



**FEDERAL PUBLIC SERVICE  
MINISTRY OF DEVELOPMENT, INDUSTRY, TRADE AND SERVICES  
BRAZILIAN NATIONAL INSTITUTE OF INDUSTRIAL PROPERTY  
DIRECTORATE OF PATENTS, COMPUTER PROGRAMS AND TOPOGRAPHIES OF INTEGRATED CIRCUITS**

March 31, 2024

**Note C. 9199  
Standing Committee on the Law of Patents<sup>1</sup>  
Brazil**

**Compilation of laws and practices relating to the patentability of artificial intelligence (AI)-  
related inventions (update of document SCP/30/5)**

**Inputs for the preparation of documents to the 36<sup>th</sup> Session of the  
Standing Committee on the Law of Patents**

The Brazilian National Institute of Industrial Property (INPI) acknowledges the increasing importance of examining patent applications related to artificial intelligence (AI) and has been making efforts since 2020 to update the Computer Implemented Inventions (CII) Guidelines (Resolution INPI/PR No. 411, of 2020) and establish procedures for examining AI related patent applications.

The most recent changes in our CII Guidelines established that artificial intelligence techniques, including machine learning and deep learning tools, among others, when applied to technical problems, may be considered inventions.

Following a project developed within the context of IP BRICS, which sought to establish a parallel between the examination practices of member countries, we found out the need to update our set of infralegal regulations to provide greater legal certainty for both patent examiners and users of the IP system<sup>2</sup>.

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<sup>1</sup> The answers to this Note have been provided on behalf of Brazil by Brazilian National Institute of Industrial Property (INPI).

<sup>2</sup> IP BRICS. "Final Report IP BRICS Offices"  
<http://www.ipbrics.net/secondpage/project/Patent%20Processes%20and%20Procedure%20-%20AI%20Study%20Report.pdf>



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As a result, INPI established a working group to address and consolidate the challenges identified during the IP BRICS project and translate them into updates to be incorporated into our set of regulations. The work of this group was divided into three distinct stages, each with independent reports, covering the following themes: eligibility, sufficiency of disclosure, and inventive step.

The group have reached a conclusion on eligibility and we expect to be publish the results in the first semester of this year. Following the documents of the World Intellectual Property Organization (WIPO) [WIPO. “AI Inventions”. IPO Conversation IP and Frontier Technologies], INPI considers it appropriate to divide inventions related to artificial intelligence into four different groups:

- AI Models or Algorithms: Inventions on core AI technology itself.
- AI-Based Inventions: Inventions in which AI is part of the inventive concept.
- AI-Assisted Inventions: Inventions made using AI as a tool in the invention process.
- AI-Generated Inventions: Inventions made autonomously by AI, without human input.

Eligibility for patentability is determined by whether the application subject matter falls into exclusions established in article 10 of Law No. 9,279 of 1996 (Industrial Property Law — IP Law). According to Resolution No. 169, of 2016, Block II of INPI's Patent Examination Guidelines, the Examiner must verify whether the claimed subject matter complies with articles 10 and 18 of the IP Law (exclusions of patentability) before evaluating the patentability requirements.

The provisions of article 10 of the IP Law enumerate the subject matters not considered inventions or utility models, such as scientific theories, computer programs *per se*, mathematical methods, abstract concepts, business plans.

Two areas that often raise concerns in AI related patent applications are computer programs and mathematical methods, because AI systems are mainly implemented through computer programs; and the intrinsic relationship between mathematics and artificial intelligence, where mathematics provides the basis for modelling complex systems, using mathematical methods to learn, process and analyze data.



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The Examination Guidelines states that the **invention should address technical problems, provides a solution to these problems, and demonstrates a technical effect**. The technical nature of the problem and the proposed solution must be evidenced. The Examination Guidelines and CII Guidelines establish that methods using mathematical concepts may be considered inventions **if it is applied in a technical field to solve a technical problem instead of a mathematical one and presents a technical effect**. Regarding inventions involving artificial intelligence, it is emphasized that artificial intelligence techniques, including machine learning and deep learning tools, when applied to solving technical problems, may be considered inventions. In other words, **AI models or algorithms when taken detached from applications in a specific technical field, is considered a mathematical method, AI models or algorithms**. Although IA core techniques *per se* is considered as a mathematical method, it is possible to protect by the patent system inventions related to changes in the AI core techniques, such as alterations to the training process or the development of a new neural network architecture, when such changes are justified considering the specific technical issue being addressed, in addition to being incorporated into a technical field and generating a technical effect.

In AI systems, a fundamental step is training, which involves an iterative process of adjusting system parameters to enhance data representation. Training is considered a mathematical optimization problem where the best possible solution is sought, usually the one that optimizes (maximizes or minimizes) a given objective function, subject to a set of constraints, and then the training method alone is considered a mathematical method. Another important aspect, especially for systems employing neural network techniques, is the architecture of an AI system, since it dictates its functionality, adaptability, and performance across diverse applications, ensuring optimal utilization of resources and facilitating effective problem-solving. Neural network architectures, when viewed alone, are considered mathematical methods.

Finally, implementing an artificial intelligence system through hardware is a viable and increasingly common approach. However, it is significant to note that merely mentioning a possible hardware implementation is not sufficient to qualify a creation as a patentable invention. In order for the subject matter to be considered a patentable invention, it is essential to present the specific characteristics and details on how this implementation is carried out.



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Despite the conclusion presented, it is necessary to further develop the understanding, as in the specific case, it was pointed out the difficulty in categorizing the object that does not meet the above criteria as a mathematical method.

**IA assisted inventions and IA generated inventions.** This type of invention should be treated like any other, regardless of whether AI was used to generate the invention. Therefore, there are no special considerations identified for the analysis of Article 10 of the IP Law for a patent application of this type of invention. Nonetheless, it remains essential that all requirements for patent grant be fully met.

In respect of **IA generated inventions, in which Inventions are made autonomously by AI, without human input**, the inventorship case was addressed by the SCP/35/7, but it is worth highlighting for the new legislative proposal (Bill No. 303, of 2024) presented to Brazilian National Congress to amend the Article 6 of IP Law:

*Art. 6 The author of an invention or of a utility model shall be afforded the right to obtain a patent securing to him the property therein, under the term set out by this law.*

*(1) In the absence of proof to the contrary, the applicant is presumed to have the right to obtain a patent.*

*(2) A patent may be applied for by the author, his heirs or successors, by the assignee or by whoever the law or a work or service contract determines to be the owner.*

*(3) When an invention or utility model is created jointly by two or more persons, the patent may be applied for by all or any one of them, by naming and qualifying the others to guarantee their respective rights.*

*(4) The author shall be named and qualified, but may request his authorship not to be divulged.*

To include the new item:

***(5) In the case of inventions generated autonomously by an artificial intelligence system, the patent may be applied for in the name of the artificial intelligence system that created the invention, which is considered the inventor and holder of the rights inherent to the invention.***



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This proposal arises in response to the widely known DABUS case, which entered in PCT National Phase in Brazil, but was rejected under the interpretation of Article 6 of the IP Law, where inventor have to be a “natural person”. The proposal has not yet been submitted to analysis.

**AI-based inventions.** In this type of invention, artificial intelligence is part of the inventive concept, embedded within a technical framework. While AI models or algorithms can be considered as mathematical methods and should be handled as such, it is necessary to assess whether methods incorporating artificial intelligence fall into the excluded matter of Article 10 of the IP Law. Additionally, it is necessary to assess whether the utilization of artificial intelligence contributes to the resolution of a technical problem and results in a technical effect.

Another point of divergence that impacts the analysis if the claimed subject matter falls within the exclusions list of Article 10 of the IP Law are whether or when the artificial intelligence should be considered a technical field. This is because AI intersects with fields easily identified as technical, such as computer vision, natural language processing, and speech recognition. However, it also brings new problems to be solved, especially those related to AI Acts being enacted worldwide. These problems include issues such as transparency, explainability, robustness, security, accountability, among others. In this context, considering the interpretation adopted by INPI, that the core techniques of AI should be treated as mathematical methods. Understanding when such challenges are deemed technical or not is essential in determining the possibility of subject matter protection by the patent system; whether the definition of the technical field and the technical problem must be present in the claim or if it suffices to be described in the descriptive report.

In the second semester, two more reports are planned: one on the analysis of sufficiency of disclosure and another on the inventive step. The report on descriptive sufficiency will address crucial issues, such as determining the level of detail required in patent applications involving artificial intelligence (AI), considering the complexity of algorithms and data structures. Topics such as access to databases, minimum acceptable description, and the use of “black boxes” will be discussed. The report on inventive step will deal with defining the expert in the subject, especially in AI-assisted inventions, and the automation of steps through AI systems.