

CJI/RES. 281 (CII-O/23) corr.1

**INTER-AMERICAN DECLARATION OF PRINCIPLES REGARDING NEUROSCIENCE,
NEUROTECHNOLOGIES, AND HUMAN RIGHTS**

THE INTER-AMERICAN JURIDICAL COMMITTEE,

TAKEN INTO ACCOUNT:

That in recent times there has been an accelerated development of research in neuroscience and neurotechnologies, vastly increasing, inter alia, knowledge of the human being, the study of the brain, and the prevention and cure of diseases for the benefit of humanity.

That this progress could also encourage unwise uses or applications that could impair or meddle with the brain activity of individuals, possibly affecting the essence of their personality and identity, thereby posing important ethical-legal challenges with respect to guarantees for already established human rights. This makes it necessary to have inter-American principles that link the advances in neurotechnology with the existing framework for protecting human rights, including dignity, non-discrimination, identity, the right to privacy and intimacy, physical and mental health, the prohibition of torture and cruel, inhuman, and degrading treatment, and access to judicial remedies, among others;

GIVEN that the Charter of the Organization of American States (OAS) maintains that scientific and technological development should strengthen the fundamental rights of people, seeking the overall improvement of the individual and social justice and progress as the foundation of democracy; and that the Social Charter of the Americas approved by the OAS establishes that scientific and technological development should help to improve people's living standards and achieve their integral development, so that it is necessary to take steps to ensure that the application of innovations benefits everyone;

RECALLING that, according to the *American Declaration of the Rights and Duties of Man*, all men are born free and equal, in dignity and in rights, and, being endowed by nature with reason and conscience, they should conduct themselves as brothers one to another; Likewise, and in accordance with the *American Convention on Human Rights* (Pact of San José), States Parties have the obligation to respect the rights and freedoms recognized therein, to ensure the free and full exercise thereof to all persons, and to commit to adopt specific measures with a view to achieving the progressive development and full realization of the rights implicit in the economic, social, educational, scientific, and cultural standards set forth in the *Charter of the Organization of American States* (OAS);

RECALLING ALSO the *Additional Protocol to the American Convention on Economic, Social, and Cultural Rights* (Protocol of San Salvador) recognizes the right of every person to enjoy the benefits of scientific and technological progress; and also that the Inter-American Convention on the Rights of Older Persons establishes that those persons have the right to their cultural identity and to the enjoyment of the benefits of scientific and technological progress, to which end the States Parties shall promote the necessary measures to ensure them preferential access under affordable conditions.

RECALLING that the *Inter-American Convention on the Elimination of All Forms of Discrimination against Persons with Disabilities* calls upon States Parties to undertake to collaborate effectively in scientific

and technological research related to prevention, treatment, and rehabilitation, as well as the development of means and resources designed to facilitate or promote the independence and self-sufficiency of persons with disabilities, in order to promote those persons' full integration into society on an equal footing.

BEARING IN MIND that the General Assembly of the Organization of American States, at its 51st regular session, approved the *Updated Principles on Privacy and Personal Data Protection*, prepared by the Inter-American Juridical Committee, through resolution AG/RES. 2974 (LI-O/21), in November 2021; and that the Inter-American Juridical Committee adopted the *Declaration on Neuroscience, Neurotechnologies, and Human Rights: New Legal Challenges for the Americas* (CJI/DEC. 01 (XCIX-O/21), in August 2021;

RESOLVES:

1. To approve the *Inter-American Declaration of Principles on Neurosciences, Neurotechnologies, and Human Rights, with annotations*, annexed to this resolution as a guideline so that people can take full advantage of the benefits of scientific advances and their applications in the field of neuroscience and the development of neurotechnologies in the certainty that their human rights will not be undermined, thus establishing international standards that help to guide and harmonize the necessary national regulations in this area

2. To transmit this resolution and the Declaration of Principles contained in the annexed document to the Permanent Council of the Organization of American States and to the General Assembly for their due knowledge and consideration.

3. To request the Department of International Law, in its capacity as Technical Secretariat of the Inter-American Juridical Committee, to disseminate this Declaration of Principles as widely as possible among the various stakeholders, in particular, to draw the attention of the States, the private sector, academia, and the scientific world, to the need to make possible the full and safe enjoyment of the benefits of scientific advances and their applications, ensuring respect for human rights, while urging them to participate in the process of adopting concrete measures that will allow these innovations to contribute to the well-being of individuals and communities.

4. Keep the treatment of this issue in its work agenda, considering the special impacts of neurotechnologies on the most vulnerable groups of society and bearing in mind that there is a need to deepen and further explore the implications of immersive and digital technologies, as well as emerging technologies based on artificial intelligence, particularly in relation to the rights of children and adolescents, as well as persons with disabilities, older adults, and persons deprived of liberty, who require special protection.

This resolution was adopted unanimously at the regular session held on March 9, 2023, by the following members: Drs. Martha Luna Véliz, Eric P. Rudge, George Rodrigo Bandeira Galindo, José Luis Moreno Guerra, Alejandro Alday González, Julio José Rojas Báez, José Antonio Moreno Rodríguez, Luis García-Corrochano Moyano, Cecilia Fresnedo de Aguirre, and Ramiro Gastón Orias Arredondo.

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Inter-American Declaration of Principles on Neuroscience, Neurotechnologies, and Human rights

Principle 1: Identity, autonomy, and privacy of neural activity. *The development and use of neurotechnologies will seek to contribute to the right of every person to enjoy a dignified life, together with the benefits of scientific and technological progress, preserving the rights of identity, autonomy, and the free development of personality. Neural activity generates the totality of the mental and cognitive activities of human beings, and therefore forms part of the essence of a person's very being, identity and privacy, and is therefore protected by human rights norms. It is essential to preserve and guarantee each person's control over his or her own individual identity, as well as to ensure people's self-determination and freedom of thought.*

Principle 2: Protection of Human Rights in the design of neurotechnologies. *States shall promote a human rights-based approach in the development of neurotechnologies, seeking to ensure comprehensive protection and respect for human rights in the design of neurotechnologies, their research methods, as well as in their implementation, commercialization, evaluation, and use.*

Principle 3: Neural data are sensitive personal data. *Neural data are highly sensitive personal data. Those responsible for the processing and use of neural data must adopt enhanced privacy and security measures and ensure limits on the use of decoding techniques that allow a person to be identified or made identifiable, especially with databases or sets of information that are shared with third parties. States shall foster measures to ensure control, security, confidentiality, and integrity of neural data.*

Principle 4: Express and informed consent regarding neural data. *The consent of the person to whom the neural data belongs is a prerequisite for access to the collection of brain information. It is vital to guarantee free, informed, express, specific, unequivocal, and flawless consent when it comes to access to or processing of neural activity. The consent given must be revocable at any time. Special protection is required in the case of children and adolescents, as well as persons with disabilities, older persons, and persons deprived of liberty.*

Principle 5: Equality, Non-Discrimination, and Equal Access to Neurotechnologies. *The goal is to promote the development and use of neurotechnologies, accessible to all people in accordance with the characteristics of the generation concerned based on the principle of equality and non-discrimination. States shall guarantee equitable access to neurotechnologies, while respecting customs and traditions, and to develop public policies for responsible innovation, seeking to narrow inequality and discrimination gaps, especially with respect to the most vulnerable groups.*

Principle 6: Exclusive therapeutic application with respect to the enhancement of cognitive abilities. *The main purpose of these scientific and technological developments in medical assistance is to preserve or improve people's autonomy and thus promote their overall wellbeing, helping them to lead a dignified, healthy, productive, and autonomous life. States shall endeavor to exercise particular caution in regulating the use of neurotechnologies to increase the cognitive abilities of individuals, and shall establish clear limits and enhanced control, while taking special care and precautions with provisions that, apart from their therapeutic or health application, seek to study neurotechnologies and use them to enhance or improve cognitive skills for other purposes.*

Principle 7: Neurocognitive integrity. *It is essential to guarantee protection of the neurocognitive integrity of all persons and to prevent the use of neurotechnologies for malicious purposes that could result in procedures aimed at harming or impairing brain activity or impairing the exercise of human rights. Access*

to brain activity may never impair freedom of thought and conscience, making a person dependent on a third party, affecting her or his ideas, security, and independence. Every person has the right not to suffer violations, alterations, manipulations, and/or modifications of his or her neurocognitive integrity and intimacy that jeopardize or impair personal integrity; clauses ruling out or limiting liability shall not be permitted.. The protection of neurocognitive integrity is guaranteed in neurotechnological treatments; compulsive or forced application mechanisms, as well as their use as a method of torture or cruel, inhuman, or degrading treatment, are prohibited.

Principle 8: Transparent governance of neurotechnologies. *States shall ensure that all state and non-state actors involved in the development, use, and/or marketing of neurotechnologies guarantee the transparency of neurotechnological advances. This encompasses not only the way in which neurotechnologies are studied, developed, and applied, and the way they function, but also the impact they have on human rights and the accountability of all actors involved for the use made of neural data in their possession.*

Principle 9: Supervision and control of neurotechnologies. *It is incumbent upon States to exercise a supervisory/oversight role by establishing a competent, technically specialized, financially autonomous, and independent national authority to ensure that neurotechnologies are used and applied in accordance with international human rights standards, so as to avoid and prevent risks and negative impacts on people's rights and pay special attention to the rights of children and adolescents, persons with disabilities, and person deprived of liberty.*

Principle 10: Access to effective protection and access to remedies associated with the development and use of neurotechnologies. *States shall promote and ensure mechanisms for the effective protection of the rights associated with the development and use of neurotechnologies. It is also necessary to ensure access to judicial remedies and comprehensive reparation in the case of human rights violations, in order to promote effective protection of these guarantees, in accordance with these Principles.*

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**“Notes to the Inter-American Declaration of Principles on Neuroscience,
Neurotechnologies, and Human Rights”**

Background:

These notes expand on the concepts underlying the “Inter-American Declaration of Principles on Neuroscience, Neurotechnologies, and Human Rights” adopted by the Inter-American Juridical Committee of the OAS.

The Inter-American Juridical Committee adopted the “Declaration on Neuroscience, Neurotechnologies, and Human Rights: New Legal Challenges for the Americas” (CJI/DEC. 01 (XCIX-O/21)) in August 2021, initiating a process of reflection and confrontation with a variety of actors that included substantive input and specialized recommendations from an interdisciplinary Committee of Experts composed of scientists and jurists with expertise in fields related to the principles addressed herein.¹

The notes to this document reflect the most recent discussions on this subject, notably the adoption of the report of the International Bioethics Committee of the United Nations Educational, Scientific and Cultural Organization (UNESCO) on “Ethical Issues in Neurotechnology”, published in December 2021; as well as recent international initiatives on the ethical, social, and human rights challenges of neuroscience and neurotechnologies, such as the “Recommendation on Responsible Innovation in Neurotechnology” adopted in December 2019 by the Organization for Economic Cooperation and Development (OECD); the Report of the Council of Europe on “Common Human Rights challenges raised by different applications of neurotechnologies in the biomedical field,” adopted in October 2021; as well as the Declaration that - in June 2022 - was approved by the Latin American and Caribbean Parliament (Parlatino), recommending the need to legislate on this matter.

The Inter-American Juridical Committee of the Organization of American States hereby adopts the following document as an important but nonbinding² guide to human rights dilemmas that may arise with advances in neuroscience and the development of neurotechnologies. The notes take existing international human rights standards into account and apply them by adapting them to address neurotechnological concerns. These principles are the product of analysis of international norms and standards that can be applied to the development of neurotechnologies with a view to making progress with good practices and countering any situation that may tend to violate human rights:

Notes and comments on the principles

Principle 1: Identity, autonomy, and privacy of neural activity. *The development and use of neurotechnologies shall seek to contribute to the right of every person to enjoy a life of dignity, together with the benefits of scientific and technological progress, by preserving the rights of identity, autonomy, and the free development of personality. Neural activity generates the totality of the mental and cognitive activities of human beings, and therefore forms part of the essence of a person’s very being, identity and privacy. For that reason, it is protected by human rights norms. It is essential to preserve and guarantee*

¹ The Committee of Experts comprises: Eduardo Bertoni, Ciro Colombara, Francesca Fanucci, Verónica Hinestroza, Amelie Kim Cheang, Tomás de la Quadra Salcedo, Moisés Sánchez, Silvia Serrano Guzmán, and Rafael Yuste. This document also contains the comments submitted by the States of Ecuador and Panama, which were duly sent to the OAS Department of International Law. In addition, it contains suggestions made by other experts consulted via a written questionnaire.

² See note presented by the delegation of the United States, “Views from the United States on ‘Second Progress Report: Draft Inter-American Principles on Neuroscience, Neurotechnologies and Human Rights’,” March 2, 2023.

each person's control over his or her own individual identity, as well as to ensure people's self-determination and freedom of thought.

Concepts and comments: For the purposes of this document, neurotechnology is construed to mean any mechanism by which it is possible to observe or modify brain activity. This includes technological devices that allow direct or indirect connection to a person's nervous system. They may be invasive mechanisms, such as the implantation of devices or microchips in the brain (or any other part of the body),³ as well as non-invasive methods, such as functional magnetic resonance imaging (fMRI). This definition of neurotechnologies encompasses the use of deep brain, electrical, and magnetic stimulation mechanisms, as well as the use of brain-computer interfaces or neural interfaces. The latter involve direct communication and transmission of information between a technological device and a person's nervous system.

Neuroscience is a recent discipline that is making it possible to expand current understanding of the human brain. The use of neurotechnologies in a clinical setting involves connecting a person's nervous system to electronic devices that make it possible to fully or partially restore the functioning of a given neurological faculty. For people with motor disabilities to people with neurodegenerative diseases such as Parkinson's or Alzheimer's, the development of neurotechnologies is significantly boosting research in the field of health, offering favorable scenarios for people suffering from neurological diseases that until recently were thought to be incurable. Notwithstanding its benefits for the well-being of human beings, the linking of the human brain to electronic devices and artificial intelligence mechanisms poses significant challenges to human rights and to the very essence of the individual.

Neurotechnologies should contribute to guaranteeing the right to a dignified life, free from all forms of violence, torture, and cruel, inhuman, or degrading treatment or punishment, as well as to the enjoyment of the highest attainable level of health, especially for those people who are in situations of vulnerability and risk, such as people with disabilities, persons deprived from their liberty, the elderly, indigenous peoples, Afro-descendants, and women, children, and adolescents who require comprehensive health care.⁴

The improper use of neurotechnologies may, in certain cases, lead a person to behave in a way that is not consistent with her or his personality. Thus, this principle has as a fundamental premise the preservation of individual identity against any neurotechnological interference. Since the human brain coordinates all an individual's vital processes, including behavior and decision making, and even generates the very essence of their personality, any modification to brain activity could entail risks associated with the impairment of personal identity, autonomy, and the free development of personality. Changes in neural architecture may affect a person's capacity to act or his or her ability to remain autonomous. Accordingly, neuronal activity generates the totality of mental and cognitive activities of human beings. It is therefore key to the preservation of privacy and must be protected by human rights norms related to it.

If an individual's capacity to act is not preserved, he or she could be at the mercy of third parties, companies, and even States or governments that may have an interest in modifying the personality or behavior of a given person, including, in cases involving public security, efforts to combat crime and impunity. That capacity includes the power of a person to make his or her own decisions regarding any intervention involving the use of neurotechnologies. Thus, according to this principle, cognitive freedom can never be impaired by compulsive or forced mechanisms (*mecanismos compulsivos o forzosos*).

In principle, one of the issues in relation to the rights under discussion is knowing what the right to identity is. The right to identity is indissolubly linked to the individual as such and, consequently, to the recognition of his or her legal personality, as well as to entitlement to rights and obligations. Personal identity is a human right that is conceived of as a highly complex construct, intimately linked to self-

³ Addition suggested by the State of Panama in its presentation on January 13, 2023.

⁴ Addition suggested by the State of Ecuador in its presentation on January 17, 2023.

perception of personality and comprising anthropological, cultural, and social elements that are a vital part of a person's individuality and true identity.

In that sense, we understand that the right to identification is a right that allows the exercise of other rights. Indeed, it is the right of every person to have his or her birth registered and to receive a name and a nationality; the responsibilities of the State in that regard are also underpinned by other international human rights standards.⁵ Identification is construed to mean the activity by which the State records a series of particular, essential, and distinctive attributes, and other circumstances pertaining to a person's identity that allow them to be individually identified in a unique, unequivocal, and differentiable way from the other members of a community, in order to guarantee the exercise of their rights and the fulfillment of their obligations. Hence the importance of ensuring that this identity is not impaired by the use of neurotechnologies. The possibility of neurotechnologies altering or modifying a person's neuronal activity may modify the essence and free development of his or her personality, which must be preserved at all times. For these reasons, the principle calls for preserving and guaranteeing each person's control over his or her own individual identity.

Article 11.2 of the American Convention on Human Rights (ACHR) establishes the right to privacy: "No one may be the object of arbitrary or abusive interference with his private life, his family, his home, or his correspondence, or of unlawful attacks on his honor or reputation." Regarding the scope of that right, the Inter-American Court of Human Rights (I/A Court H.R.) has written that "The sphere of privacy is characterized by being exempt from, and immune to, abusive and arbitrary invasion or attack by third parties or public authorities."⁶

However, neurotechnologies are pushing the very concept of privacy to the limit. Neuroimaging techniques have the ability to record brain activity. Research in this field will be justified by the principle of doing good (*beneficencia*)- treatment of disabling mental illnesses - and the principle of not doing harm, (*maleficiencia*)- not endangering people and the human species -.⁷ Therefore, illegitimate and unlawful use of brain information and neural data governance are two key issues today. Although neurotechnologies do not currently allow "mind reading," they can reveal information that individuals consider highly sensitive, such as personality traits and information about an individual's internal mental activity. Accordingly, neural data are construed to mean those data derived from the activity of the nervous system of a person that constitute highly sensitive personal information because they reveal aspects of her or his internal mental activity. This internal mental activity is the essence of their personality, so that protection of that inner core is inseparable from the protection of human dignity and, therefore, also from the protection of human rights.

It should also be noted that the I/A Court H.R. has expressed its opinion on the concept of privacy and autonomy (ACHR, Article 11). Regarding an alleged violation of Article 11 of the American Convention, the Court has specified that the content of that provision includes, inter alia, the protection of privacy. For its part, the concept of privacy is a broad term that cannot be defined exhaustively, but includes, among other protected spheres, the right to establish and develop relationships with other human beings. For example, in the *El Mozote* case, the Inter-American Court considered that the rape of the young women

⁵ Article 6 of the Universal Declaration of Human Rights states that "everyone has the right to recognition everywhere as a person before the law." Article 24 (2) of the International Covenant on Civil and Political Rights establishes that: "The child shall be registered immediately after birth and shall the right from birth to a name." Article 7 of the Convention on the Rights of the Child states that: "The child shall be registered immediately after birth and shall have the right from birth to a name, the right to acquire a nationality and, as far as possible, the right to know and be cared for by his or her parents. States Parties shall ensure the implementation of these rights..." and Article 8 states: "States Parties undertake to respect the right of the child to preserve his or her identity ..."

⁶ I/A Court H.R. Case of the Ituango Massacres v. Colombia. Preliminary Objections, Merits, Reparations, and Costs. Judgment of July 1, 2006. Series C No. 148, par.194.

⁷ Addition suggested by the State of Panama in its presentation on January 13, 2023.

violated essential values and aspects of their private lives and meant that they lost all control over their most personal and intimate decisions, and over their basic bodily functions.⁸

For its part, the Convention on the Rights of Persons with Disabilities⁹ establishes that States Parties recognize that persons with disabilities have the right to the enjoyment of the highest attainable standard of health and, furthermore, states that all appropriate measures shall be taken to promote the physical, cognitive, and psychological recovery, rehabilitation, and social reintegration of persons with disabilities, always in an environment that is conducive to the health, well-being, self-esteem, dignity, and autonomy of the person and that takes into account specific gender and age-related needs.¹⁰ The above-mentioned instruments are binding on States when it comes to protecting the rights of persons with disabilities against the misuse of new technologies.

Principle 2: Protection of Human Rights in the design of neurotechnologies. *States shall promote a human rights-based approach in the development of neurotechnologies, seeking to ensure comprehensive protection and respect for human rights in the design of neurotechnologies, their research methods, as well as in their implementation, marketing, evaluation, and use.*

Concepts and comments: For the purposes of this principle, it is understood that the neurocognitive core (*sustrato*) of an individual is the product of his or her brain activity, which constitutes the essence of that individual's personality. Since neurotechnologies make it possible to modify a person's neural activity, under this principle it is fundamental to ensure full protection of human rights at every phase of the neurotechnology development cycle.

In other words, when emphasizing the importance of protecting and respecting human rights in the design of neurotechnologies, all the necessary technical and technological measures must be taken to comply with international treaties and instruments on human rights from the moment those technologies are designed through to their final deployment and use. States shall also ensure that the development, use, and/or marketing of neurotechnologies are subject to human rights impact and risk assessments throughout their life cycle and that such assessments are conducted with the meaningful participation of persons entitled to human rights that are potentially impaired by such technologies.

Furthermore, the development of neurotechnology, in a manner that does not violate human dignity, must be based on ethical, social, and democratic principles, adopted by the States in their domestic legislation and reflected in the norms, public policies, and measures established, in accordance with Article 2 of the American Convention.¹¹

Principle 3: Neural data as sensitive personal data. *Neural data are highly sensitive personal data. Those responsible for the processing and use of neural data must adopt enhanced privacy and security measures and ensure limits on the use of decoding techniques that allow a person to be identified or made*

⁸ Inter-American Court of Human Rights, Judgment in the *Case of El Mozote and Nearby Places v. El Salvador*. Merits, Reparations, and Costs, Judgment of October 25, 2012, par. 166.

⁹ Convention on the Rights of Persons with Disabilities, adopted by General Assembly resolution 61/106 of December 13, 2006, A/RES/61/106, Articles 16, 22ff.

¹⁰ According to the aforementioned Convention (Article 22), respect for the privacy of persons with disabilities is geared to ensuring that: 1. No person with disabilities, regardless of place of residence or living arrangements, shall be subjected to arbitrary or unlawful interference with his or her privacy, family, home or correspondence or other types of communication or to unlawful attacks on his or her honor and reputation. Persons with disabilities have the right to the protection of the law against such interference or attacks. 2. States Parties shall protect the privacy of personal, health, and rehabilitation information of persons with disabilities on an equal basis with others.

¹¹ Addition suggested by the State of Ecuador in its presentation on January 17, 2023.

identifiable, especially with databases or sets of information that are shared with third parties. States shall foster measures to ensure control, security, confidentiality, and integrity of neural data.

Concepts and comments: The term “neural data” refers to data resulting from the use of new technologies for the identification and coding of the human brain’s own biosignals. For the purposes of this principle, a dataset is defined as a set or collection of information treated as a single unit by a neurotechnological device. Likewise, sensitive personal data are construed to mean data referring to the private sphere of their owner whose misuse may lead to discrimination or place the person concerned at grave risk. By way of example, personal data are considered sensitive if they might reveal aspects such as racial or ethnic origin; religious, philosophical and moral beliefs or convictions; union membership; political opinions; information related to health, life, sexual preference or orientation, and genetic, neurological, or biometric data aimed at definitively identifying a natural person.

This is consistent with the Updated Principles on Privacy and Personal Data Protection.¹² One of the principles deals exclusively with this kind of data that “given its sensitivity in particular contexts, are especially likely to cause material harm to individuals if misused.” Neural data are particularly likely to cause considerable harm to individuals if misused. Using artificial intelligence algorithms, neurotechnologies can recognize and decode neural information. This makes it possible to interpret (albeit in a limited way) the electrical parameters generated in the brain. That, in turn, allows correlations to be made between the decoded neural information and certain personality traits of an individual: information that can be used for non-medical or research-related purposes. Neural data may also be used for biometric identification, because a person’s brain activity is unique, identifiable, and distinguishable from others, making it the most reliable means of biometric identification available to date. For these reasons, this principle seeks to protect brain information from intrusion by any individual, organization, or government that seeks to use neural data in a manner not consented to by the individual. It is for this reason that those responsible for the processing and use of neural data must adopt privacy and security measures commensurate with the sensitivity of those data and their ability to harm the owner of the data.

Principle 4: Express and informed consent regarding neural data. *The consent of the person to whom the neural data belong is a prerequisite for access to the collection of brain information. It is vital to guarantee free, informed, express, specific, unequivocal, and flawless consent when it comes to access to or processing of neural activity. The consent given must be revocable at any time. Special protection is required in the case of children and adolescents, as well as persons with disabilities and persons deprived of liberty.*

Concepts and comments: Informed consent is an essential requirement for clinical practice. It is based on the notion of personality. Accordingly, it is the basis of legitimacy for a neurotechnological procedure and, therefore, any person who for any reason undergoes such a procedure must have the ability to express in a conscious, deliberate, and informed manner whether or not he or she authorizes that neurotechnological procedure. In the case of persons who cannot give their consent, the protection measures shall be extreme, guaranteeing the consent of third parties recognized by law.¹³ Consequently, a neurotechnological procedure would not be acceptable if it violated this principle.

Thus, individuals who give their consent must be able to revoke it and have the right to request that neural data stored at any time are not processed, to which end the party responsible for processing neural

¹² Updated Principles on Privacy and Personal Data Protection (CJI/doc. 638/21) adopted by the Inter-American Juridical Committee in April 2021 and approved by the General Assembly of the Organization of American States (OAS) by means of resolution AG/RES. 2974 (LI-O/21) of November 2021.

¹³ Addition suggested by the State of Panama in its presentation on January 13, 2023.

data must establish simple, prompt, effective, and free mechanisms. Likewise, the rules governing the processing of neural data extend to security and full control and disposal of the data.

Consent shall be obtained after a process that ensures that relevant information is transmitted in simple language, with an intercultural and gender approach, to make sure that it is understood so that a decision can be taken, expressly and in writing. Coercion, deception, or domination by any means would definitively vitiate any consent.¹⁴

Thus, bearing in mind the provisions set forth in the Updated Principles on the Privacy and Protection of Personal Data,¹⁵ those who are responsible for the processing of neural data must adopt enhanced measures to ensure their privacy and security in accordance with the sensitivity of those data, as well as establish and maintain for any kind of processing clear management plans and strict protection, security and control guidelines for the collection, storage and organization of neural data, and for access to them.

***Principle 5: Equality, Non-Discrimination, and Equal Access to Neurotechnologies.** The goal is to promote the development and use of neurotechnologies, accessible to all people in accordance with the characteristics of the generation concerned¹⁶ based on the principle of equality and non-discrimination. States shall guarantee equitable access to neurotechnologies, while respecting customs and traditions, and to develop public policies for responsible innovation, seeking to narrow inequality and discrimination gaps, especially with respect to the most vulnerable groups.*

Concepts and comments: The principle of equality and non-discrimination is one of the core pillars of the inter-American system for protection of human rights. It is recognized both in Article 24 of the American Convention on Human Rights and in Article 3 of the Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social, and Cultural Rights (“Protocol of San Salvador”). For its part, the Inter-American Court of Human Rights has also reaffirmed on multiple occasions that the notion of equality springs directly from human nature, making it inseparable from the essential dignity of the individual. This therefore also applies to the development and use of neurotechnologies, which must be equally accessible to all people, including the right to obtain protection against, inter alia, acts of discrimination based on race, color, gender, nationality, religion, and social status.

Special attention shall be given to vulnerable age groups. It is estimated that the human brain does not fully develop until after the age of 20. Without adequate regulation, the use of neurotechnologies can lead to significant age bias. It is necessary to provide special protection against such vulnerability, taking into account the best interest of the persons concerned and guaranteeing sound neurocognitive development following the creation, marketing, and use of neurotechnologies and other immersive technologies.

Likewise, ethnic minorities, indigenous peoples, and Afro-descendants must be taken into account, in accordance with the International Convention on the Elimination of All Forms of Racial Discrimination, which provides for the adoption by States of special measures exclusively designed to ensure the adequate advancement of certain racial or ethnic groups or individuals requiring such protection in order to guarantee them, on an equal footing, the enjoyment or exercise of human rights and fundamental freedoms.¹⁷

By the same token, in accordance with the Principles and best practices on the protection of persons deprived of liberty in the Americas (OEA/Ser/L/V/II.131 doc. 26), under no circumstances shall neurotechnologies be used to categorize, separate, or transfer persons deprived of their liberty; nor shall they be used to justify discrimination, the use of torture, cruel, inhuman, or degrading treatment or punishment, or the imposition of harsher or less adequate conditions on a particular group of people.

¹⁴ Addition suggested by the State of Ecuador in its presentation on January 17, 2023.

¹⁵ Op. Cit.

¹⁶ Addition suggested by the State of Ecuador in its presentation on January 17, 2023.

¹⁷ Addition suggested by the State of Ecuador in its presentation on January 17, 2023.

Thus, this principle seeks to guarantee access to neurotechnologies, as well as to any scientific development aimed not only at avoiding the “increase of inequalities”, but also at narrowing inequality gaps. States should consider equality as an achievable goal and develop appropriate policies to that end: a perspective geared to enhancing the scope of public policies.¹⁸

Thus, States Parties should guarantee equitable access to neurotechnologies and develop public policies for responsible innovation with a view to avoiding any increase in inequality or exacerbation of discrimination. This entails refraining from acts that in any way generate situations of discrimination on the basis of, inter alia, race, color, sex, language, religion, or social status. Based on Article 29 of the American Convention, it could be construed that access to neurotechnology is part of the right to health and the right to life and personal integrity, in their progressive, individual, and collective dimension, whereby vulnerability and poverty should also be taken into account as obstacles to be overcome in order to avoid discrimination.¹⁹

It is relevant at this point to consider the Inter-American Convention on the Elimination of all Forms of Discrimination against Persons with Disabilities,²⁰ the main objective of which is the prevention and elimination of all forms of discrimination against persons with disabilities and to promote their full integration into society.

Equality and non-discrimination in the development, access, marketing, and use of neurotechnologies also provides protection against discrimination by algorithms linked to artificial intelligence systems that use neurotechnological interfaces. This Principle also seeks to prevent neurotechnologies from allowing some human beings to be considered superior to others, which would make them a new source of discrimination.

Principle 6: Exclusive therapeutic application with respect to the enhancement of cognitive abilities. *The main purpose of these scientific and technological developments in medical assistance is to preserve or improve people’s autonomy and thus promote their overall wellbeing, helping them to lead a dignified, healthy, productive, and autonomous life. States shall endeavor to exercise particular caution in regulating the use of neurotechnologies to increase the cognitive abilities of individuals, and shall establish clear limits and enhanced control, while taking special care and precautions with provisions that, apart from their therapeutic or health application, seek to study neurotechnologies and use them to enhance or improve cognitive skills for other purposes.*

Concepts and comments: The use of neurotechnologies for the enhancement of human cognition triggers profound philosophical debate regarding the legal treatment it should have. Currently, all over the world, research projects are being conducted that seek to enhance human cognitive abilities by methods ranging from traditional mechanisms, such as education, to more disruptive means, such as brain stimulation or the implantation of neurotechnologies and artificial intelligence systems in the brain. Likewise, cognitive improvements could condition not only intellectual performance, but also emotional and behavioral improvement. In addition to physiological consequences, cognitive enhancement raises important legal and ethical challenges that need to be considered for effective regulation.

In such scenarios, precautionary needs support the adoption of legislative guidelines to delimit with special care the contexts for the use of neuroenhancement technologies. This includes the adoption of protective legislative measures aimed at establishing limits to potential risks associated with these technologies. Accordingly, the generic principle of non-discrimination, as it is traditionally been defined,

¹⁸ Addition suggested by the State of Ecuador in its presentation on January 17, 2023.

¹⁹ Addition suggested by the State of Ecuador in its presentation on January 17, 2023.

²⁰ Inter-American Convention on the Elimination of All The Forms of Discrimination against Persons with Disabilities Adopted in Guatemala City, on June 7, 1999, entry into force on September 14, 2001.

does not preclude making distinctions, provided that those distinctions do not pursue persecutory aims or defend undue privileges. The Inter-American Court of Human Rights has stated in various judgments that the general obligation of non-discrimination translates into the prohibition of issuing sweeping laws or of favoring measures and practices by its officials, when enforcing or interpreting the law, that discriminate against a certain group of persons on the basis of their race, gender, color, or other characteristics.²¹

This implies preventing the emergence of a potential social divide between persons who have decided to enhance their cognitive abilities and those who are unable or choose not to do so. This principle needs to be used with caution because an outright ban could trigger its clandestine use and implementation. Therefore, in accordance with that principle, domestic laws should more specifically define the normative and regulatory context of neuroenhancement to ensure that human rights are effectively safeguarded and protected.

It is noted that in the Inter-American Convention on the Elimination of all Forms of Discrimination against Persons with Disabilities,²² States Parties committed to work to establish the necessary measures to eliminate discrimination against persons with disabilities so as to achieve “(b) Early detection and intervention, treatment, rehabilitation, education, job training, and the provision of comprehensive services to ensure the optimal level of independence and quality of life for persons with disabilities...” Likewise, the UN Convention on the Rights of Persons with Disabilities recognizes the right of access to appropriate supportive devices and technologies, including new technologies, to meet the needs of persons with disabilities, so that they can fully enjoy all human rights. Accordingly, States should strive to ensure equitable access to treatment based on neurotechnological advances and thus prevent only a few privileged groups from benefiting from advances from progress in science and technology, which would give rise to new forms of marginalization and exclusion. Prudence in the development of enhancement technologies implies taking into account the socio-educational context, the progressiveness of the measures, and the ongoing assessment of negative effects and long-term risks.²³ Thus, neurotechnological cognitive enhancement reflects the importance of the aforementioned principle of equality for avoiding deep social inequality gaps.

Principle 7: Neurocognitive integrity. *The protection of the neurocognitive integrity of all persons must be ensured and its use for malicious purposes, resulting in neurotechnological procedures aimed at harming or impairing brain activity or impacting the exercise of human rights, must be prevented. Access to brain activity may never alter freedom of thought and conscience, making it dependent on a third party, thereby undermining people’s ideas, security, and independence. Every person has the right not to suffer violations, alterations, manipulations, and/or modifications of his or her neurocognitive integrity and privacy that jeopardize or affect personal integrity, and the imposition of exclusion or limitation of liability clauses is not admissible. The protection of neurocognitive integrity is guaranteed in neurotechnological treatments, and compulsive or forced application mechanisms are prohibited, as well as their use as a method of torture or cruel, inhuman, or degrading treatment.*

Concepts and comments: In addition to their use for medical purposes, neurotechnologies can also be used for malicious purposes to the detriment of people’s physical and neurocognitive integrity. This principle is in line with the duty to respect physical integrity enshrined in Articles 3 and 5 of the Universal Declaration of Human Rights and Article 5 of the American Convention. Accordingly, the guideline seeks to establish mechanisms to safeguard personal integrity against neurotechnological procedures that entail unauthorized alterations to the functioning of a person’s nervous system and result in potential damage to

²¹ I/A Court H.R., Advisory Opinion OC-18/2003, “Juridical Condition and Rights of Undocumented Migrants,” September 17, 2003.

²² Op. Cit. 8, Article III.

²³ Addendum suggested by the State of Panama in its presentation on January 13, 2023.

its processing or neural architecture. The main concern about the impacts, benefits, and risks of these new technologies for people's integrity has to do with the right to health, given the intrusive impact that the irresponsible or unwise use of these technological devices can have on the human body. Thus, the WHO has advanced in the development of a set of general guidelines on the use of technological devices medical care purposes, which should always be to maintain or improve people's autonomy and well-being.²⁴

It should be noted that the notion of "neurocognitive integrity" is construed in a broad sense to refer to the protection of the neurocognitive substrates of the human being, both in their tangible (physical) and intangible (psychological) dimensions. Attacks against neurocognitive integrity can be carried out in different ways, ranging from the use of disproportionate stimulation to certain areas of the brain to the hacking of neuroprostheses or neural interfaces used by a person. They can also be carried out directly when they are aimed at adversely affecting an individual's neural activity. In addition, they can be performed indirectly when the objective is to cause the prosthesis or neurotechnological device to malfunction. This principle is particularly important given the emergence of new forms of neurocriminality, that is, the use of neurotechnological interventions for criminal purposes. According to this principle, everyone has the right to the protection of the law against alterations, manipulations, and/or modifications of cerebral information. Given such scenarios, it is recommended that States establish legislative mechanisms aimed at safeguarding the neurocognitive integrity of individuals against acts that put their physical or mental integrity at risk by means of brain technologies.

Likewise, the absolute prohibition of torture protects against medical or scientific experimentation. Article 7 of the United Nations International Covenant on Civil and Political Rights protects human beings from pain and suffering caused by or with the acquiescence of state agents for a specific purpose, including obtaining information or a confession, for investigative purposes, as a preventive measure, as a punishment, or for any other purpose. Along the same lines, Article 2 of the Inter-American Convention to Prevent and Punish Torture establishes that: "Torture shall also be understood to be the use of methods upon a person intended to obliterate the personality of the victim or to diminish his physical or mental capacities, even if they do not cause physical pain or mental anguish," so that neurotechnologies should never be used on those deprived of liberty, for criminal investigation purposes, as a means of intimidation, as a personal punishment, as a preventive measure, as a penalty, or for any other control purpose. Accordingly, the use of neurotechnologies should not be ordered or promoted by prosecutors' offices, courts, police authorities, or any kind of center used for deprivation of liberty.

Principle 8: Transparent governance of neurotechnologies. *States shall ensure that all state and non-state actors involved in the development, use, and/or marketing of neurotechnologies guarantee the transparency of neurotechnological advances. This encompasses not only the way in which neurotechnologies are studied, developed, and applied, and the way they function, but also their compatibility with human rights and those actors' accountability for the processing of neural data in their possession.*

Concepts and comments: This principle implies that the development, use, and marketing of neurotechnologies must be carried out in accordance with international standards of transparency and accountability. Transparency requires that sufficient information on the different stages of neurotechnology development be documented and published on a regular basis. Such information should be published in a timely manner.

States shall promote strategies for efficient governance of neurotechnologies in order to minimize the technological risks associated with them. Accordingly, both public authorities and private entities should periodically disclose how decisions have been made to adopt such technologies and the potential risks that they may pose to citizens. This implies audits conducted by entities that specialize in innovation processes

²⁴ World Health Organization (WHO), Executive Council, 142. (January 26, 2018). *Improved access to supportive technology (tecnología de asistencia)*. <https://apps.who.int/iris/handle/10665/274583>

in the field of neurotechnologies. It is also recommended that both companies and the public sector should regularly disclose information on the collection and processing of neural data in accordance with these guidelines.

Principle 9: Supervision and control of neurotechnologies. States should exercise a supervisory/oversight role by establishing a competent, technically specialized, financially autonomous, and independent national authority to ensure that the use and application of neurotechnologies are in accordance with international human rights standards, in order to avoid and prevent risks and negative impacts on people's rights, while taking special care to protect the rights of children and adolescents and persons with disabilities.

Concepts and comments: It is incumbent upon states to exercise a supervisory/oversight role to ensure the responsible development, marketing, and use of neurotechnologies, consistent with international human rights instruments and treaties. This principle of supervision/oversight implies the creation of specialized, professional, functionally autonomous, and independent entities capable of monitoring and controlling all phases of the life cycle of neurotechnologies, in order to promote responsible and safe neurotechnological innovation that minimizes potential risks and negative impacts of such technologies on the exercise of individuals' human rights. In addition, civil society shall be encouraged to participate in these endeavors, and play a part in the processes of exercising control over neurotechnologies.²⁵

Principle 10: Access to effective protection and access to remedies associated with the development and use of neurotechnologies. States shall promote and ensure mechanisms for the effective protection of the rights associated with the development and use of neurotechnologies. It is also necessary to guarantee access to judicial remedies and comprehensive reparation in the case of human rights violations, in order to promote effective protection of these guarantees in accordance with these Principles.

Concepts and comments: Access to remedy mechanisms associated with serious injuries caused by neurotechnologies is a fundamental issue, and effective guarantees must be established for the benefit of individuals to prevent or repair serious impairment of fundamental rights related to neurotechnological development.

As part of the protection, it is necessary to ensure access to quick and simple mechanisms to guarantee access to the rights of individuals in the administration of justice and comprehensive reparation measures, in accordance with the provisions of Article 8 of the American Convention. In addition, there must be mechanisms within the administrative sphere that allow for sanctions and reparations to be made to the victim.²⁶

This principle highlights the need to demand the protection and guaranteeing of human rights even in jurisdictions other than the State of origin in which the information or harm occurred, bearing in mind the jurisprudence of the Inter-American Court on access to justice in cases of transboundary damage.²⁷

²⁵ Addition suggested by the State of Ecuador in its presentation on January 17, 2023.

²⁶ Addition suggested by the State of Ecuador in its presentation on January 17, 2023.

²⁷ "This Tribunal established that, in the case of transboundary damage, it is understood that a person is under the jurisdiction of the State of origin when there is a causal relationship between the project or activity carried out, or to be carried out, in its territory and the affectation of the human rights of persons outside its territory (supra paras. 95 to 103). Therefore, States have the obligation to guarantee access to justice to persons potentially affected by transboundary damage originating in their territory." I/A Court H.R., Advisory Opinion OC-21/17, of November 15, 2017. Series A No.21, par. 238ff.

In addition, Article 25.1 of the American Convention on Human Rights establishes that all persons have the right to simple and prompt recourse to a competent court or tribunal for protection against acts that violate their fundamental rights as recognized by the constitution or laws of the state concerned or by the Convention.

In this sense, the principle recommends that States establish mechanisms for the effective protection of the rights associated with the development and use of neurotechnologies. This means providing effective judicial protection against the violation of such rights. This principle also calls on States to establish legal procedures for accessing remedies and obtaining comprehensive redress for human rights violations associated with the development and use of neurotechnologies.