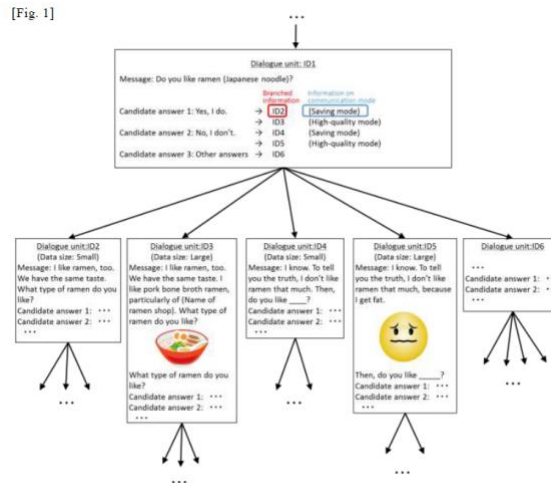


[Fig. 1]

**Mapping:**

| Claim | Eligible? | Software Category | | | | |
|---|---|---|---|---|---|---|
| | | User Interface | Data Structure | Data Transfer/ Network Transfer | Data Storage | Data Processing/ Other |
| 1 | Y | X | X | | | X |

**Determination on Eligibility for Patent:**

Since the data structure of Claim 1 has similar properties to a program in that it defines information processing performed in voice interactive systems, it is "a data structure equivalent to a program" (software). Further, it can be determined, from the recitations in Claim 1, that specific calculation or processing of information depending on the intended use, namely voice interaction in accordance with the branch information contained in the dialogue unit, is implemented by concrete means or procedure through cooperation of software (data structure equivalent to a program) and hardware resources. Therefore, the data structure of Claim 1 is a creation of a technical idea utilizing the laws of nature, and thus falls under "invention".

**Case Number:**

[*Annex B, Case 2-14*] Trained Model for Analyzing Reputations of Accommodations

(Technique related to a trained model to have a computer function for analyzing reputations of accommodations)

**What is claimed is:**

[Claim 1]

56

A trained model for causing a computer to function so as to output quantified values of reputations of accommodations based on text data on reputations of accommodations, wherein;

the model is comprised of a first neural network and a second neural network connected so as to receive output from the said first neural network;
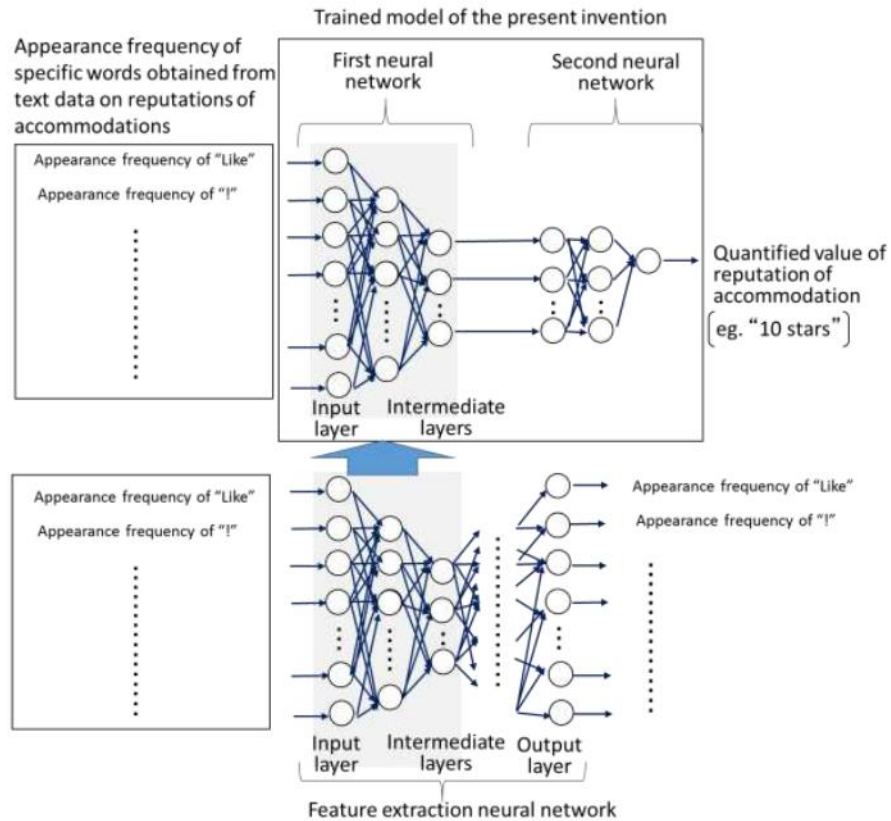
the said first neural network is comprised of an input layer to intermediate layers of a feature extraction neural network in which the number of neurons of at least one intermediate layer is smaller than the number of neurons of the input layer, the number of neurons of the input layer and the number of neurons of the output layer are the same as each other, and weights were trained in a way each value input to the input layer and each value output from the output layer corresponding to the input layer are equal to each other;

weights of the said second neural network were trained without changing the weights of the said first neural network; and

the model causes the computer to function so as to perform a calculation based on the said trained weights in the said first and second neural networks in response to appearance frequency of specific words obtained from the text data on reputations of accommodations input to the input layer of the said first neural network and so as to output the quantified values of reputations of accommodations from the output layer of the said second neural network.

**Drawing:**

Drawing



Trained model of the present invention

Appearance frequency of specific words obtained from text data on reputations of accommodations

First neural network    Second neural network

Appearance frequency of "Like"

Appearance frequency of "!"

Quantified value of reputation of accommodation [eg. "10 stars"]

Input layer    Intermediate layers

Appearance frequency of "Like"

Appearance frequency of "!"

Appearance frequency of "Like"

Appearance frequency of "!"

Input layer    Intermediate layers    Output layer

Feature extraction neural network

**Mapping:**

| Claim | Eligible? | Software Category | | | | |
|---|---|---|---|---|---|---|
| | | User Interface | Data Structure | Data Transfer/ Network Transfer | Data Storage | Data Processing/ Other |
| 1 | Y | | X | X | | X |

**Determination on Eligibility for Patent:**

The trained model of Claim 1 is a "program" even though the claimed subject matter of Claim 1 is described as a "model". Further, it can be determined, from the recitations in Claim 1, that specific calculation or processing of information depending on the intended use is implemented by concrete means or procedure through cooperation of software and hardware resources. Therefore, the trained model of Claim 1 is a creation of a technical idea utilizing the laws of nature, and thus falls under "invention".

**Case Number:**

"Healthcare Server, Healthcare Server Control Method, and Healthcare Program"

**What is claimed is:**

[Claim 1]

A healthcare server connected to a terminal over a network, the healthcare server comprising:

a storage unit that stores healthcare target information of a healthcare target having the terminal, question information and answer information;

a reception unit that receives message information transmitted from the terminal;

an analysis unit that analyzes language information based on the received message information and acquires the question information from the analyzed language information;

a generation unit that extracts the answer information corresponding to the acquired question information and generates a sentence example based on the extracted answer information;

an evaluation unit that evaluates the extracted answer information with a degree of confidence indicating the certainty of the answer information;

a correction unit that corrects the sentence example and the evaluation based on the healthcare target information; and

a transmission unit that transmits the corrected sentence example and evaluation to the terminal.

**Drawing:**



FIG. 3
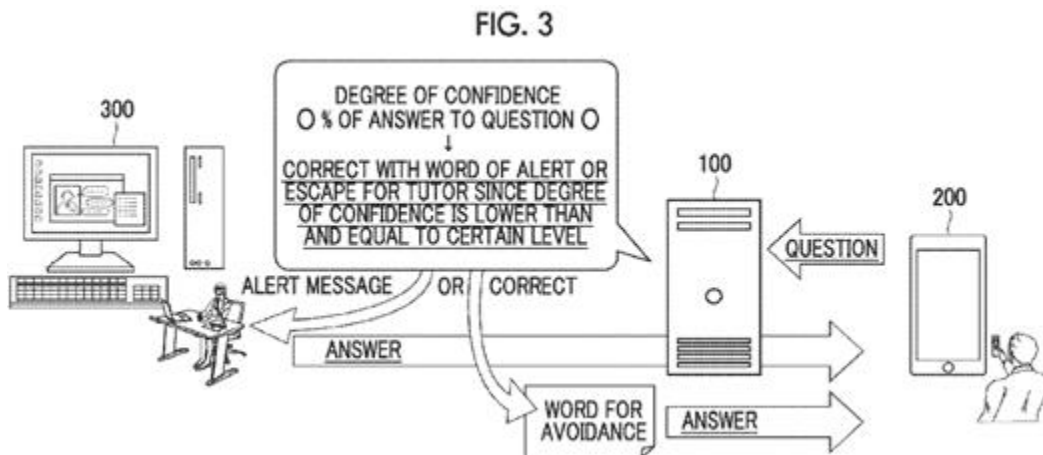
**Mapping:**

| Claim | Eligible? | Software Category | | | | Data Processing/ Other |
|---|---|---|---|---|---|---|
| | | User Interface | Data Structure | Data Transfer/ Network Transfer | Data Storage | |
| 1 | Y | X | | X | X | X |

**Determination on Eligibility for Patent:**

It is assumed as follows: It is interpreted that the invention of claim 1 is directed to a "healthcare server" connected to a terminal over a network, which provides a technical means that functions based on components of the healthcare server, and presents to the healthcare target an answer to a question from a healthcare target and evaluation of the answer; thus, it is determined that information processing by software is specifically achieved using hardware resources, i.e., through cooperation of software and hardware resources, a specific information processing apparatus in accordance with intended use or an operation method thereof is configured.

**Case Number:**

*JP-T-No. 2017-524195* (JP Patent Application No.2017-505856, Applicant: Uber Technologies, Inc.)

"Determining and Providing Predetermined Location Data Points to Service Providers"

**What is claimed is:**

(Filed on May 28, 2019.  Eligibility for Patent is not denied in the examination procedure of this application.  In the Written Argument, the applicant presents an argument against the rejection due to lack of Inventive Step):

[Claim 1]

A method for arranging a transport service, the method being performed by a network computer system and comprising:

communicating, by the network computer system via one or more networks, with a service application executed on mobile computing devices of a plurality of users, to thereby (i) receive a plurality of transport requests and (ii) determine which of the plurality of transport requests has been completed;

allowing, by the network computer system via the one or more networks, a first user of the plurality of users to make a first transport request indicating a requested pickup location by using a map interface displayed by a corresponding service application executed on a mobile computing device of the first user;

causing, by the network computer system via one or more networks, the corresponding service application to generate a first graphic indicator indicating the requested pickup location on the map interface;

determining historical location information related to the requested pickup location from completed transport requests of other users of the plurality of users;
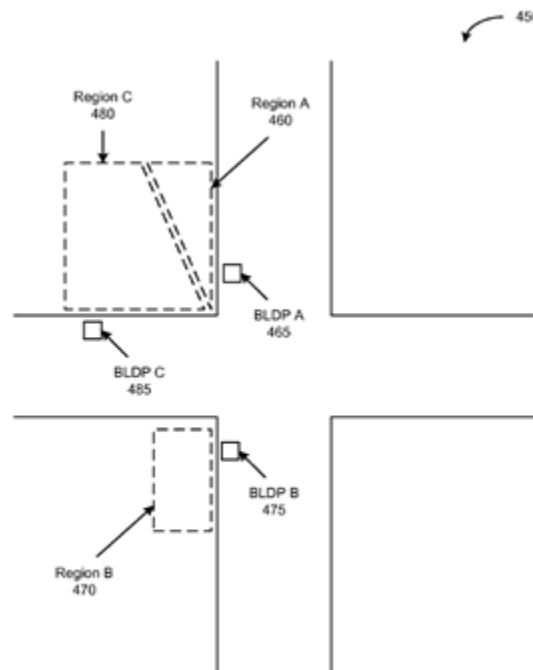
selecting, by the network computer system, a pickup location to start the transport service in order to complete the first transport request based on at least a part of the determined historical location information of the other users;

causing, by the network computer system via one or more networks, the service application to generate a second graphic indicator indicating the selected pickup location, and to display the second graphic indicator on the map interface, thereby providing the first user with a visual feedback showing that the selected pickup location is different from the requested pickup location;

receiving an input to change the requested pickup location to the selected pickup location from the mobile computing device of the first user; and

selecting a driver to perform the transport service for the first user based on the selected pickup location.

**Drawing:**



FIG. 4B

**Mapping:**

| Claim | Eligible? | Software Category | | | | |
|---|---|---|---|---|---|---|
| | | User Interface | Data Structure | Data Transfer/ Network Transfer | Data Storage | Data Processing/ Other |
| 1 | Y | X | | X | X | X |

**Determination on Eligibility for Patent:**

It is assumed as follows: It is interpreted that the invention of claim 1 is directed to a method of arranging a transport service performed by a network computer system to communicate with a service application executed on a mobile computing device, and that the invention provides a technical means to select a driver to perform the transport service for a user based on a requested pickup location data point, and to transmit a specified location data point to a selected driver's device; thus, it is determined that information processing by software is specifically achieved using hardware resources, i.e., through cooperation of software and hardware resources, a specific information processing apparatus in accordance with intended use or an operation method thereof is configured.

## III. Other Considerations

**Evaluation of Novelty/Inventive Step**

As the subject of this paper is "Patent Subject Matter Eligibility", evaluation of novelty and inventive step is not an issue of direct interest. Nevertheless, it is worthy of mentioning that, under the current Japanese system, once a software-related invention is deemed to have patent subject matter eligibility, the inventive step of the invention is approved relatively more likely than other jurisdictions (for example, Europe).

Regarding this issue, it is stated as follows in the Examination Handbook Appendix B, Chapter1, Section 2.2.1.

When finding a software-related invention, it is appropriate to understand an invention as a whole, while it is not appropriate to specify it by dividing it into **artificial arrangement or the like** and a **systemization method**, since the matters or terms described in the claims should be always considered and should not be ignored, as with other kinds of inventions".

In other words, it is clearly stated that the examiner should evaluate "artificial arrangement or the like" (non-technical feature) and a "systemization method" (technical feature) recited in the claims equally with respect to prior arts when evaluating novelty and inventive step.

This is contrasting to, for example, the examination practice of the EPO where only the technical features recited in the claims are evaluated for inventive step and non-technical features are ignored and unevaluated.

## Patentability of Computer Software-Related Inventions

|  |  | Ideas to be realized (business method) | |
|---|---|---|---|
|  |  | Known | Not known |
| Realization by IT | Known | unpatentable | may include inventive step |
|  | Not known | may include inventive step | may include inventive step |

Non-Technical Feature

Technical Feature

# Korea
by Jesung Ahn

## I. Overview

### A. Summary

For software or computer-related inventions to be eligible subject matter under Korean patent practice, it should meet the general requirements according to the definition of an invention ("creation of technical idea using the law of nature") under the Patent Act. The KIPO Examination Guidelines provide more specific guidance/examples by providing that a computer-related invention may be patentably eligible if a patent claim describes information processing by software concretely realized by utilizing hardware. While pure software or computer program may not be allowed under the above rules/guidance, such invention may be patentably eligible if it is claimed in one of apparatus (device), process (method), computer-readable medium (e.g., a compact disc, a memory), and computer program stored on a medium. For example, an invention directed to a graphical user interface or a data structure (which is described as being implemented in software in the application) may be allowable if a patent claim is drafted to recite a "computer-readable recording medium" storing such program or data structure.

### B. Statutory Framework

In general, software inventions or computer-implemented inventions (which may be referred to as "computer-related invention") are treated similarly to other inventions under the Korean Patent Act. The Patent Act does not have any specific provisions regarding computer-related inventions, and applications for computer-related inventions are subject to the same statutory requirements of patentability that apply to applications of other inventions in general (e.g., patent eligibility, novelty, inventiveness and description requirements). Although there are no specific provisions in the Patent Act, the KIPO Examination Guidelines for Computer-related Inventions ("Guidelines") provide some guidance or standard, which are generally based on case precedents, for practitioners and KIPO examiners in evaluating the patent eligibility of a computer-related invention.

Unlike the U.S., the Korean Patent Act provides a definition of what constitutes an "invention." In particular, Article 2 of the Patent Act provides a definition of an invention stating that "[t]he invention is defined as an advanced creation of technical idea using the law of nature." In this way, the Patent Act establishes a requirement that should be met for an idea to be an invention under the Patent Act. The meaning of "advanced" is introduced merely to distinguish an "invention" under the Patent Act from a "utility model" under the Utility Model Act. Thus, when determining the subject matter eligibility of an invention, the "being advanced" requirement is not considered (*see Supreme Court decision 2001Heo4937*).

The above definition of an invention under the Patent Act applies equally to a computer-related invention. Also, the Guidelines provide some guidance as to what the creation of technical ideas means in the context of computer-related inventions. According to the Guidelines, a computer-related invention may be considered as such creation of technical idea using the law of nature if it corresponds

to information processing realized through cooperating between software and hardware, e.g., in a way that information processing by software is concretely realized by utilizing hardware.  This requirement essentially reflects some Supreme Court decisions (*see Supreme Court decisions 2001Hu3149, 2007Hu265, 2007Hu494*).

According to the Guidelines, a subject matter of a patent claim defining a computer-related invention may be represented as one of an information processing "apparatus" cooperating with software, a "method" for operating such apparatus, a computer-readable "medium" storing a computer program for operating such apparatus, or a computer program for operating such apparatus that is stored in a medium.  However, pure computer program may not be an eligible subject matter because it is considered as nothing but instructions for executing a computer, and thus, does not correspond to a creation of technical idea using the law of nature.
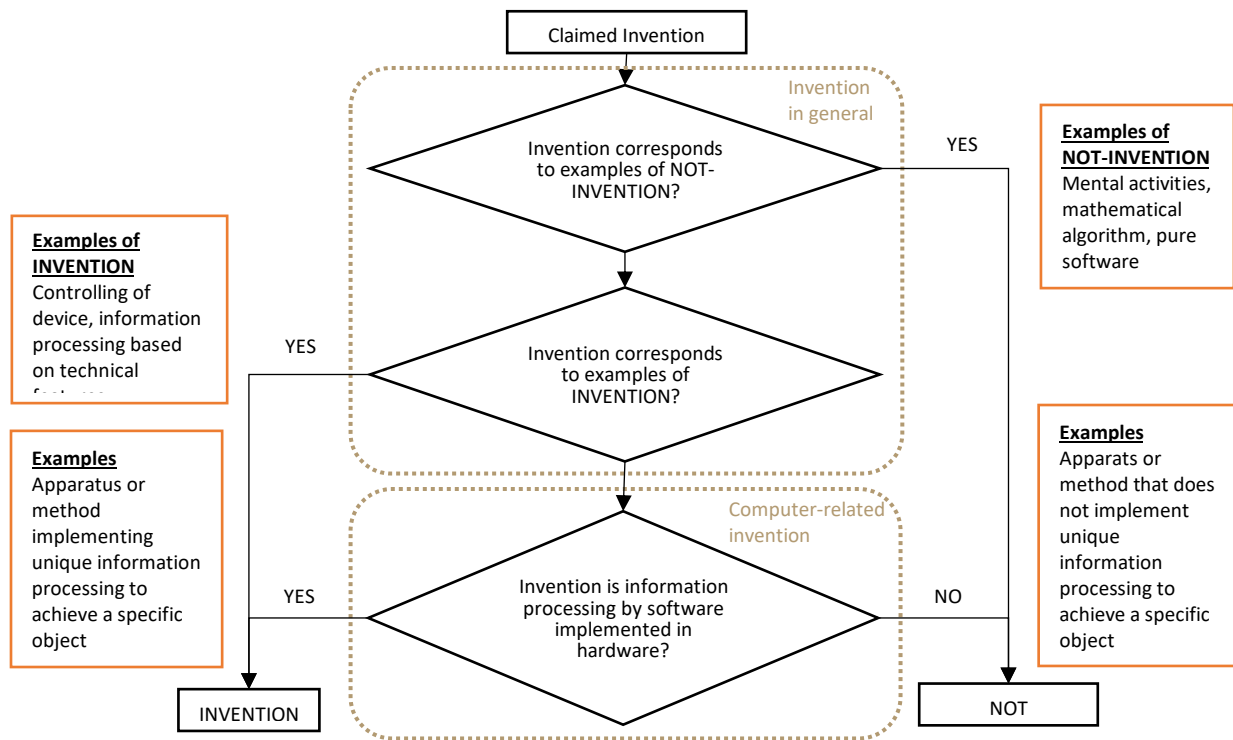
### C. Judicial Exceptions

In Korea, case precedents relating to the patent eligibility of software related inventions typically dealt with whether an invention uses the law of nature or whether it uses other method than the law of nature such as decision making by human being, human being's mental activities, and mere information providing (*see Supreme Court decisions 2001Hu3149, 2002Hu277, 2009Hu436, 2007Hu265, 2007Hu494*).

According to the Guidelines, whether a computer-related invention uses the law of nature may be determined based on the description of the claimed invention as a whole.  That is, when a claimed invention as a whole does not use the law of nature even if a part of the invention uses the law of nature, such claimed invention may not be determined as using the law of nature.  On the other hand, when a claimed invention as a whole uses the law of nature even if a part of the invention does not use the law of nature (e.g., mathematical algorithm), such claimed invention may be determined as using the law of nature.

### D. KIPO Guidance

Because it may be difficult to determine whether an invention is patentably eligible only based on the definition of an invention according to Article 2 of the Patent Act, the Guidelines provide some guidance as to the categories of "NOT-INVENTION" or "INVENTION."  The examples of "NOT-INVENTION" include decision making by human being, human being's mental activities, and mere information providing.  Also, the examples of "INVENTION" include processing required for controlling a device, and information processing based on technical features of a processing target.

Also, the Guidelines provide a flowchart for determining the patent eligibility of computer-related inventions including 3 steps of: (i) determining whether an invention corresponds to the examples of "NOT-INVENTION"; (ii) determining whether an inventor corresponds to the examples of "INVENTION"; and (iii) determining whether an invention corresponds to an apparatus or method for performing unique information processing for achieving a specific object.

**Claimed Invention**

Invention in general

**Invention corresponds to examples of NOT-INVENTION?** — YES →

**Examples of NOT-INVENTION**
Mental activities, mathematical algorithm, pure software

**Examples of INVENTION**
Controlling of device, information processing based on technical features

**Invention corresponds to examples of INVENTION?** — YES →

**Examples**
Apparatus or method implementing unique information processing to achieve a specific object

Computer-related invention

**Invention is information processing by software implemented in hardware?** — YES → / NO →

**Examples**
Apparats or method that does not implement unique information processing to achieve a specific object

**INVENTION**

**NOT**

In determining the patent eligibility of a computer-related invention according to the above flowchart, an examiner is required to evaluate the invention as described in a patent claim as a whole. That is, an invention may not be considered as an eligible subject matter if the invention as defined in a claim as a whole does not use the law of nature even though a part of the invention uses the law of nature. On the other hand, even if an invention as defined in a patent claim includes a part not using the law of nature (e.g., mathematical algorithm), it may be an eligible subject matter as long as the invention as defined in the patent claim as a whole utilizes the law of nature.

In addition, the Guidelines provide some claim examples that are considered as eligible subject matters or non-eligible subject matters as follows:

### 1. Using other law than the law of nature

For example, concepts or methods relating to economics, mathematics, etc. may not be patentably eligible.

### 2. Decision making by human being

For example, a method for generating a password by combining alphabets, numbers, symbols, etc. may not be patentably eligible. In particular, a method for providing character alphabets may be considered as nothing but decision making by human being that is irrelevant to the law of nature because it requires decision making by a linguistic society as to determining the alphabets of a certain language specifying symbols of certain shapes and rules regulating the compliance to such determination (*see Patent Court decision 2001Heo3453*).

*3. Human being's mental activities or behaviors in an off-line environment*

For example, a method for managing recycling of household waste using hardware or software means such as a barcode sticker, a calendar, a waste bag, and a computer reading the barcode may not be considered as using the law of nature because it is nothing more than human being's mental activities utilizing such means as tools and each step of the method is performed in an off-line environment rather than a computerized on-line environment (*see Supreme Court decision 2001Hu3149, Patent Court decision 2000Heo5438*).

*4. Mere information providing*

If an invention is characterized only in the contents of provided information and its primary object is to present the information, it may not be considered as an eligible subject matter.  For example, a manual on an equipment manipulating method or a chemical material usage method, a compact disc characterized only in the recoded music, an image data captured by a digital camera, a computer program list may not be an eligible subject matter.

However, if a manner of providing information includes novel technical features, an apparatus or method for providing information in such manner may be patentably eligible.  For example, a plastic card embossed with information consisting of characters, numbers, symbols, etc. may be an eligible subject matter.


## II. Analysis by Software Category  (return to mapping)

In the following, analysis of case precedents or the Guidelines is provided regarding the patent eligibility of 5 software categories (user interface, data structure, data transfer/network transfer, data storage, data processing).

Under the Guidelines, computer-related inventions can be claimed in one of apparatus (device), process (method), computer-readable medium (e.g., a compact disc, a memory), and computer program stored on a medium. Accordingly, the above 5 categories of inventions may be considered as eligible subject matters as long as they are claimed in one of the above 4 forms.

### A. User Interface

Although there is no notable case precedent regarding the patent eligibility of user interface in Korea, the Guidelines may provide some guidance on this issue.  A user interface implemented in software may not be patentably eligible because the Guidelines suggest that pure software does not correspond to using the law of nature.  In reality, KIPO examiners often reject a patent claim directed to a graphical user interface (which is described as being implemented in software in the application) on the grounds that the subject matter is unclear.  Thus, it may be safer to draft claims to recite a "computer-readable recording medium," for example, as follows.

- *A computer-readable recording medium storing a computer program for implementing in a computer a user interface…*
- *A user interface implemented by a computer program stored on a medium …*

### B. Data Structure

The Guidelines defines "data structure" as a logical structure of data representing correlation of data elements.  Also, similarly to a user interface, a data structure implemented in software may not be patentably eligible under the current Guidelines.  Thus, it may also be safer to draft claims in a form of a "computer-readable recording medium" recording such data structure.

### C. Data Transfer/Network Transfer

Data transfer or network transfer may be patentably eligible if it is claimed as information processing by software implemented in hardware, according to the Guidelines.  For example, an online education system including computer devices in combination with software for transferring educational information through a network may be patentably eligible (*see Patent Court decision 2001Heo942*).

### D. Data Storage

As discussed above, data storage implemented in a form of recording medium or computer-readable medium (e.g., disc, memory) may be patentably eligible under the current Guidelines.  Also, data storage implemented in a form of hardware cooperating with software (e.g., database management system, cloud storage) may be patentably eligible.

### E. Data Processing/Other

Data processing may be patentably eligible if it is claimed as unique information processing by software implemented in hardware.  For example, so-called "business method" (BM) invention may be an eligible subject matter if the invention corresponds to information processing by software according to the method implemented in detail using hardware (*see Supreme Court decision 2007Hu265*).

## III. Other Considerations

Regarding the patent eligibility of computer-related inventions, the Guidelines provide some additional rules as follows.

### A. Whether to consider the Detailed Description in determining the eligibility of a patent claim

The patent eligibility of a patent claim should be determined based on the description of the claim.  Accordingly, even though the Detailed Description or the Drawings illustrate information processing by software implemented in detail using hardware, unless such information processing is specified in the claim, the claimed invention may not be patentably eligible.

### B. How to specify the cooperation of hardware and software in a patent claim

In some cases, simply reciting "computer," "processor," "memory," etc. in a patent claim may not be sufficient for rendering the claimed invention patentably eligible.  For example, when it is unclear from the description of a patent claim which hardware element is used in detail to realize each function of the information processing by software algorithm, the claimed invention may not correspond to using the law of nature (*see Patent Court decision 2011Heo9078*).

On the other hand, even when a patent claim describes a general-purpose "computer" rather than "unique information processing device according to specific object," the patent claim may be

considered as realizing unique information processing or operation according to specific object in view of the technical level of an ordinary person skilled in the art.

### C. Whether to consider the category of a patent claim in determining the eligibility of the claim

What category (e.g., method or apparatus) a patent claim falls in may not affect the patent eligibility of the claim.  Rather, the meaning of description or terms that are used for specifying the claimed invention may be more significant in determining whether the claimed invention corresponds to the creation of technical idea using the law of nature.

### D. Whether a patent claim described in a programming language or a program code is patentably eligible

A patent claim described in a programming language may correspond to decision making by human being, and thus, may not correspond to the creation of technical idea using the law of nature.  Also, a patent claim described using program codes may correspond to mere information providing, and thus, may not correspond to the creation of technical idea using the law of nature.

### E. Patent eligibility of a business method invention

The patent eligibility of a business method (BM) invention should not be determined based on whether such method itself has some distinguishing features.  The patent eligibility of such BM invention should be evaluated by determining whether information processing by software according to the invention is realized in detail using hardware.

### F. Patent eligibility of an artificial intelligence invention

The patent eligibility of an artificial intelligence (AI) invention should be evaluated by determining whether the invention has consistent effects in a repeatable manner without involvement of any human being's mental activities.  In addition, it should be evaluated whether the claimed invention defines a concrete method or means for realizing unique information processing using software cooperating with hardware to achieve a specific object.

### G. Subject of performing unique information processing

In principle, a patent claim defining a computer-related invention should explicitly describe an entity or subject (e.g., hardware) for carrying out the invention realizing "unique information processing according to a specific object."  Accordingly, if such subject or hardware for carrying out the unique information processing is not identified in the claim as a whole, the claimed invention may not be considered as defining a concrete method or means for realizing unique information processing using software cooperating with hardware to achieve a specific object.

# United States of America
by B. Delano Jordan

## I. Overview

### A. Summary

In general, patents and/or patent applications that claim "technical" features and provide specification support for the contention that those technical features solve a problem in the prior art, tend to fare better with regard to patent eligibility than patents/applications that do not. Of particular note is that this analysis currently incorporates prior art considerations into the patent eligibility determination.

### B. Statutory Framework

Section 101 of the U.S. Patent Act states that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." Therefore, the code establishes broad categories of patent protection -- processes, machines, manufacture, or composition of matter.

The Patent Act expands on what is "new" in §§ 102 and 103. For example, § 102 prohibits the patenting of inventions that were previously disclosed or patented, identically, by others (i.e., requiring novelty in view of the prior art) and § 103 prohibits the patenting of inventions that were previously disclosed or patented, with only obvious differences, by others (i.e., requiring non-obviousness in view of the prior art). Moreover, § 112 of the Patent Act provides additional conditions and requirements with regard to clarity and specificity.

The America Invents Act (AIA) touched on patent eligibility concerns by providing additional mechanisms to challenge issued patents. For example, Covered Business Method (CBM) protection is a transitional program that sunsets on September 16, 2020 and provides the ability to challenge the validity of granted business method patents at the PTO (lack of novelty, obviousness, lack of clarity/specificity). In order to trigger CBM review, the challenger must show that the patent claims are directed to "financial products or services" and the patent claims do not recite a "technological invention." A technological invention as a whole claims a technological feature that is novel and unobvious over the prior art and solves a technical problem using a technical solution. CBM eligibility therefore includes patentability considerations. The AIA also includes Post Grant Review (PGR) and Inter Partes Reexamination (IPR) as other administrative options for challenging patent validity. PGR and IPR challenges are not limited to business method patents. The AIA provisions of CBM, PGR and IPR do not mention the concept of "abstract ideas."

### C. Judicial Exceptions

Judicial precedent has long held that § 101 contains an implicit exception for laws of nature, natural phenomena, and abstract ideas. see, *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014) (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012)). Patent eligibility-related challenges to software related inventions are typically on the basis of the patent covering an abstract idea.

In 2014, the U.S. Supreme Court decided *Alice*, which dealt with whether patent claims directed to a computer-implemented scheme for mitigating "settlement risk" were patent eligible under § 101, or were instead drawn to a patent-ineligible abstract idea. The Court found that the claims were drawn to the abstract idea of intermediated settlement, and that merely requiring generic computer implementation failed to transform that abstract idea into a patent-eligible invention. Section II below provides a digest of the current patent eligibility caselaw in the wake of *Alice* from a software related inventions perspective.

### D. USPTO Guidance

On January 7, 2019, the U.S. Patent and Trademark Office released the "2019 Revised Patent Subject Matter Eligibility Guidance." Along with the Guidance, the USPTO released additional examples and frequently asked questions (FAQs). Because the Guidance is not a substantive rulemaking, the failure of an examiner to follow the Guidance may not be basis itself of a petition or appeal.

Three key aspects of the Guidance are 1) the partitioning of Step "2A" of the patent eligibility analysis into two prongs, 2) the identification of a group of concepts constituting an "abstract idea," and 3) the isolation of inventive concept considerations to Step "2B" of the analysis.

The two prongs: Under the so-called Alice/Mayo test, Step 2A of the patent eligibility analysis determines whether a patent claim is directed to a judicial exception. The Guidance breaks this step into a first prong, which determines whether the patent claim recites a judicial exception. If it is determined that the patent claim recites a judicial exception, the second prong determines whether the judicial exception is integrated into a practical application. The Guidance also states that conventional elements can satisfy the second prong.

Abstract ideas: The Guidance identifies mathematical concepts, certain methods of organizing human activity (e.g., fundamental economic practices), and mental processes as being *per se* abstract ideas. A concept outside this group of concepts may be deemed a "tentative abstract idea" with the approval of the Technology Center Director or appropriate PTAB leadership.

The courts are not bound by the Guidance. For example, the Federal Circuit recently invalidated claims related to cardiovascular testing under § 101 commenting in dicta that "[w]hile we greatly respect the PTO's expertise on all matters relating to patentability, including patent eligibility, we are not bound by its guidance." See, *Cleveland Clinic Foundation v. True Health Diagnostics*., 760 Fed. Appx. 1013 (Fed. Cir. 2019).

## II. Analysis by Software Category ([return to mapping](#))

The abstract idea debate often centers around 1) claim breadth or 2) technology. To facilitate an easier review of the below analysis, *B* is used to designate a case in which claim breadth was persuasive and/or relevant, where *T* is used to designate a case in which the lack or presence of technology was persuasive/relevant. In either event, the color *green* designates a patent eligible result, the color *red* designates a patent ineligible result, and the color *purple* designates a mix of eligibility and ineligibility. Also note that all cases may not fit cleanly into the broad categories of User Interface, Data Transfer/Network Transfer, Data Storage, Data Processing (i.e., there may be overlap or no clear fit, which is captured in the "Other" category).

## A. User Interface

Three cases of interest surrounding user interface software are *Trading Technologies*[6] (graphical user interface), *Core Wireless*[7] (user interface with an application summary), *McRO*[8] (set of phoneme sequence rules that define an output morph weight set), and *Data Engine Technologies*[9] (spreadsheet tabs and tracking changes to data in spreadsheets). In *Trading Technologies*, *Core Wireless* and *McRO*, the court found patent claims to be directed to statutory subject matter and in *Data Engine Technologies*, the court found a mix of patent eligibility and ineligibility.

*Trading Technologies* (*\*T*): This case involved a graphical user interface. The Federal Circuit seemed to largely base its decision on the fact that the claimed graphical user interface addresses specific problems found in prior graphical user interfaces in this area (electronic trading). As a practical tip, it may be important to cast a problem in the prior art in terms of the technology and then make sure the claims recite an improvement to the technology that solves the problem.

Representative claim:

1. A method for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the method comprising:

dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a price level along a common static price axis, the first indicator representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a price level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market;

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators moves in the bid or ask display regions relative to the common static price axis;

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

in response to a selection of a particular location of the order entry region by a single action of a user input device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.

---

[6] *Trading Techs. Int'l, Inc. v. CQG, Inc.*, 675 F. App'x 1001, 1004 (Fed. Cir. 2017) (nonprecedential).
[7] *Core Wireless Licensing S.A.R.L., v. LG Electronics, Inc.*, 880 F.3d 1356, 1362 (Fed. Cir. 2018).
[8] *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016).
[9] *Data Engine Techs. LLC v. Google LLC*, 906 F.3d 999 (Fed. Cir. 2018).

*Core Wireless* (*\*T*): This case involved a user interface with an application summary.  The specification described what technical problems were found in prior user interfaces and the claimed graphical user interface solved those problems with improved technology.  It also appeared to be helpful to claim the structure and/or process for the improvement, rather than merely a result of the improvement.  As a practical tip, consider being specific as to how particular elements of the claims improve the functioning of the computer system.

Representative claim:

1. A computing device comprising a display screen, the computing device being configured to display on the screen a menu listing one or more applications, and additionally being configured to display on the screen an application summary that can be reached directly from the menu, wherein the application summary displays a limited list of data offered within the one or more applications, each of the data in the list being selectable to launch the respective application and enable the selected data to be seen within the respective application, and wherein the application summary is displayed while the one or more applications are in an un-launched state.

*McRO* (*\*B*): This case involved a set of phoneme sequence rules that defined an output morph weight set stream.  Key to the Federal Circuit's holding was that there were other alternatives to the claimed method (e.g., rules that only evaluated individual phonemes). Thus, although the representative claim was not directed to tangible material, it claimed patent-eligible subject matter because it did not preempt the underlying broader abstract concept.

Representative claim:

1. A method for automatically animating lip synchronization and facial expression of three-dimensional characters comprising:

obtaining a first set of rules that define output morph weight set stream as a function of phoneme sequence and time of said phoneme sequence;

obtaining a timed data file of phonemes having a plurality of sub- sequences;

generating an intermediate stream of output morph weight sets and a plurality of transition parameters between two adjacent morph weight sets by evaluating said plurality of sub-sequences against said first set of rules;

generating a final stream of output morph weight sets at a desired frame rate from said intermediate stream of output morph weight sets and said plurality of transition parameters; and

applying said final stream of output morph weight sets to a sequence of animated characters to produce lip synchronization and facial expression control of said animated characters.

*Data Engine Technologies* (*\*B*, *\*T*): In this case, claims involving spreadsheet tabs were found to be eligible and claims involving the tracking of changes to data in spreadsheets were found be ineligible. With regard to the spreadsheet tab claims, the court noted that the claims recited a specific interface

and implementation for navigating complex three-dimensional spreadsheets using techniques unique to computers.  By contrast, the claims involving the tracking of spreadsheet changes did not provide an inventive concept beyond the abstract idea of identifying and storing electronic spreadsheet pages.  As a practical tip, consider claiming the specifics of how to implement concepts that might be deemed to be abstract ideas.

Representative claim (spreadsheet tabs):

12. In an electronic spreadsheet system for storing and manipulating information, a computer-implemented method of representing a three-dimensional spreadsheet on a screen display, the method comprising:

displaying on said screen display a first spreadsheet page from a plurality of spreadsheet pages, each of said spreadsheet pages comprising an array of information cells arranged in row and column format, at least some of said information cells storing user-supplied information and formulas operative on said user-supplied information, each of said information cells being uniquely identified by a spreadsheet page identifier, a column identifier, and a row identifier;

while displaying said first spreadsheet page, displaying a row of spreadsheet page identifiers along one side of said first spreadsheet page, each said spreadsheet page identifier being displayed as an image of a notebook tab on said screen display and indicating a single respective spreadsheet page, wherein at least one spreadsheet page identifier of said displayed row of spreadsheet page identifiers comprises at least one user-settable identifying character;

receiving user input for requesting display of a second spreadsheet page in response to selection with an input device of a spreadsheet page identifier for said second spreadsheet page;

in response to said receiving user input step, displaying said second spreadsheet page on said screen display in a manner so as to obscure said first spreadsheet page from display while continuing to display at least a portion of said row of spreadsheet page identifiers; and

receiving user input for entering a formula in a cell on said second spreadsheet page, said formula including a cell reference to a particular cell on another of said spreadsheet pages having a particular spreadsheet page identifier comprising at least one user-supplied identifying character, said cell reference comprising said at least one user-supplied identifying character for said particular spreadsheet page identifier together with said column identifier and said row identifier for said particular cell.

B. Data Structure

This section will discuss *DDR Holdings*[10] (composite web page generation), *Aatrix*[11] (form file creation), and *Amdocs*[12] (distributed networking enhancement of network accounting records), which were all deemed to be patent eligible.

---

[10] *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 2014 U.S. App. LEXIS 22902, 113 U.S.P.Q.2d (BNA) 1097 (Fed. Cir. 2014).

[11] *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121 (Fed. Cir. 2018).

[12] *Amdocs (ISRAEL) LTD. V. Openet Telecom, INC.*, 841 F. 3D 1288, 1300 (Fed. Cir. 2016).

*DDR Holdings* (*\*T*): This case involved composite web page generation.  The patent in question in this case characterized a technical problem/solution in a technical manner in terms of the infrastructure used to implement the idea.   As a practical tip, consider avoiding as much as possible (but not entirely) discussing the business problem addressed by the invention.  Also consider including at least some examples in the specification that are not related to a business process.

Representative claim:

Claim 13. An e-commerce outsourcing system comprising:

a) a data store including a look and feel description associated with a host web page having a link correlated with a commerce object; and

b) a computer processor coupled to the data store and in communication through the Internet with the host web page and programmed, upon receiving an indication that the link has been activated by a visitor computer in Internet communication with the host web page, to serve a composite web page to the visitor computer with a look and feel based on the look and feel description in the data store and with content based on the commerce object associated with the link.

*Aatrix* (*\*T*): This case involved form file creation.  The patents in dispute provided a "problem/solution" in the specification to highlight the various inventive concepts of the software related invention as an improvement over known prior art (e.g., Aatrix's claimed data file contained "an inventive concept directed to improved importation of data and interoperabiltiy with third-party software").   As a practical tip, explicitly stating advantages of the inventive concept may help support the inventive concept captured in the claims as not routine or conventional.

Representative claim:

1. A data processing system for designing, creating, and importing data into, a viewable form viewable by the user of the data processing system, comprising:

(a) a form file that models the physical representation of an original paper form and establishes the calculations and rule conditions required to fill in the viewable form;

(b) a form file creation program that imports a background image from an original form, allows a user to adjust and testprint the background image and compare the alignment of the original form to the background test-print, and creates the form file;

(c) a data file containing data from a user application for populating the viewable form; and

(d) a form viewer program operating on the form file and the data file, to perform calculations, allow the user of the data processing system to review and change the data, and create viewable forms and reports.

*Amdocs* (*\*T*):  This case involved the distributed networking of network accounting records.  The specifications in this case were specific with respect to how the invention operated to provide an improvement over the state of the art.  As a practical tip, consider carefully describing interactions and

operations between components that may be considered conventional to relate a story of how these components act in an unconventional manner.

Representative claim:

1. A computer program product embodied on a computer readable storage medium for processing network accounting information comprising:

computer code for receiving from a first source a first network accounting record;

computer code for correlating the first network accounting record with accounting information available from a second source; and

computer code for using the accounting information with which the first network

accounting record is correlated to enhance the first network accounting record.

## C. Data Transfer/Network Transfer

This section will discuss *Finjan*[13] (behavior based virus scanning), *BASCOM*[14] (distributed networking based content filters), *Berkheimer*[15] (storing object structures with reduced redundancy), and *Visual Memory*[16] (memory system with programmable operational characteristics).  Each of these cases was considered to be patent eligible by the court.

*Finjan* (*T*):  This case involved behavior based virus scanning.  The patent in this case described the creation of a new data structure based on conventional activity (virus scanning), which satisfied the second, significantly more, prong of the *Alice* test, particularly because the claims recited more than just the result.  As a practical tip, consider including specific steps that accomplish the result. Additionally, consider including a clear description of these steps and the claim language used so that an unreasonably broad interpretation of claim terms can be traversed by pointing to the specification.  In post-USPTO proceedings, ensure the claim construction includes the specific steps.

Representative claim:

1: A method comprising:

receiving by an inspector a Downloadable;

generating by the inspector a first Downloadable security profile that identifies suspicious code in the received Downloadable; and

linking by the inspector the first Downloadable security profile to the Downloadable before a web server makes the Downloadable available to web clients.

*BASCOM* (*B*, *T*): This case involved distributed networking based content filters.  The patent specification was specific in description of the arrangement and relative positioning of components of

---

[13] *Finjan, Inc. v. Blue Coat Systems, Inc.*, 879 F. 3d 1299 (Fed. Cir. 2018).
[14] *BASCOM Global Internet Svcs v. AT&T Mobility*, 827 F. 3D 1341 at 1348 (Fed. Cir. 2016).
[15] *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1370 (Fed. Cir. 2018).
[16] *Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253, 1258 (Fed. Cir. 2017).

the system.  As a practical tip, a specifically described arrangement provides a position supporting a technical improvement.  In addition, more specific arrangement precludes allegations of pre-emption.

Representative claim:

1. A content filtering system for filtering content retrieved from an Internet computer network by individual controlled access network accounts, said filtering system comprising:

a local client computer generating network access requests for said individual controlled network accounts;

at least one filtering scheme;

a plurality of sets of logical filtering elements; and

a remote ISP server coupled to said client computer and said Internet computer network, said ISP server associating each said network account to at least one filtering scheme and at least one set of filtering elements, said ISP server further receiving said network access requests from said client computer and executing said associated filtering scheme utilizing said associated set of logical filtering elements.

*Berkheimer* (*T*): This case involved storing object structures with reduced latency.  The patent specification in this case provided a "problem/solution" to highlight the various inventive concepts of the software related invention as an improvement over known prior art (e.g., Berkheimer's inventive concept of "archiv[ing] documents in an inventive manner that improves these aspects of the disclosed archival system").  As a practical tip, consider explicitly and repeatedly stating advantages of the inventive concept that supports the inventive concept captured in the claims as not routine or conventional.

Representative claim:

1. A method of archiving an item in a computer processing system comprising:

presenting the item to a parser;

parsing the item into a plurality of multipart object structures wherein portions of the structures have searchable information tags associated therewith;

evaluating the object structures in accordance with object structures previously stored in an archive;

presenting an evaluated object structure for manual reconciliation at least where there is a predetermined variance between the object and at least one of a predetermined standard and a user defined rule.

*Visual Memory* (*T*): This case involved a memory system with programmable operational characteristics.  The patent claims in this case were directed to an improved computer memory system, not to the abstract idea of categorical data storage and the court noted that the specification explained multiple benefits that flow from the patent's improved memory system.  As a practical tip, consider including and explaining benefits in the specification.

Representative claim:

1. A computer memory system connectable to a processor and having one or more programmable operational characteristics, said characteristics being defined through configuration by said computer based on the type of said processor, wherein said system is connectable to said processor by a bus, said system comprising:

• a main memory connected to said bus; and

• a cache connected to said bus;

• wherein a programmable operational characteristic of said system determines a type of data stored by said cache.

### D. Data Storage

This section will discuss *Enfish*[17] (self-referential database) and *Ancora*[18] (license record storage), which were both held to be patent eligible.

*Enfish* (*B*, *T*):  This case involved self-referential databases.  The decision confirms that improvements in computer-related technology are not always, by definition, abstract ideas under the first step of the *Alice* test.  Thus, applicants may wish to consider identifying the improvement offered by the claimed invention and inquiring as to whether that improvement represents a specific improvement to the technology itself.

Representative claim:

17. A data storage and retrieval system for a computer memory, comprising:

means for configuring said memory according to a logical table, said logical table including:

a plurality of logical rows, each said logical row including an object identification number (OID) to identify each said logical row, each said logical row corresponding to a record of information;

a plurality of logical columns intersecting said plurality of logical rows to define a plurality of logical cells, each said logical column including an OID to identify each said logical column; and

means for indexing data stored in said table.

*Ancora* (*T*):  This case involved the storage of license records in a verification structure of BIOS (Basic Input Ouput System).  Citing *Enfish*, the court reasoned that the claimed method improved security "in an assertedly unexpected way: a structure containing a license record is stored in a particular, modifiable, non-volatile portion of the computer's BIOS."[19]  As a practical tip, consider linking claim features to a computer-functionality improvement over prior art solutions.

---

[17] *Enfish, LLC v. Microsoft Corp.*, 822 F. 3d 1327 (Fed. Cir. 2016).
[18] *Ancora Techs. v. HTC Am.*, Inc., 908 F.3d 1343 (Fed. Cir. 2018).
[19] *Id.* at 1348.

Representative claim:

1. A method of restricting software operation within a license for use with a computer including an erasable, non-volatile memory area of a BIOS of the computer, and a volatile memory area; the method comprising the steps of:

selecting a program residing in the volatile memory,

using an agent to set up a verification structure in the erasable, non-volatile memory of the BIOS, the verification structure accommodating data that includes at least one license record,

verifying the program using at least the verification structure from the erasable non-volatile memory of the BIOS, and acting on the program according to the verification.

## E. Data Processing/Other

This section discusses *Electric Power*[20] (real-time performance monitoring of an electric power grid), *Fairwarning*[21] (detecting misuse of digitally stored personal health information) and *Classen*[22] (determining whether an immunization schedule affects the incidence or severity of a disorder in mammals), which all contained claims deemed to be ineligible. Other relevant cases to consider but are not discussed below are *Int. Ventures*[23] (*B*, *T*) (calculating a budget for spending and sending summaries of spending, tailoring website information based on user preferences or browsing habits, organizing scanned images, and remotely accessing and retrieving user specified information), *CyberSource*[24] (*B*, *T*) (verifying the validity of credit card transactions over the Internet), *Digitech*[25] (*B*, *T*) (organizing and manipulating information through mathematical correlation), and *Ameranth*[26](*B*, *T*) (generating menus on a computer).

*Electric Power* (*B*, *T*): This case, which is used frequently by USPTO examiners in rejections, involved the real-time performance monitoring of an electric power grid. In finding the claims ineligible, the court noted that the claims were not limited to "technical means for performing the functions that are arguably an advance over conventional computer and network technology."[27] As a practical matter, patent applicants and holders might consider attacking the identification of the abstract idea, arguing that a technical solution to a technical problem is claimed and/or establishing that the claims generate new information that did not previously exist.

Representative claim:

---

[20] *Electric Power Group, LLC v. ALSTOM SA*, 830 F. 3d 1350 (Fed. Cir. 2016).

[21] *FairWarning IP, LLC v. Iatric Sys.* 839 F.3d 1089 (Fed. Cir. 2016).

[22] *Classen Immunotherapies, Inc. v. Biogen Idec*, 659 F.3d 1057 (Fed. Cir. 2011).

[23] *Intellectual Ventures I LLC v. Capital One Bank* (USA) 792 F.3d 1363 (Fed. Cir. 2015) and *Intellectual Ventures I LLC v. Erie Indem. Co.*, 711 Fed. Appx. 1012, (Fed. Cir. 2017)

[24] *CyberSource Corp. v. Retail Decisions*, Inc. 654 F.3d 1366, (Fed. Cir. 2011).

[25] *Digitech Image Techs., LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014).

[26] *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229 (Fed. Cir. 2016).

[27] *Electric Power*, 830 F.3d at 1351.

12. A method of detecting events on an interconnected electric power grid in real time over a wide area and automatically analyzing the events on the interconnected electric power grid, the method comprising:

receiving a plurality of data streams, each of the data streams comprising sub-second, time stamped synchronized phasor measurements wherein the measurements in each stream are collected in real time at geographically distinct points over the wide area of the interconnected electric power grid, the wide area comprising at least two elements from among control areas, transmission companies, utilities, regional reliability coordinators, and reliability jurisdictions;

receiving data from other power system data sources, the other power system data sources comprising at least one of transmission maps, power plant locations, EMS/SCADA systems;

receiving data from a plurality of non-grid data sources;

detecting and analyzing events in real-time from the plurality of data streams from the wide area based on at least one of limits, sensitivities and rates of change for one or more measurements from the data streams and dynamic stability metrics derived from analysis of the measurements from the data streams including at least one of frequency instability, voltages, power flows, phase angles, damping, and oscillation modes, derived from the phasor measurements and the other power system data sources in which the metrics are indicative of events, grid stress, and/or grid instability, over the wide area;

displaying the event analysis results and diagnoses of events and associated ones of the metrics from different categories of data and the derived metrics in visuals, tables, charts, or combinations thereof, the data comprising at least one of monitoring data, tracking data, historical data, prediction data, and summary data;

displaying concurrent visualization of measurements from the data streams and the dynamic stability metrics directed to the wide area of the interconnected electric power grid;

accumulating and updating the measurements from the data streams and the dynamic stability metrics, grid data, and non-grid data in real time as to wide area and local area portions of the interconnected electric power grid; and

deriving a composite indicator of reliability that is an indicator of power grid vulnerability and is derived from a combination of one or more real time measurements or computations of measurements from the data streams and the dynamic stability metrics covering the wide area as well as non-power grid data received from the non-grid data source.

*Fairwarning* (**\*B**): This case involved automatically detecting misuse of digitally stored personal health information.  In finding the claims ineligible, the court found that the claims merely implemented an old practice in a new environment.  In practice, consider making sure your claims do something with the information that is collected beyond merely providing a notice that an event has occurred.  As in *Classen's* eligible claims (see below) that actually call for immunization to be performed, modify your claims to perform something beyond just a notification.

Representative claim:

1. A method of detecting improper access of a patient's protected health information (PHI)
in a computer environment, the method comprising:

generating a rule for monitoring audit log data representing at least one of transactions or activities that are executed in the computer environment, which are associated with the patient's PHI, the rule comprising at least one criterion related to accesses in excess of a specific volume, accesses during a pre-determined time interval, accesses by a specific user, that is indicative of improper access of the patient's PHI by an authorized user wherein the improper access is an indication of potential snooping or identity theft of the patient's PHI, the authorized user having a pre-defined role comprising authorized computer access to the patient's PHI;

applying the rule to the audit log data to determine if an event has occurred, the event occurring if the at least one criterion has been met;

storing, in a memory, a hit if the event has occurred; and

providing notification if the event has occurred.

*Classen* (***B***, ***T***):  The claims in this case involved determining whether an immunization schedule affects the incidence or severity of a disorder in mammals.  While two other patents in the case were held eligible because they involved an immunization step, claim 1 in the U.S. Patent No. 5,723,283 was held ineligible because no immunization step was required.  Of particular note is that the claim actually recites comparing, does not require a computer to do the comparing, and lacks any step based on the comparison.

Representative claim:

1. A method of determining whether an immunization schedule affects the incidence or severity of a chronic immune-mediated disorder in a treatment group of mammals, relative to a control group of mammals, which comprises immunizing mammals in the treatment group of mammals with one or more doses of one or more immunogens, according to said immunization schedule, and comparing the incidence, prevalence, frequency or severity of said chronic immune-mediated disorder or the level of a marker of such a disorder, in the treatment group, with that in the control group.

## III. Other Considerations

On May 22, 2019, the Senate Judiciary Subcommittee on Intellectual Property's Chairman Thom Tillis (R-N.C.) and Ranking Member Chris Coons (D-Del.), along with House Judiciary Committee Ranking Member Doug Collins (R-Ga.), House IP Subcommittee Chairman Hank Johnson (D-Ga.), and Rep. Steve Stivers (R-Ohio), released a bipartisan, bicameral draft bill to reform Patent Act section 101. In a press release, the lawmakers noted that the proposal "is intended to solicit feedback. For that reason, the language contained in the draft bill text is not final, and is subject to additional revision" after receiving additional input.