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**Chapter 22      Computer-Implemented  
Inventions**

## **22.01 Scope of this chapter - REVISED**

The purpose of this chapter is to highlight Office practice as it pertains in particular to computer-implemented inventions.

The term “computer” is used in this chapter to refer to an electronic device comprising a processor, such as a general purpose central processing unit (CPU), a specific purpose processor or a microcontroller. A computer is capable of receiving data (input information or signals), of performing a sequence of predetermined operations thereupon, and of producing thereby a result in the form of information or signals (output information or signals).

Depending on context, the term “computer” will mean either one or more processors in particular, or a processor (or processors) and interrelated elements contained within a single case or housing, or to a distributed multiprocessor system such as a cloud computing system. A computer could refer to a general purpose computer, (e.g., a network server, smartphone, tablet, desktop or laptop computer), or to a purpose-built device that is computer-controlled (e.g., a smart television, a programmable HVAC system, or a processor-controlled appliance such as an automatic coffee machine). In certain contexts, the term “computer” may encompass a processing device as well as certain ubiquitous peripherals, (e.g., a keyboard, mouse, microphone, speakers, display) necessary for interacting with the processing device itself.

## **22.02 Examining computer claims - REVISED**

In order for the subject-matter defined by a claim to be considered patentable subject-matter, it must be limited to or narrower than an actual invention that either has physical existence or manifests a discernible physical effect or change. Said actual invention must also belong to the manual or productive arts, and not be among the excluded categories [see Chapter 17]. Where a claim is directed to a computer-implemented invention, the actual invention will generally belong to the manual or productive arts. In such cases, it must also be determined whether the computer itself cooperates with other elements as part of a single actual invention which has physicality and is not otherwise excluded..

Recitation of a computer in a claim generally assures that said computer will be purposively construed as an essential element [see Chapter 12], however this will not necessarily lead to the subject-matter defined by the claim being considered patentable subject-matter. Although the computer must necessarily be present in order to execute the software, if it merely executes the algorithm in a well-known manner, the use of the

computer may not be sufficient to overcome the prohibition on disembodied ideas, scientific principles or abstract theorems under subsection 27(8) of the *Patent Act*. In such a case, the subject-matter will not be considered patentable subject-matter.<sup>1</sup>

A computer program is not, by itself, patentable subject-matter, as it is merely a disembodied algorithm. However, an otherwise non-patentable algorithm may form the basis of a claim reciting patentable subject-matter if any of the following is true:

- (i) *Execution of the algorithm results in a functional improvement in the operation of a computer, such that together, the algorithm and computer form a single actual invention.*
- (ii) *The algorithm utilizes input data acquired in a physical step, other than by generic input means [see 22.02.04], or provokes a physical effect not considered to be a generic computer output.*

Condition (i) stipulates that if operation of a computer is functionally improved by the algorithm – despite the fact that said algorithm is a disembodied idea, scientific principle or abstract theorem --- the algorithm and computer are considered to cooperate to form a single actual invention. A claim to such an actual invention, either in the form of a method wherein the computer is functionally improved or a computer configured to run such a method, will generally be patentable subject-matter.

When an otherwise non-patentable algorithm does not impart a functional benefit to the computer, the subject-matter could still be patentable subject-matter if a non-generic input or output step/element cooperates with the algorithm to form a single actual invention having physicality. A claim to such a combination of elements, forming an actual invention that relates to the manual or productive arts and that either has physical existence or manifests a discernible physical effect or change, fulfills condition (ii) and so will generally be patentable subject-matter.

## **22.02.02            Adapting a computer to solve a problem**

A computer can be adapted to solve a problem either by its hardware, software or a combination thereof. Where the adaptation is made to hardware, the actual invention will likely include physical elements and hence be patentable subject-matter. Moreover, a structural comparison of the computer to other computers may facilitate the assessment of novelty and obviousness.

More often, however, a computer will be adapted via software. In evaluating a computer

adapted by software, it is useful to draw a distinction between the design of a computer program and the expression of that program in a specific programming language.

Designing a computer program comprises steps such as developing a method to be implemented by the computer and creating flow charts, design diagrams or pseudocode to describe the method steps to be performed by the computer in order to solve a problem. Furthermore, specific operations and their necessary sequence to enable the computer to implement the method are determined.

Irrespective of programming language, software alone cannot be considered patentable subject-matter (see section 22.02.03). Expressing the program in a particular language, will generally be considered to be a design choice, unless said selection relies on functions or features only available in a particular language. Software integrated within a computer may be patentable subject-matter, depending on the assessment in 22.02.

### **22.02.03 Patentability and programming**

A computer program is not, by itself, patentable subject-matter, as it is merely a disembodied algorithm. For there to be patentable subject-matter, absent some external physicality, both the computer program and the computer on which it operates must form part of a single actual invention.

A computer executing software or an algorithm will together form a single actual invention if execution of the algorithm improves the functioning of the computer [see condition (i) in subsection 22.02]. If the computer merely processes the algorithm in a well-known manner, with no functional improvement and no non-generic physical steps, the actual invention is likely the algorithm alone (i.e., not applied). In this case, though the algorithm is a method, the subject-matter is disembodied and therefore prohibited under subsection 27(8) of the *Patent Act*.

A non-exhaustive list of factors that may indicate an improvement in computer functioning include:

- the description details a specific inadequacy with the operation of a computer and/or an alternative manner of operating the computer;
- the description emphasizes challenges or deficiencies in prior -art computers;
- achieving a desired outcome involves controlling a chip, system component or technical architecture element such as through firmware (embedded software);

- a significant level of technical detail is devoted to describing the implementation.

Some aspects of electronic device operation in which ‘improvements in the functioning of a computer’ might be realized include:

- processing speed
- increased throughput
- processor cycles
- power consumption
- efficiency of data storage or retrieval
- threading or task distribution
- security or encryption
- lag or latency
- noise or corruption in signals
- “self-repairing” algorithms

A non-exhaustive list of factors that may suggest that the algorithm alone is the actual invention, and that processing of said algorithm does not improve the functioning of the computer include:

- explicit statements in the description suggesting a problem other than a computer problem (i.e., that the algorithm yields an output/result applicable in an application external to the computer);
- neither an explicit indication in the specification, nor establishment of a convincing argument during prosecution, that any functional limitations relating to the operation of a computer were overcome;
- a relative absence of technical implementation details, despite an indication in the description that the method be executed by a computer;
- speed or efficiency improvements derived merely from omission of peripheral or administrative steps.

With respect to a claim in which the computer is operating in a well-known manner to execute an algorithm, and a functional improvement in computer operation attributable to the algorithm is not apparent, the examiner will generally conclude that the computer is not part of the actual invention. In such circumstances, a claim may be considered to recite patentable subject-matter only if the actual invention also includes one or more non-generic elements having physical existence or which manifest a discernible physical effect or change [see condition (ii) in section 22.02].

#### **22.02.04 The Generic Computer, Generic Input, Generic Output**

In determining patentable subject-matter, distinction exists between a computer adapted such that it is non-generic, in order to perform a function (generally patentable subject-matter), a generic computer used in a non-well-known manner (could also be patentable subject-matter), and a generic computer retrieving stored data, performing computations, and presenting the resulting data in usual ways (unlikely to be patentable subject-matter).

Determining whether or not a computer and associated inputs and outputs are generic should involve consideration for the context in which the device is meant to be used, with regard to the field of endeavour and the common general knowledge therein, as well as for the means by which information is passed to and from the computer. Standard components (e.g., a touch-sensitive display on a handheld tablet) and ubiquitous peripherals (e.g., a mouse, microphone or loudspeaker on a desktop computer), which convey information in the usual manner, are considered generic inputs and outputs. Such generic interface devices are considered components of a generic computer, and thus they generally cannot lend physicality to an actual invention unless the computer itself is included by virtue of a functional improvement [per condition (i), section 22.02].

However, claims should be examined with consideration for the possibility that a generic input or output device might be used in an atypical manner, to measure, monitor, or otherwise act to acquire physical input or produce physical output. In such a scenario, the interface device may be considered non-generic, and hence a physical, cooperative element of an actual invention.

Take for example an atypical use of a computer keyboard, which would normally be considered a generic input. Identification of an authorized user by detecting keyed-in values (in the usual way), while also measuring the rate or cadence of keystrokes for comparison to a pre-set pattern (atypical), would lead to a determination that the keyboard, used in this manner, is non-generic.

The use of a non-ubiquitous device to provide input, such as a sensor which acquires measurement data from the environment external to the computer, will generally be considered a non-generic input. Similarly, a non-ubiquitous device which performs a physical action in response to computational output will likely be treated as a non-generic output.

If either of a non-generic input or a non-generic output cooperates with the algorithm, thus forming part of the actual invention, the claimed subject-matter will typically be

patentable subject-matter [condition (ii, section 22.02)].

## **22.02.05            Examples**

The following examples illustrate how the guidance in this chapter can be applied in practice, both in cases where the computer or system includes non-generic external elements, and alternatively where the computer is generic but it does not merely operate in the well-known manner.

### Example 1:

An application discloses a vehicle wheel alignment system comprising a vehicle station used for vehicle testing, a set of optical sensors adapted for measuring vehicle wheel alignment angles, an automated tool for adjusting wheel angles, and a computer station. Aligning vehicle wheels is a process which includes measuring and adjusting a number of wheel angles, such as camber, caster and toe angles, as well as the steering axis inclination. The computer runs software which compares angles measured by the optical sensors with manufacturer-recommended specifications stored in a database and 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.

Claims:

1. A system for vehicle wheel alignment comprising:
  - a) a set of optical sensors for measuring vehicle wheel alignment angles;
  - b) an automated tool for the synchronous adjustment of vehicle wheel angles, the automated tool being a single unit comprising several modules, with each module being capable of adjusting a specific wheel angle; and
  - c) a general purpose computer in electronic communication with the optical sensors and the automated tool, wherein the computer comprises:
    - i. means for receiving wheel alignment angle measurement data collected by the sensors,
    - ii. means for retrieving manufacturer recommended wheel angle values from an electronic database,

- iii. means to calculate differences between the measured values of the vehicle wheel alignment angles and the manufacturer recommended angles, and
- iv. means to output a signal based on the calculated values to actuate the automated tool in order to synchronously align the vehicle wheel angles.

2. A system for calculating a vehicle wheel angle condition comprising:

- a) an input means for inputting measured values of vehicle wheel angles,
- b) 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
- c) an output means for displaying the calculated angle differences on a computer display.

Analysis:

There is no use of claim language indicating any of the elements to be optional, a preferred embodiment or one of a list of alternatives. Nor is there any indication in the specification that would lead to a determination of any claimed elements being non-essential. Therefore, all the elements identified in each of these claims are considered to be essential.

Claim 1 defines a system for vehicle wheel alignment. The actual invention includes non-generic components (the optical sensors and the alignment tool), as well as the general purpose computer communicating with and controlling both of these. Since the actual invention incorporates non-generic input and output elements, said elements having physical existence and manifesting a discernible physical effect or change (sensors acquire initial wheel angles, alignment tool adjusts wheel angles based on manufacturer recommended values), it is considered patentable subject-matter.

Claim 2 defines a system including a computer capable of calculating the wheel angle differences required for proper alignment. The claim defines “an input means for inputting”, “a processor means for searching ... and calculating” and “an output means for displaying”. This language does not make it clear that said input and output means

include elements beyond the ubiquitous peripherals of a generic computer. The algorithm searches a database and retrieves manufacturer recommended wheel angles, performs computations using the input values and retrieved data, and presents information to indicate the necessary adjustments. There is no evidence that the algorithm improves the functional operation of the computer because it is just carrying out routine data retrieval and processing operations. Therefore the actual invention consists of the algorithm alone, hence the claim is considered to not recite an invention as defined by section 2 of the *Patent Act*, and it is prohibited under subsection 27(8) of the *Patent Act*.

### Example 2:

The description describes a new way of analysing data from seismic measurements acquired by sensors to identify preferred drilling sites for oil. It relies on a complicated algorithm X to perform the analysis. The description also describes the conventional ways in which the seismic measurements were physically performed as well as the conventional computerized drilling systems that would use the analyzed data.

### Claims:

1. A computer-implemented method of analysing data from seismic measurements comprising:
  - a) Performing seismic measurements;
  - b) Receiving the data from the seismic measurements;
  - c) Processing the data on a computer using algorithm X; and
  - d) Displaying the results of the analysis.
  
2. A system for analysing data from seismic measurements comprising:
  - a) Sensors to measure seismic measurements;
  - b) A module configured to receive the data from the sensors;
  - c) A processor configured to apply algorithm X to the data received from the sensors; and
  - d) A display configured to present the results of step c).
  
3. A computer-implemented method of analysing data from seismic measurements comprising:
  - a) Retrieving stored data from seismic measurements;
  - b) Processing the data on a computer using algorithm X; and

- c) Displaying the results of the analysis of step b).
4. A computer readable memory having recorded thereon statements and instructions for execution by a computer to carry out the method of claim 3.
5. A computer-implemented method of drilling for oil comprising:
  - a) Receiving data from seismic measurements;
  - b) Processing the data on a computer using algorithm X; and
  - c) Drilling for oil at a location indicated by the results of the processing.
6. A computer readable memory having recorded thereon statements and instructions for execution by a computerized drilling system to carry out the method of claim 5.

#### Analysis:

There is no use of language indicating that any of the steps/elements are optional, a preferred embodiment or one of a list of alternatives. Therefore all the steps/elements are considered to be essential. In claims 4 and 6, the language of the claim indicates that all elements are essential. In this case that would include the computer readable memory and the instructions for carrying out the method of claim 3 or 5.

For claim 1: In this claim the seismic measurements of step a) produce the data processed by the computer. Step a) cooperates with the computer processing steps (b-d) to produce better results by use of the algorithm X. As step a) includes measurements that rely upon discernible physical effects to produce their data, step a) provides the discernible physical effect or change that renders the subject-matter of the claim patentable subject-matter.

For claim 2: In this claim, the sensors which are used to perform seismic measurements do not correspond to a generic input of data to a computer. As is evident from the claim itself and confirmed by reference to the rest of the specification (considered in light of the relevant CGK), the sensors cooperate with the computer because the measurements from the sensors are used by the computer in the analysis. Consequently, this is not a generic computer that would operate in a well-known manner. The sensors are part of a non-generic computer system having physical existence and these sensors are the subject-matter of the claim is patentable subject-

matter falling within the definition of "invention" in section 2 of the *Patent Act*.

For claim 3: As is evident from the claim itself and confirmed by reference to the rest of the specification (considered in light of the relevant CGK), data input and output steps a) and c) represent generic input/output steps of a computer-implemented process. In such a case, all of the essential elements correspond only to the processing of data using algorithm X to produce results by means of a generic computer. It is therefore necessary to ascertain whether the computer forms part of the actual invention. There is no evidence that algorithm X improves the functioning of the computer; there is no indication that the use of algorithm X reduces the resources used in the computer processing for example. Therefore, the computer and input/output/processing steps do not form a single actual invention. The actual invention is considered to be the algorithm or the analysis and resulting data, which has no physical existence and does not cause a physical effect or change. Thus, the actual invention is prohibited under subsection 27(8) of the Patent Act and is not patentable subject-matter within section 2 of the *Patent Act*.<sup>2</sup>

For claim 4: This claim refers to method claim 3, where the actual invention was found to be directed to an abstract algorithm. It is evident from the claims and the rest of the specification that the claimed computer-readable memory is a generic means of inputting instructions to a computer and, therefore, is considered to be part of the generic computer system of claim 3. Therefore, the result for this claim would be the same as that of claim 3.

For claim 5: In this claim, step c) uses the results of the processing of received seismic data to affect the physical step of drilling for oil. Step c) depends on and cooperates in combination with the computer processing step b) to execute a well drilling operation, providing a discernible physical effect or change, which renders the subject-matter of the claim patentable subject-matter.

For claim 6: This claim refers to claim 5 where the method was found to be patentable subject-matter. Although the claimed computer-readable memory is a generic means of inputting instructions to a computer and therefore is considered to be part of the generic computer system, the discernible physical effect associated with the instructions, namely the drilling of a well, was found to be patentable in claim 5. As the system incorporating the computer-readable memory is capable of carrying out the drilling of a well, this physical effect is sufficient to render the subject-matter of claim 6 patentable subject-matter.

### Example 3:

The description describes a new algorithm Y for compressing video data, which produces a coded signal with the same signal to noise ratio and level of compression (required Mb/s to transmit) as existing methods but using fewer processing steps. Algorithm Y is described in comparison to known compression techniques, and the advantages stemming from its efficiency improvements are emphasized.

Claim:

1. A computer-implemented method of digitally coding a video signal comprising:
  - a) Receiving digital video data;
  - b) Encoding, using a digital signal processor, the digital video data using algorithm Y; and
  - c) Providing the encoded video data.

Analysis:

There is no use of language indicating that any of the steps in the claim are optional, a preferred embodiment or one of a list of alternatives. Therefore, all the steps identified in the claim are considered to be essential elements.

In this claim, as evident from the claim itself and confirmed by reference to the rest of the specification (considered in light of the relevant CGK) data input and output steps a) and c) represent generic input/output steps of a computer-implemented process. In such a case, all of the essential elements correspond only to the processing of data using algorithm Y to encode a video signal by means of a generic computer. It is therefore necessary to ascertain whether the computer forms part of the actual invention. It is apparent that the use of algorithm Y encodes a video signal using discernibly less processing power (fewer instructions) than known methods, while providing an encoded signal of the same quality and degree of compression. Since the algorithm Y improves the functioning of the computer, the computer forms part of the actual invention, along with the algorithm, and provides the physicality to render the subject-matter of the claim patentable subject-matter.

## **22.03 Anticipation - REVISED**

The general requirements for novelty of an invention are detailed in Chapter 18 of this manual, and apply equally to computer-implemented inventions as to any other.

### **22.03.01 Anticipation by prior use**

Although the majority of prior art cited in examiner reports consists of prior written disclosures, a prior sale or use of an invention can also amount to an anticipation, as detailed in section 18.01.02 of this manual.

In determining whether a publicly available product anticipates a claimed invention, a relevant question is whether that product is “an enabling disclosure”. That is, would it be straightforward for a POSITA to copy or reverse engineer the product? In the context of reverse engineering, the question could be framed as whether there is “an analytical method available at the relevant time to lead a skilled person to the invention”.<sup>3</sup>

Therefore, where relevant, the ability of the POSITA to reverse engineer a product, without inventive effort, to ascertain what method it implements, must be considered. Note that what is considered is the ability to reverse engineer, such as by decompiling; it is not necessary to establish that the product was actually reverse engineered.<sup>4</sup>

With regard to computer-implemented inventions, software that was available to the public prior to the claim date can be considered as prior art if the availability date can be validated. If it can simply be mimicked by the skilled person, it constitutes an "enabling disclosure" regardless of whether or not the skilled person understands everything about how it works. If the program's functions cannot be replicated, it will only be considered to have disclosed the claimed invention if the software provides sufficient information for the skilled person to comprehend the invention.<sup>5</sup>

Thus, if the claimed invention is defined broadly using functional language, any prior art software that achieves the same function could be anticipatory. In contrast, if the claimed invention defines a particular method for arriving at a specific result, prior art software would only be anticipatory if it could be established that it was using the same method for arriving at the result, though prior art disclosing an alternative method could still be applied to a finding of obviousness.

## **22.04 Obviousness - REVISED**

The general requirements for non-obviousness of an invention are detailed in Chapter 18 of this manual, and apply equally to computer-implemented inventions as to any other.

It is considered obvious that computers can be used to automate many manual

operations. Given a defined process of calculations and abstract operations, the programming of such a process is often within the common general knowledge of the skilled person. Merely automating a known manual process is, in the absence of reasons to conclude the contrary, considered to be obvious. The inventive step necessary to support a claim to a computer-automated version of a known manual method therefore must typically be found in the solution to specific challenges attendant to enabling the automation.

In general, expressing a computer program in a specific programming language is considered to fall within the common general knowledge of an uninventive skilled programmer and is not considered to require inventive effort. This person skilled in the art is considered to be able to express the program in any number of different programming languages, and therefore without the exercise of ingenuity. Consequently, the inventive ingenuity necessary to provide patentability to a computer is unlikely to be found simply in writing computer code to express a developed program, unless demonstrated otherwise.

Where the application includes no details regarding how the computer program is to operate, this suggests the applicant considers the manner of implementing their method to be uninventive. It can be appropriately concluded by the examiner that there is no invention in the reduction to practice of the method.

Where a computer-implemented invention aims to achieve a new result through the use of a combination of known hardware and software, an inventive step may exist by virtue of the recognition that the combination will achieve that result. If, by contrast, using the hardware and software together merely results in a predictable outcome, the alleged invention may be obvious.

## **22.05 Utility - October 2010**

An invention must be useful, in the sense that it carries out some useful known objective “and is not merely a ‘laboratory curiosity whose only possible claim to utility is as a starting material for further research’”.<sup>6</sup> The utility of the claimed subject-matter must be established by demonstration or sound prediction, and the invention must be controllable and be reliably reproducible.<sup>7</sup>

A computer is generally considered to be capable of reproducibly performing whatever operations its hardware and programming enable. The utility of a computer-implemented invention is not guaranteed by this fact, however. Even where the components of the computer are working as intended, the invention as a whole may

require other elements for its proper operation.

Where the judgement or interpretative reasoning of an operator is implicated in the proper operation of the claimed invention, such as deciding on suitable computer-managed operations through the exercise of judgement and reasoning, the criterion of reproducibility will not be satisfied. Where an operator's input is required, but there is no judgement associated with the input, the need to rely on the input does not cause a lack of reproducibility [see section [19.01.01](#) of this manual].<sup>8</sup>

## **22.06 Sufficiency - REVISED**

The general requirements for a sufficient disclosure of an invention are detailed in [Chapter 14](#) of this manual, and apply equally to computer-implemented inventions as to any other.

Certain aspects of a correct and full description of a computer-implemented invention warrant particular attention, and are discussed in the following sections.

### **22.06.01 Disclosure and enablement**

In accordance with subsection 27(3) of the *Patent Act*, the specification must correctly and fully describe the invention. In practice, this requirement relates to the description, which must support the claims in accordance with section 60 of the *Patent Rules*.

The two requirements of a description are i) that it discloses in clear and unambiguous terms the nature of the claimed invention (disclosure requirement) and ii) that it provides any teachings necessary to allow a person skilled in the art to operate the claimed invention (enablement requirement). A person skilled in the art must be able to understand, in view of the specification alone when read in light of their common general knowledge, what the invention is, what it does, and how to make it work.

The level of description necessary will depend on the facts of each case. In general, where aspects of common general knowledge are referred to, it may not be necessary to do more than identify a well-known element or technique forming part of this common stock of information. Where specific information is required that does not form part of the common general knowledge, this must be explicitly provided in the description.

It will often be the case that the algorithm or logic performed by the computer lies at the heart of the invention. In such circumstances, a description of the algorithm or logic tree should be provided. The amount of written description necessary to properly describe and enable an algorithm may depend on the relationship of each step to the common

general knowledge. Where the algorithm invokes well-known operations, it may be that very little or no specific description is necessary for the purposes of proper description or enablement. If, in contrast, the specific operations necessary to enable a step in the algorithm would not be self-evident to the person skilled in the art, these operations would need to be fully described.

Where the algorithm or logic is described by reference to a flow chart, presented as a drawing, an adequate written explanation of the flow chart is necessary, such that the POSITA would be able to practice the algorithm without recourse to inventive ingenuity or undue experimentation.

Furthermore, if the common general knowledge of the person skilled in the art would lead them to attempt to enable the algorithm in ways that would not in fact work, the description should provide sufficient instructions to allow the person skilled in the art to arrive at operable embodiments and avoid inoperative ones.

Where very little explanation is given regarding how a step in a method is to be implemented by a computer, this will generally be understood as an indication that the applicant, does not consider the implementation of that step to require inventive effort on the part of the person skilled in the art.

## **22.06.02            Source code or pseudocode**

Source code or pseudocode may be provided as part of the description of a computer-implemented invention, but will generally not be considered, by themselves, to provide a full and enabling description of an invention.

Where source code is provided, it must be remembered that the significance of the commands used in specific code may depend on the intended platform, and the code itself will generally not be a clear and unambiguous description of the invention.

Pseudocode refers to a semi-structured, natural language explanation of the functioning of an intended program, and may be used as an alternative to a flowchart to provide a set of instructions with a logical sequence but which do not follow the syntax of any particular programming language. Pseudocode will therefore usually have a greater value in describing an invention than source code in a specific programming language. However, in the same way that a flowchart will usually require an accompanying description in order to fully describe an invention, pseudocode which merely specifies the desired result, while omitting functional aspects of the algorithm not evident to the skilled person, will typically not be sufficient to provide a full and correct description of an invention.

### **22.06.03 Common general knowledge and programming**

The activities required to reduce a specific series of logic instructions to a computer code are considered to form part of the common general knowledge of a skilled programmer. It is, therefore, typically not necessary for an inventor to describe how to write computer code, either in general or in respect of a specific computer language.

Where the description only discloses in broad terms what the program is intended to do, and it would not be clear to the person skilled in the art in view of their common general knowledge what the required operations are or the logic necessary to enable specific required operations, then the skilled programmer has not been given sufficient instructions to create the necessary code. To create a working program, the programmer would first have to exercise ingenuity in order to solve the problem of reducing the concepts disclosed to a series of practical instructions (i.e. would need to design the program).

### **22.07 Claims - REVISED**

A computer-implemented invention is typically claimed as a machine (computer or system), an art (method or use) or a manufacture (computer-readable medium). As with any type of claim, a claim to a computer-implemented invention must meet the requirements of, inter alia, subsection 27(4) of the *Patent Act* and section 60 of the *Patent Rules*.

#### **22.07.01 Apparatus, Device, Processor claims**

Where a claim is directed to a machine, it must be defined in terms of physical components. Computerized machines are typically defined as an apparatus, device or processor.

The term system, depending on the context in which it is used, may refer to a machine (a device or apparatus, or a network of devices or apparatuses), a computer program or set of computer programs (e.g. a database management system or an operating system), or a method. Consequently, care must be taken to ensure that its intended meaning in a given context is unambiguous.

In the computer arts, the Office will generally construe “system” to refer to a machine, though if such language results in a claim of ambiguous scope, it may be considered defective.<sup>9</sup>

Regardless of which meaning is intended, it must be clear that the claimed subject-matter

belongs to at least one of the categories of invention defined in section 2 of the *Patent Act*. Where the claimed system is not a machine, it may be necessary to explicitly define that it is, for example, a software product or method in order to comply with subsection 27(4) of the *Patent Act*.

## **22.07.02 Computer-Readable Medium claims**

A computer program (software), when claimed *per se*, is considered by the Office to be an abstract disembodied scheme, or a set of rules for operating a computer [see section [17.03.08](#) of this manual], and consequently not patentable under subsection 27(8) of the *Patent Act*.

In defining a computer program product, the language of the claim is important. The preamble must clearly direct the claim to a physical product limited by the computer program stored thereon, and not to a computer program limited by having been stored on a memory. Because a claim to physical memory falls within the category 'manufacture', the preamble "a physical memory having stored thereon..." directs the claim to a patentable embodiment, whereas "a computer program stored on a physical memory" directs the claim to a computer program *per se* and thus to non-patentable subject-matter.

Furthermore, it should be explicitly defined or implicitly evident that the computer program is present as machine-executable code. Only machine-executable code can change the functionality of the physical memory storing the program. Non-executable code is considered to be mere descriptive matter [see section [17.03.06](#) of this manual].

The mere fact that a computer program is claimed in the correct format does not assure that it will be considered patentable subject-matter. It will also need to meet the conditions described in section 22.02.

### Example:

An application is directed to a computer-implemented method for controlling transmitted power in a wireless network. It is evident from the specification that the method improves the functioning of the wireless network.

### Claims:

1. A computer-implemented method for transmitter power control in a wireless network, comprising the steps of...

2. A computer program for transmitter power control in a wireless network according to the method of claim 1.
3. A computer-readable memory having recorded therein statements and instructions that, when executed by a computer, perform the method steps of claim 1.
4. A computer program product comprising a computer readable memory storing computer executable instructions to perform the method steps of claim 1.
5. A machine-readable medium carrying instructions, which, when executed by a computer, perform the method steps of claim 1.
6. A non-transitory machine-readable medium carrying instructions, which, when executed by a computer, perform the method steps of claim 1.
7. A machine-readable storage medium carrying instructions, which, when executed by a computer, perform the method steps of claim 1.

Analysis:

Claim 1 defines a method in which transmitter power control is recited. Since it improves the functioning of the network, it is patentable subject-matter.

Claim 2 defines a computer program *per se* and is directed to non-patentable subject-matter, as a program is disembodied. The claim is defective under section 27(8) of the *Patent Act*.

Claims 3 and 4 are alternative ways for defining a computer product. Both are acceptable. Physical memory will be patentable subject-matter if the computer program stored on or in the memory would cause a computer running the program to execute a method considered to be patentable subject-matter. Since the method of claim 1 is patentable subject-matter, either of claim 3 or claim 4 would also be patentable subject-matter.

Claim 5, while seemingly equivalent to claims 3 and 4, could be problematic in that, broadly interpreted, a machine-readable medium could include a transitory

disembodied signal, such as a modulated wireless or optical waveform. Signals are considered forms of energy and are not patentable subject-matter [see section 17.03.04 of this manual]. Where an examiner, upon purposively construing claim 5 in view of the specification, finds that machine-readable medium encompasses a disembodied signal, the subject-matter would be defective under section 2 of the *Patent Act* and thus not be patentable subject-matter. In contrast, claim 3 uses the word “recorded”, and claim 4 uses the word “storing”. These terms are construed as referring to non-transitory physical media.

Claims 6 and 7 are similar to claim 5, but add the qualifiers “non-transitory” and “storage”, respectively. These terms restrict the claims to physical media, hence these claims fall into the category of a manufacture and are considered patentable subject-matter.

### **22.07.03 Means statements in claims**

A “means” statement defines some part of an invention in terms of a means suitable for achieving a result, rather than by explicitly defining those specific elements that would yield the result. Means statements are not a defect *per se*, provided the claim meets all the requirements of the *Patent Act* and *Patent Rules*.

In order for a means statement to be properly supported, the specification must disclose what means are contemplated by the inventor unless this would be obvious to the POSITA in view of their common general knowledge. Where it would not be clear to the POSITA which means fall within the scope of a means statement, the claim may be defective for lack of proper support and/or for indefiniteness. A means statement may refer to hardware or to software, and it should be clear in the context of the claim to what the means statement refers.

In the computer arts, the term “means” is often used in reference to a computer running software. Unless the context of the claim precludes this interpretation, a means statement that encompasses software may be understood to refer to physical memory storing software executable by a processor.

Many computer claims will define the computer in terms of means statements that set out what the computer will do. Where a means statement in a software or computer program product claim is understood to be a software means, it must be specified that there is a physical memory upon which the software is stored, so that it is not disembodied. This can be done in the claim itself or in the description, with due regard

being given to the need for the language of the claim to be clear, concise and unambiguous.

In some cases, it is possible that the means referred to in a means statement can be either hardware or software. In such cases, it may avoid ambiguities to state in the description that the means statement refers to either hardware or physical memory storing software, so that the means is physically embodied across the full scope of the claim.

## **22.08 Selected areas in the computer arts- REVISED**

This section addresses specific types of subject-matter for which particular attention, elaboration or clarification is considered appropriate.

In the following sections, the analyses focus primarily on the question of whether the claims are directed towards patentable subject-matter. In attempting to provide simplified examples, little consideration has been given to the question of enablement, or to other requirements of patentability.

### **22.08.01 Automated calculations**

#### Example 1:

Claim 1:

A method of determining when to administer a patient's next dose of drug X, comprising:

- a) providing to a computer the blood concentration level of drug X in a patient's bloodstream at a first point in time and a second point in time;
- b) causing the computer to extrapolate the drug concentration level in the patient's blood at various times based on the information provided using algorithm A; and
- c) causing the computer to calculate and display the patient's next required dose time based on the extrapolation.

The description states in the background of the invention that the current process to calculate a patient's drug dose time is to take information about drug levels at two different points in time, to manually calculate the extrapolated drug concentration level over time using algorithm A (which is well-known in the art), and to use this information to determine the patient's next dose time.

## Analysis:

There is no use of claim language indicating any of the elements to be optional, a preferred embodiment or one of a list of alternatives. Nor is there any indication in the specification that would lead to a determination of any claimed elements being non-essential. Therefore, all the elements identified in claim 1 are essential.

The claim is to a method for determining the time at which a dose of medication should next be administered, based on calculations performed by a computer.

The actual invention includes an algorithm which extrapolates the rate of change of a patient's drug concentration based on two prior measurements. The algorithm calculates and displays the time at which the next dose should be given.

Since there is no explicit recitation otherwise, the initial measurements are understood to be either retrieved from memory or input manually. Moreover, the output of the algorithm is displayed to a user. These are considered generic input and output means encompassed within the computer, so analysis of the algorithm and computer must be considered. Since execution of the algorithm cannot be said to improve the functioning of the computer, the actual invention consists of only the algorithm. As the algorithm is disembodied, it is prohibited under subsection 27(8) of the *Patent Act* and is not patentable subject-matter within section 2 of the *Patent Act*.

## Example 2:

Consider the same claim as in Example 1 above, except that the two blood concentration levels of drug X are explicitly measured, at the first and second times, using a sensor.

Claim 1: A method of determining when to administer a patient's next dose of drug X, comprising:

- a) measuring, using a sensor, the blood concentration level of drug X in a patient's bloodstream at a first point in time and a second point in time;
- b) causing the computer to extrapolate the drug concentration level in the patient's blood at various times based on the information provided using algorithm A; and
- c) causing the computer to calculate and display the patient's next required dose time based on the extrapolation.

Analysis:

There is no use of claim language indicating any of the elements to be optional, a preferred embodiment or one of a list of alternatives. Nor is there any indication in the record before the examiner that would lead to a determination of any claimed elements being non-essential. Therefore, all the elements identified in claim 1 are essential.

The claim is to a method for determining the time at which a dose of medication should next be administered, based on calculations performed by a computer.

the claim includes the physical step of acquiring measurements of the blood concentration level of drug X in a patient's bloodstream from a sensor. This provides a non-generic input of data to the computer and is considered to cooperate with the computer and algorithm to form an actual invention. Since the actual invention manifests a discernible physical effect, it is patentable subject-matter.

## **22.08.02 Communication security and encryption**

Example:

The application describes a communication method by which encrypted packets will become corrupted if not decrypted by the intended recipient within a time interval. The method, applied to known data encryption algorithms, is intended to thwart interception by imposing a limited time interval during which brute force decryption may be attempted.

Claim:

1. A method of reducing the risk of secure communications being intercepted and decrypted by an unintended recipient comprising steps of:
  - a) transmitting, by an originator, a series of encrypted data packets, each having a timestamp in the header;
  - b) upon receipt of the series of packets, the recipient system queries an internet time server to obtain the current time;
  - c) the recipient system initiates a decryption process using the current time as a component of the decryption key; wherein
  - d) if the elapsed time between said current time and the average packet header time exceeds a threshold interval, the decryption process will yield corrupted data.

Analysis:

There is no use of language indicating that any of the steps/elements are optional, a preferred embodiment or one of a list of alternatives. Therefore all the steps/elements are considered to be essential.

The actual invention improves the functionality of a communication system by ensuring data transmission is better protected from interception by unintended third parties. As the improved system resulting from performing the method manifests a discernible physical effect, the subject-matter of the claim is patentable subject-matter.

### **22.08.03 Measurement and control systems**

Computers are often recited in metrology systems as well as systems involving feedback of sensor information used to control a process.

#### Example 1:

An application claims a method of improving the yield of a chemical reactor used to make a particular substance.

Claim 1:

A computer-controlled method of producing substance X from ingredients Y and Z in a chemical reactor comprising:

- a) feeding ingredients Y and Z into the reactor at defined flow rates and temperatures controlled by pumps and pre-heaters under control of a computer;
- b) monitoring process variables a, b and c in the reactor using sensors;
- c) supplying the sensor readings to the computer;
- d) calculating the flow rates and pre-heater temperatures required to optimize the reactor yield according to equation 1; and
- e) supplying the calculated flow rates and pre-heater temperatures to the pumps and pre-heaters for controlling production of X.

Analysis:

There is no use of claim language indicating any of the elements to be optional, a preferred embodiment or one of a list of alternatives. Nor is there any indication in the specification that would lead to a determination of any claimed elements being non-essential. Since it has not been established otherwise, nor is it contrary to the language

used in the claim, all elements of claim 1 are essential.

The method includes using sensors to monitor process variables, calculating flow rates and temperatures based on said measurements, and controlling pumps and pre-heaters to achieve optimal calculated values and increase the yield of product X.

The actual invention involves the physical raw materials Y and Z, pumps and pre-heaters, along with the computer controlling their operation, and sensors for monitoring the specified process variables.

The sensors used to acquire measurement data, for use by the algorithm, have physical existence. Moreover, computer control of the physical inputs and use of the computational output to control physical elements extrinsic to the computer are further indications that The subject-matter of the claim is considered patentable subject-matter.

#### Example 2:

It is known that reduced battery voltage weakens the transmission power of wireless controllers for video game consoles. The application describes a predictive algorithm for prolonging the useable life of a wireless game console controller, by maintaining a log of previously-received commands in console memory, and issuing an extrapolated command if no signal is received during a specified interval.

Claim:

1. A method of controlling a game console using a weakly-transmitting game controller, consisting of:
  - a) Recording, in storage within a game console device, a recent history of commands received from the game controller;
  - b) Monitoring a time interval since the last command was received;
  - c) If the time interval exceeds a threshold value, determine a probable command by extrapolating from the stored history; and
  - d) Execute the determined command.

Analysis:

There is no use of language indicating that any of the steps/elements are optional, a

preferred embodiment or one of a list of alternatives. Therefore all the steps/elements are considered to be essential.

The actual invention includes detection that expected signals have not been received, and a subsequent prediction of what commands were likely to have been intended. The overall effect is an improvement in game system function, in that operation may be extended despite reduced controller battery power. Since the improved game system represents a discernible physical effect or change, the subject-matter of the claim is patentable subject-matter.

## **22.08.04 Commercial and financial operations**

Computers are often recited in claims of inventions related to commerce and financial operations.

### Example:

Claim 1:

A non-transitory computer-readable storage medium bearing instructions which, when executed, cause a processor to:

- a) generate return scenarios for each asset class of a plurality of asset classes based upon future scenarios of one or more economic factors;
- b) create a mapping from each financial product of an available set of financial products onto one or more asset classes of the plurality of asset classes by determining exposures of the available financial products to each asset class of the plurality of asset classes;
- c) simulate return scenarios for one or more portfolios of combinations of the financial products based upon the mappings; and
- d) determine an optimal feasible portfolio comprising one or more of the available financial products based upon the simulated return scenarios by maximizing an expected value of wealth at a future time with a defined risk tolerance using algorithm A.

Analysis:

There is no use of claim language indicating any of the elements to be optional, a preferred embodiment or one of a list of alternatives. Nor is there any indication in the specification that would lead to a determination of any claimed elements being non-

essential. Therefore, all the elements identified in claim 1 are essential.

The claimed software, when executed by a computer, simulates return scenarios for various combinations of asset classes and uses these results to determine an appropriate portfolio for a defined risk tolerance. All of the claimed subject matter is occurring within a generic computer, as no elements are recited beyond the computer and algorithm. It must therefore be determined whether the algorithm improves the functionality of the computer. Where the algorithm results in a functional improvement of the computer, the actual invention will consist of both the computer and algorithm.

In this example, it is not evident that forecasting future values of asset classes, nor determination of an optimal portfolio based on said forecast, effects an improvement in functionality of the computer. Moreover, it is common general knowledge to use computers for simulation and forecasting in the field of finance and commerce.

Hence the computer is not considered part of the single actual invention, which therefore consists solely of algorithm A. Since the actual invention is not physical, the subject-matter of the claim considered to be abstract and therefore not patentable subject-matter within section 2 of the *Patent Act*, and prohibited under subsection 27(8) of the *Patent Act*.

### **22.08.05 Graphical user interfaces (GUIs)**

A Graphical User Interface (GUI), as the name implies, refers to a type of interface for enabling a user to interact with a computer or a computer-based device. GUIs enable users to interact with computers via visual elements such as icons, buttons, menus, toolbars and other graphical screen elements.

The term GUI is considered by the Office to refer only to the arrangement of visual elements that will be displayed on a screen, and not to include any of the hardware or software components that may be required to generate the GUI or to make it functional. A GUI *per se* is regarded as a feature of solely intellectual or aesthetic significance that, when displayed on a screen, is subject to the practice set out in section 17.03.05 of this manual, and is not patentable subject-matter when claimed as such.

However, the presence of a GUI does not necessarily exclude a claim from being directed to patentable subject-matter. To be patentable, the GUI must cooperate with elements as part of an actual invention that satisfies the patentability criteria (relates to the manual or productive arts, and either has physical existence or manifests a

discernible physical effect or change).

### Example 1:

The application proposes a method for getting a computer to perform a task based on inputs supplied via a graphical user interface (GUI). Conventional GUIs do not take into account that users' devices have different display capabilities, often requiring inconvenient scrolling by the user.

#### Claim 1:

A method of implementing a GUI enabling selection and ranking of images for display on a user device, comprising:

- a) Determining, by a host computer, from the user device on which the GUI is to be implemented, the particular type and orientation of the user device;
- b) determining, by the host computer, a display aspect ratio based on the particular type and orientation of the user device;
- c) randomly retrieving, by the host computer, a number of images from a repository, wherein the number retrieved is determined by the host computer based on the determined display aspect ratio;
- d) determining, by the host computer, an optimal display arrangement of the randomly retrieved images and the other elements of the GUI, based on the determined display aspect ratio;
- e) displaying, on the user device, the GUI, according to the determined optimal arrangement, wherein the GUI includes elements permitting a user to select and rank their preferred images from those displayed.

#### Analysis:

There is no use of claim language indicating any of the elements to be optional, a preferred embodiment or one of a list of alternatives. Nor is there any indication in the specification that would lead to a determination of any claimed elements being non-essential. Therefore, all the elements identified in claim 1 are essential.

The actual invention includes the host computer and software, as well as the user device. Steps a) to e) are all performed under the control of the host computer providing the GUI. The "optimal display arrangement" determined in step d and implemented in step e has the effect of improving the computer system, by facilitating user interaction with all the displayed images and GUI elements without needing to scroll in any direction, regardless of the device being used. Execution of the software

results in a functional improvement to the user device, hence the subject-matter of claim 1 is considered to be patentable subject-matter.

### Example 2:

The application proposes a method for interactively estimating the cost of installing hardwood floors. The GUI allows a user to see the effect that selecting different options will have on the estimated price of their project, and to accept the proposal, thereby initiating a supplier work order.

#### Claim 1:

A method of providing an estimate for hardwood floor installation, comprising:

- a) presentation of a GUI having controls by which room dimensions may be specified, and a drop-down menu listing available species of wood;
- b) upon selection of a wood species, displaying an additional element in the GUI permitting user selection from a list of available board widths;
- c) using stored price data to compute and display the estimated cost to install the selected flooring over the specified area; and
- d) accepting an order for the installation of the hardwood flooring.

#### Analysis:

There is no use of claim language indicating any of the elements to be optional, a preferred embodiment or one of a list of alternatives. Nor is there any indication in the specification that would lead to a determination of any claimed elements being non-essential. Therefore, all the elements identified in claim 1 are essential.

Steps a) to d) represent generic input, output and processing steps of a conventional computer. For example, presenting a drop-down menu (and subsequent menus dependent upon the user's selection) is a conventional way of providing input means. All the essential elements correspond to the processing of data according to the rules for presenting options to a customer and estimating costs for the installation of hardwood floors.

The discernible effect of the claimed method is that an estimate has been calculated and the customer's wishes have been made known in the form of an order. Such effects are not physical, but of intellectual significance only.

Since the software does not improve the functioning of the computer, the computer and the GUI implemented in software do not cooperate to produce a physical effect, and thus do not form a single actual invention. The actual invention therefore includes only the algorithm implemented in software, hence the subject-matter of the claim is prohibited under subsection 27(8) of the Patent Act and is not patentable subject-matter within section 2 of the *Patent Act*.

## **22.08.06 Data structures/databases**

A data structure is a format for organizing and storing a collection of related data items to suit a specific purpose. A particular data structure may enable or facilitate a specific set of operations to be performed on the data items easily and efficiently, for example to improve the performance of computer programs and minimize the consumption of computer resources. Examples of data structures are arrays, records, linked lists, stacks, trees and bodies of training data.

A data structure *per se* is considered to be an abstract idea or plan for organizing data items, and excludes the physical medium upon which the data structure is to be stored. A data structure is therefore disembodied and is not an invention within the meaning of section 2 of the *Patent Act* [see section 17.03.08 of this manual]. For a data structure to have an impact on the patentability of a claimed invention, it must cooperate with other elements in the claim to form an actual invention having physical existence or manifesting a discernible physical effect or change.

In general terms, a database refers to a collection of information organized so that it can be stored, searched and retrieved easily. Computer databases can be implemented in many forms, the simplest being to store information in a text file in a specific format (a data structure) to enable the information to be subsequently retrieved. Similar to a data structure, a database *per se* is construed to be disembodied and a mere collection of information, but together with other elements in the claim, could form an actual invention having physical existence or manifesting a discernible physical effect or change.

### Example 1:

What is described is a structure for storing aggregated inventory data for a group of warehouses, intended to facilitate order fulfilment for groups of items commonly ordered together. Periodic stock reallocation is described as a well-known inventory management strategy, but that doing so is inefficient and cumbersome for large

databases. The disclosed data structure enables such operations by dynamically establishing and revising associations between articles frequently ordered together.

Claims:

1. A method of inventory management comprising steps of:
  - a) creating records, hosted on a network server, representing articles stored in inventory and their respective storage locations; and
  - b) creating a data structure consisting of associations between articles frequently ordered together in a single transaction.
  
2. The method of claim 1 further comprising steps of:
  - a) performing a query on the network server to identify, for all storage locations, articles available in insufficient quantities to permit immediate fulfilment of a typical multi-article order.
  - b) generating a report summarizing inventory reallocation recommendations.
  
3. A method of inventory management and order fulfilment comprising steps of:
  - a) performing the method of claim 2 daily;
  - b) reallocating inventory between storage locations according to the recommendations contained in the report; and
  - c) fulfilling typical multi-article orders from customers by sending articles from storage locations having stock of all requested inventory items.

Analysis:

There is no use of language in any of claims 1-3 indicating that any of the steps are optional, a preferred embodiment or one of a list of alternatives. Therefore all the steps and associated elements are considered to be essential.

For claim 1: The actual invention consists of storing records and creating associations between them, thereby generating the data structure. This arrangement of information does not result in a functional improvement to the network server, so the server does not form part of the actual invention. As the actual invention produces no discernible physical effect or change, the subject-matter of the claim is excluded under subsection 27(8) of the *Patent Act* and is not patentable subject-matter within section 2 of the *Patent Act*.

For claim 2: The actual invention includes execution of a query and generation of a report. Since such a report is considered a generic output, the network server does not form part of the actual invention. Again the actual invention produces no discernible physical effect or change, so the subject-matter of the claim is excluded under subsection 27(8) of the *Patent Act* and is not patentable subject-matter within section 2 of the *Patent Act*.

For claim 3: The actual invention is the use of the data structure to physically reallocate articles to more readily fulfil typical multi-article orders. Aside from this discernible physical effect, use of the associations between records in the data structure enables more efficient fulfilment of common orders by dynamic, automatic selection of the most appropriate storage locations. Each of these factors indicates the subject-matter of the claim is patentable subject-matter.

### **22.08.07 Computerized games**

For a general consideration of the patentability of games, see section 17.03.09 of this manual.

When a game is implemented with a computer, such as a video poker game, it may be the case that the actual invention relates only to rules, instructions or a display of information, with the computer elements merely facilitating gameplay rather than improving the functionality of the computer. Consequently, the actual invention lacks physicality and hence the subject-matter is excluded under subsection 27(8) of the *Patent Act* and is not patentable subject-matter within section 2 of the *Patent Act*.<sup>10</sup>

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<sup>1</sup> An example of the application of this principle is found in *Schlumberger v Canada (Commissioner of Patents)*, [1982] 1 F.C. 845 (C.A.). In that case, the court concluded that, although computers were necessary for the invention to be put into practice, the computer did not form part of “what has been discovered” and thus was not relevant in determining whether the claimed invention was patentable subject-matter.

In [Canada \(Attorney General\) v Amazon.com, Inc, 2011 FCA 328](#), paragraph 44, the court noted the importance for the Commissioner to be “alive to the possibility that a patent claim may be expressed in language that is deliberately or inadvertently deceptive.” The court then cited the *Schlumberger* decision as an example of a situation where “what appears on its face to be a claim for an “art” or a “process” may, on a proper construction, be a claim for a mathematical

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formula and therefore not patentable subject matter.” In paragraph 69, the court further noted that the “claims in Schlumberger were not saved by the fact that they contemplated the use of a physical tool, a computer, to give the novel mathematical formula a practical application.”

2 Schlumberger v Canada (Commissioner of Patents), [1982] 1 F.C. 845 (FCA); [Canada \(Attorney General\) v Amazon.com, Inc, 2011 FCA 328](#), paragraph 69

3 [Baker Petrolite Corp. v. Canwell Enviro-Industries Ltd. 2002 FCA 158](#) at paragraph 35

4 [Baker Petrolite Corp. v. Canwell Enviro-Industries Ltd. 2002 FCA 158](#) at paragraph 42

5 [Bauer Hockey Corp. v. Easton Sports Canada Inc. 2010 FC 361](#) at paragraphs 216 to 220

6 [AstraZeneca Canada Inc. v. Apotex Inc., 2017 SCC 36](#) at paragraph 56, citing *Re Application of Abitibi Co.* (1982), 62 C.P.R. (2d) 81, (Patent Appeal Board and Commissioner of Patents), at p. 91

7 *Re Application No. 003,389 of N.V. Organon* [(1973) [C.D. 144](#), 15 C.P.R. (2<sup>nd</sup>), 253 (P.A.B)] at page 258

8 *Re Application for Patent Containing Claims that Read on Mental Steps* [(1972), 23 C.P.R. (2<sup>nd</sup>), 93] ; *Re Application 269,230 of Itek Corporation* (1981) [C.D. 896](#)

9 See, e.g., the comments in *Re Application 2,349,479 of U-Haul International Inc.* (2010) [C.D. 1298](#) at paragraphs [37] to [42]

10 See for example *Re Application 2,237,438 of IGT* (2013) C.D. 1346 (P.A.B.) at paragraphs 47-53.