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Examination Guidelines for Patent Applications of Computer-Implemented Inventions

This text is an integral part of the Examination Guidelines adopted by the BRPTO for steering the technical examination of patent applications addressing computer-implemented inventions, in compliance with the Brazilian Patent Statute (Statute #9,279/96) as well as the procedures contained in current administrative acts.

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1 - General Orientations

[001] The purpose of this document is to review and update the Examination Guidelines for Patent Applications of Computer-Implemented Inventions, established by Rule BRPTO/PR #158, from November 28, 2016.

[002] Patent Application addressing computer-implemented inventions is based on a process, and therefore fits only in the nature of the patents for invention. According to Article 9 of the Brazilian Patent Statute, a Patent Application for Utility Model must refer to "an object of practical use that presents a new shape or arrangement…", which is not the case for computer-implemented inventions.

[003] Like any patent application for invention, applications involving computer-implemented creations must comply with the legal requirements, more specifically those addressed in the Brazilian Patent Statute, notably: novelty, non-obviousness, and industrial application. The Examination Guidelines for Patent Applications – Block I and Block II – should be observed for general matters. This Guidelines document addresses matters related to computer-implemented inventions.

[004] When examining a patent for computer-implemented inventions, it is irrelevant whether such process is performed on a general-purpose computer (personal computer) or for a specific use (Programmable Interface Controller – PIC, Field Programmable Gate Array – FPGA, etc.), and whether said computer is on a local network, remote network, or cloud.

[005] When examining a patent application for computer-implemented inventions, it is irrelevant whether the process is carried out in an Internet of Things (IoT) environment.

[006] The concepts of algorithm and embedded software are frequently found in patent applications for computer-implemented creations and may give rise to doubts on whether the creation fits into items of Article 10 of the Brazilian Patent Statute. For this reason, definitions of these terms are given below.

[007] An algorithm is considered a sequence of logical steps to be followed to solve a certain problem. According to such definition, an algorithm is comprised of a method or process and therefore must be claimed as such. To be considered as an invention, the method or process must not fall under the provisions of Article 10 of the Brazilian Patent Statute.

[008] Embedded software is considered as a computer program determining the behavior of a dedicated device. In this context, both the functionality associated with the behavior of said device is patentable in the form of a process, as well as the device dedicated to said functionality is patentable in the form of a product. However, the computer program itself is not patentable since it is not considered an invention. The fact that a creation is embedded is not enough to be considered an invention. To this end, the creation must not fall under the restrictions listed in Article 10 of the Brazilian Patent Statute.

2 - Article 10[1] of The Brazilian Patent Statute

[009] Cases referring to items of Article 10 that may involve computer-implemented creations will be analyzed as follows.

2.1 - Item I - Mathematical Methods

[010] Item I of Article 10 of the Brazilian Patent Statute determines that mathematical methods, as methods that solve a purely mathematical problem, i.e., dissociated from any employment that solves a technical problem, are not considered inventions. The fact that a mathematical method is implemented by a computer program is irrelevant for the framing of such method under said item.

[1] See General Guideline – Block II, Chapter I.

Example: A specific numerical integration method is not deemed to constitute an invention as it solves a purely mathematical problem.

[011] A method involving a mathematical concept is not immediately a subject matter excluded by item I of Article 10 of the Brazilian Patent Statute. If a process employs the mathematical concept in order to obtain a technical solution to a technical problem, such process might be deemed to constitute an invention, provided that the resulting effects are technical rather than purely mathematical. A computer-implemented method involving mathematical concepts is deemed to constitute an invention when such a method is intrinsically linked to an employment producing a technical effect.

Example: A motor control method that uses a numerical integration technique in a manner that results in faster operating speed or better stability might be deemed to constitute an invention, as it is applied to a technical problem, produces a technical effect, and consequently is not classified as a mathematical method.

[012] Creations involving mathematical concepts may be deemed to constitute inventions when applied to solving practical technical problems and dealing with information associated with physical magnitudes or abstract data, with real or virtual results.

Example of manipulation of physical magnitudes: a method for filtering seismic data that allows for noise reduction, and control method for the dynamic behavior of a specific vehicle or robot. In this case, the physical magnitudes are, respectively, seismic data and data measured by motion sensors.

Example of manipulation of abstract data: a method for compressing data, and a method of data encryption.

[013] Artificial intelligence (AI) techniques comprising machine learning and deep learning, among others, when applied for solving technical problems may be deemed to constitute an invention.

2.2 - Item III – Commercial, Accounting, Financial, Educational, Publishing, Lottery, or Fiscal Nature Methods

[014] Item III of Article 10 of the Brazilian Patent Statute stipulates that schemes, plans, principles, or methods that are commercial, accounting, financial, educational, publishing, lottery or fiscal are not deemed to constitute inventions. The fact that said mathematical methods are implemented by computer is irrelevant for framing such method under said item.

Example: business feasibility analyses, market analyses, auctions, consortium, incentive programs, point of sale methods (POS), fund transfers, tax or insurance processing, proprietary analyses, financial analyses, auditing methods, investment planning, retirement plans, health insurance schemes, on-line purchase methods, air ticket sales methods over the Internet, among others, are not considered inventions.

[015] The items contained in Item III of Article 10 of the Brazilian Patent Statute, even when using technical means or being of practical use, are not considered inventions.

2.3 - Item V - Computer Program per se

[016] The computer program per se, as addressed by Item V of Article 10 of the Brazilian Patent Statute, is understood as an organized set of instructions written in natural or coded language regarding the literal elements of creation, such as the source code. The computer program per se is not deemed to constitute an invention and is consequently non-patentable, as it is a mere expression of a technical solution, being intrinsically dependent on the programming language. The protection regime appropriate for a computer program is the one conferred to literary works by the legislation of copyright and related rights, as indicated in Statute #9,609/98.

[017] Item V of Article 10 of the Brazilian Patent Statute, when mentioning that “the computer program per se” is not deemed to constitute an invention, merely separates, and distinguishes the protection systems when addressing an invention involving computer programs. Creations involving a computer program have two

forms of protection: copyright for the computer program, and patent for the processes or products solving technical problems, attaining a technical effect that is not exclusively related to alterations in the code.

[018] The terms “instruction set” and “expression of an instruction set” are not synonymous. An instruction set defines a method, whereas the expression of an instruction set defines a particular way by which said method manifests.

[019] The expression of a set of instructions in a language, object code, source code or source code structure is not considered an invention, even if its execution provides technical effects.

Example: the source code of a program grating the benefit of faster speed, smaller size (whether in the source code or the space occupied in memory), modularity, etc. are not deemed to constitute an invention despite the technical effects.

[020] A computer-implemented creation with industrial application may be deemed to constitute an invention if it solves a technical problem and attains technical effects which are not only related to the manner this computer program is written.

[021] When assessing the technical effect, consideration is given to the effects attained by following all the steps developed by the computer-implemented invention. Non-exhaustive examples of technical effects attained by computer-implemented inventions are: optimization of run times, hardware resources, memory use, and database access; fine-tuning of the user interface as a feature that is not only aesthetic; file management, and data switching. It is important to stress that in case the technical effects arise from alterations to the computer program code rather than the method, the creation is not deemed to constitute an invention.

[022] Mere interaction between the computer program and the hardware does not ensure that the creation implemented by such a program shall be deemed an invention. It is necessary to discern a technical effect beyond this interaction, regardless of whether such technical effect takes place inside or outside the processing unit. In addition, the technical effect of an invention must be intentional and directly derived from the proposed invention.

Example: computer-implemented creations directly intended to cause a reduction in memory access time, a better control of a robot’s element, or a better coding of a radio signal received are suitable for obtaining patent protection.

[023] Although modifications in the manner the computer program is written may give rise to indirect physical effects, such as variations in electric current, this is not sufficient to confer a technical nature to a computer-implemented creation.

2.4 - Item VI - Presentation of Information

[024] Item VI of Article 10 of the Brazilian Patent Statute establishes that the presentation of information is not deemed to constitute an invention. Thus, any computer-implemented creation characterized solely by its informational content, such as music, text, or images, is deemed to constitute presentation of information and is not considered an invention.

Example: graphic interface wherein the icons are presented on the screen with no functionality is not considered an invention.

[025] Creations which provide technical effects with functional aspects, in addition to merely presenting information, may be considered invention.

Example: graphic interface associating personal annotations with segments of an electronic document through XML tags may constitute a technical solution that is patentable.

[026] When a creation that generates coded information has a technical character, it might be deemed to constitute an invention. If the encoded information has a functional and/or structural relation to a process or

product, these can also be deemed to constitute an invention, since the claimed subject matter refers to the process or to the device presenting information relating to the technical character, and not just to the presentation of information.

Example: a data recording process with specific coding on a physical support (HD, CD, DVD, etc.), and a recording process using volumetric support characteristics, or a recording device using such processes might be deemed to constitute an invention for having functional and structural relationship with the recording support.

[027] A physical support characterized solely by its informational content violates Item VI of Article 10 of the Brazilian Patent Statute.

Example: physical support characterized by having a song recorded therein is not considered an invention.

[028] Data structures, classes, objects, and database structures, including those defined by tables and the relationship between tables, are deemed presentation of information and, therefore, are not considered invention according to item VI of Article 10 of the Brazilian Patent Statute. However, a creation which uses or manages data structures, classes, objects, or database structures may be deemed to constitute an invention.

2.5 - Item VIII - Operative, therapeutic, or diagnostic methods for application in human or animal bodies

[029] Item VIII of Article 10 of the Brazilian Patent Statute determines that operative methods and techniques, as well as therapeutic or diagnostic methods, for application to human or animal bodies, are not deemed to constitute an invention. The fact that such a method is implemented in a computer is irrelevant for framing such method under said item.

[030] If the proposed method has no application in the human or animal body, it may be considered invention even if computer implemented.

Example: a method for processing electrocardiograph signals that optimizes calculation of non-stationary signals, allowing parameters to be obtained which may assist the physician in diagnosing pathologies, might be deemed an invention.

3 - Patentability Requirements

3.1 - Industrial Application[2]

[031] Computer-implemented inventions may be claimed as processes and/or products. The fact that a process is implemented by a computer program does not undermine the possibility of its industrial application. Consequently, the same rules are applied to the assessment of industrial application in any patent for invention.

3.2 - Novelty[3]

[032] For the purposes of examining novelty in patent applications of computer-implemented inventions, the same rules are applied as for the assessment of novelty in any patent for invention.

[2] See General Guidelines – Block II, Chapter II.
[3] See General Guidelines – Block II, Chapter IV.

3.3 - Non-obviousness[4]

[033] A computer-implemented invention for a product or process formerly run by specific hardware does not present non-obviousness when the outcomes are merely equivalent.

[034] A computer-implemented invention is obvious if it refers to the mere automation of a known manual process. Mere automation is understood as a direct link between the steps of the manual and the automated processes.

Example: Consider that a method characterized by mixing compound X with compound Y is known in the prior art. A claim that claims "a method implemented by a robot characterized in that mixes compound X with compound Y" cannot be protected, since the claimed method is considered obvious, as it constitutes a mere automation of a method that is already known. However, the robot's operation method and the way the elements that make up the robot must interact in order to implement said mixture are considered non-obvious. In this case, the protection given to such method affects the operability of said robot and not exactly the mixing method known in the prior art, that is, it is not a matter of protecting a mere automation, since the robot's operability is considered non-obvious in relation to the state of the art.

[035] For the purpose of non-obviousness, the technical effects reached by the computer-implemented invention must be considered. Some of the technical effects achieved result from the features of the used computer and do not result from the computer-implemented invention, such as the processing speed, ability to process large amounts of data, uniformity and accuracy of results. Thus, it is necessary to distinguish the technical effects achieved by the computer-implemented invention from the technical effects inherent to the computer system used. The creation must demonstrate that the technical effects are achieved by the computer-implemented invention.

4 - Structure of the Patent Application[5]

4.1 - Title

[036] The title must be concise, clear, and precise, identifying the subject matter of the application, considering the categories of claims. Expressions or words such as: software, computer program, computer program product, algorithm, business method, therapeutic method, financial method, are not accepted, as they define objects that fall directly under the restrictions provided for in Article 10 of the Brazilian Patent Statute.

4.2 - Specification

[037] The description of the invention must be clear and sufficient so that a person skilled in the art can reproduce the invention. Small parts of the source code can be presented if they are useful for understanding the invention.

[038] Except when there are equivalents in Portuguese for technical terms or abbreviations in foreign language that are commonly used by a person skilled in the art, they do not need to be translated.

Examples: Bitcoin, bitmap, boot, buffer, byte, cache, CDMA, data mining, desktop, drivers, firewall, hash, host, HTML, login, hub, mouse, online, phishing, pixel, plug-in, prompt, QPSK, RAM, among others.

[039] It is suggested that terms of common use be used in Portuguese.

[4] See General Guidelines – Block II, Chapter V.
[5] See General Guidelines – Block I.

Examples: *Navegador* (browser), *barramento* (bus), *dispositivo* (device), *banco de dados* (database), *disco rígido* (hard disk), *multimídia* (multimedia), *rede* (network), *senha* (password), *roteador* (router), among others.

4.3 - Drawings

[040] Drawings are optional and may be submitted for a better understanding of the invention. The presentation of drawings showing an overview of the creation in physical terms, flowcharts with main functionalities of the process or product, flowcharts with data structures and, if the invention contemplates user interfaces, main presentation screens, is encouraged. Indicative terms or key words may appear in the drawings when relevant.

4.4 - Claims

[041] Computer-implemented inventions may be claimed as a process (method) or product (system, apparatus, device, or equipment associated with the process). Claims of categories which fall directly under the restrictions provided for in Article 10 of the Brazilian Patent Statute are not accepted.

Example: Claims of categories such as software, computer program, computer program product, algorithm, application, code, among others, are not accepted.

[042] Claims should not contain source code excerpts in order to avoid dubious interpretation and, as a result, lack of clarity, according to item V of Article 10 of the Brazilian Patent Statute.

[043] Claims involving subject matter which falls under Article 10 are not exempt from falling under such article by describing that the desired function or results are achieved by using a computer, a computer component (such as a processor), through the Internet, in the form of a product defined as means plus functions, or the like.

Example: A device for solving a differential equation characterized only by means of performing the Runge Kutta method is not considered an invention since its contribution lies in the mathematical method (item I of Article 10 of the Brazilian Patent Statute).

[044] A product claim must address the technical means, or the physical components used. In turn, a process claim must address a set of steps. Otherwise, claims will lack clarity in terms of its type.

[045] An independent claim may reference one or more claims if such a structure does not result in lack of clarity of the claimed subject matter.

Example: device characterized by comprising means to perform a method as defined in any of claims 1 to 10; system for detecting a signal comprising means for implementing the method defined in claim 1.

4.4.1 - Process Claims

[046] Process claims must be written as a sequence of steps describing their technical functionality. Such claims must be written as a method or as a process, which are considered synonyms.

Example: Method for automatic clutch control characterized by the steps of measuring the motor speed, generating a slip reference signal, comparing the motor speed with the input speed, and controlling the clutch drive.

[047] Steps of process claims should not start with the expression “means for”, as such expression might be interpreted as “device for”, resulting in lack of clarity in terms of the claim type.

4.4.2 - Product Claims

[048] Product claims must be written in terms of their physical components (devices, memories, etc.) or in

terms of means plus functions.

[049] The expression "means plus functions" is used to refer to constructions of products containing means or devices to perform functions without inserting a definition of specific physical characteristics of such means or devices. In this case, it must be clear to the person skilled in the art which means are to be used to implement the claimed invention.

Example: Device for encoding, encoder for encoding, and means for encoding.

[050] Terms such as "means for" in product claims should not be used when they result in lack of clarity and definition. In such cases, the claim must technically specify the means claimed instead of using the expression "means for".

[051] When there is no grounding in the specification, the use of the expression “means for” is forbidden, as it unduly expands the scope of protection. When the means are specific for implementing said functionality, this must be clearly specified and claimed.

Example: the expression “means for storing data” is not accepted when the specification specifies that the invention requires the use of a “DRAM memory” in order to achieve the desired results, but there is no grounding for the invention to function properly with any type of memory.

[052] The system claim is a category of product claim. Usually, a system claim refers to different pieces of equipment working together and must, whenever possible, explain the relationship among such equipment and their functions.

[053] When a system claim cannot be defined in structural terms, it can be described in terms “of means plus functions”.

Example: System for automatic control of mechanical gear shifting transmission comprising a fuel choke and a mechanical gear shifting transmission characterized by comprising: i) a device for detecting the effective gear ratio used during each ignition operation, and ii) a memory for storing the effective gear ratio used during each ignition operation.

[054] The physical support claim is a category of product claim.

Examples: recording medium, memory, signal, wave, carrier, non-transitory computer readable medium, among others.

[055] Claims relating to a physical support containing a set of instructions to perform a method claimed in the previous claim are accepted, provided that said method is considered an invention. In this case, the physical support is not considered as merely presenting information or a computer program.

Example: computer-readable memory characterized by containing a set of instructions that, when executed, perform the method with steps A, B, and C.

[056] A claim for a physical support containing a mathematical, financial, commercial, accounting, educational, advertising, lottery, inspection, therapeutic, or diagnostic method, as well as the computer program that implements it, is not considered an invention, since the method falls under the restrictions of Article 10 of the Brazilian Patent Statute.

[057] In case the invention addresses the physical support for recording or transporting data (CD, DVD, Blu-ray, flash drive, signal, database, etc.) itself, the claims must present its physical features or the way the data is written or organized, and not the information content recorded therein.

[058] A physical support claim defined by a computer program is not considered an invention as its content falls under Article 10 of the Brazilian Patent Statute. Physical support claims defined by expressions that can be interpreted as synonyms for the term “computer program”, such as software, firmware, and application, are also not accepted.

Example: Claims such as the following are not accepted: “Recording support containing a computer program characterized by performing steps A, B, and C”, “Computer readable memory containing recorded software

characterized in that, the software implements the method with steps A and B", or "Computer readable medium characterized by a computer program".

[059] In a claim, the expressions "recording means", "storage means", among others, are not accepted when the term "means" can be interpreted both as a method (set of steps) and as a physical device, making the claim ambiguous and therefore lacking clarity and precision.

4.5 - Abstract

[060] The abstract must clearly show that the claimed subject matter is an invention implemented by a computer and not the computer program per se.

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