INTERNATIONAL JOURNAL OF DIGITAL LAW - IJDL
ano 02 · n. 03 · setembro/dezembro 2021 - Publicação quadrimestral
DOI: 10.47975/digital.law.vol.2.n.3

03

ISSN 2675-7087

IJDL

International Journal of DIGITAL LAW

NUPED
Núcleo de Pesquisas em Políticas Públicas e Desenvolvimento Humano da PUCPR

FORUM

DOI: 10.47975/IJDL.schier.v.2.n.3

The urgency of regulating and promoting artificial intelligence in the light of the precautionary principle and sustainable development

A urgência da regulação e do fomento da inteligência artificial à luz do princípio da precaução e do desenvolvimento sustentável

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Como citar este artigo/*How to cite this article*: SCHIER, Adriana Ricardo da Costa; MAKSYM, Cristina Borges Ribas; MOTA, Vitória Dionísio. The urgency of regulating and promoting artificial intelligence in the light of the precautionary principle and sustainable development. *International Journal of Digital Law*, Belo Horizonte, ano 2, n. 3, p. 133-152, set./dez. 2021. DOI: 10.47975/IJDL.schier.v.2.n.3.

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Recebido/Received: 22.09.2021/ September 22nd, 2021
Aprovado/Approved: 08.11.2021/ November 08th, 2021

Abstract: The objective of this research is to analyze whether the Brazilian state has had any initiatives to regulate artificial intelligence in a way that promotes sustainable development. It is based on the need for this regulation in light of the precautionary in order to avoid irreversible damage, as in the case of the use of artificial intelligence in robotic cars or in health care, in the replacement of administrative or judicial decisions that involve value analysis by automated and exegetical decisions, as well as because of the democratic damages resulting from interference in elections. Moreover, considering that what most suffocates innovations is not their regulation, but rather, the absence of a coordinated and vigorous national state entrepreneurship, it is also verified whether there are no initiatives in the country to promote the use of artificial intelligence in the market or by the government. The methodology used is a bibliographic review and comparison of the regulatory and development initiatives established in other countries. The central hypothesis is that that despite sparse initiatives, artificial intelligence has not been a priority in the Brazilian State, whether seen as a regulatory State or as an entrepreneurial State.

Keywords: Artificial intelligence. Public administration. Regulation. Promotion. Precautionary principle. Sustainable development.

Resumo: O objetivo da presente pesquisa consiste em analisar se o Estado brasileiro tem tido iniciativas de regulação da inteligência artificial que propiciem o desenvolvimento sustentável. Fundamenta-se pela necessidade desta normatização à luz do princípio da precaução com intuito de se evitar danos irreversíveis, como no caso do uso da inteligência artificial nos carros robóticos ou na área da saúde, na substituição de decisões administrativas ou judiciais que envolvam análise de valor por decisões automatizadas e exegéticas, assim como em razão dos prejuízos democráticos decorrentes das interferências nas eleições. Ademais, considerando que o que mais sufoca as inovações não é sua regulação, mas sim a ausência de um empreendedorismo estatal nacional coordenado e pujante, verifica-se também se há iniciativas de fomento no país para o uso da inteligência artificial no mercado ou pelo Poder Público. A metodologia utilizada é de revisão bibliográfica e comparação das iniciativas regulatórias e de fomento estabelecidas nos demais países. A hipótese central é de que apesar das iniciativas esparsas, a inteligência artificial não tem sido uma prioridade no Estado brasileiro, seja este visto como um Estado-regulador, seja este observado sob um viés de Estado-empreendedor.

Palavras-chave: Inteligência artificial. Administração pública. Regulação. Fomento. Princípio da precaução. Desenvolvimento sustentável.

1 Introduction

The analysis of the impacts of artificial intelligence – AI – in Law is a current and constant discussion. It is not just a fad, since even if one wants to close one's eyes, the truth is that new technologies with massive use of data and AI are present in our daily activities, just as they are in half of the Brazilian Courts and also disseminated in the Public Administration, both in services and public policies, but especially in control activities.

Analyzing the theme from different perspectives, therefore, becomes essential, especially because there are many unanswered questions.

In this context, AI has been treated as a "great mantra and symbol of the conceptual refinement of post-industrial society in the 21st century". It is also viewed with a lot of optimism and advocated by enthusiasts given its enormous potential. On the other hand, many problematizations are also made as to whether its application must respect ethics and human dignity, since AI tends to "expose the inconsistencies of social action".[1]

But it is necessary to analyze this innovation not only from the standpoint of its capabilities or the need for its applications to respect certain principles and basic rights (soft law). It must be analyzed the need for regulation in light of the precautionary principle, considering the irreversible damages that have already arisen and others that may still arise (hard law). This taking into account that the Brazilian State's goal is not only technological progress or respect for free enterprise, but also sustainable development.

With this, it is not denied the potentiality of the use of artificial intelligence, much less intend to repel it, but what found is that its regulation is not only necessary but also urgent, as well as its promotion combined with the use of coordinated strategies for its safe application and development by the government.

And because of these needs, the objective of the present research is to analyze whether the Brazilian State has had initiatives of regulation, planning and state promotion for the use of this technology. In this context, it is first analyzed what artificial intelligence is and what its applications have been (item 2), and then verify the Brazilian initiatives and the need for both regulation (item 3) and promotion (item 4).

2 Artificial Intelligence: what it is, how it works and which functions does it have?

The European Ethical Charter on the use of artificial intelligence – AI – explains that this tool allows certain tasks previously performed by humans to be performed in an automated fashion. Artificial intelligence, therefore, is the assignment of a previously human task to a machine.[2]

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1 POLIDO, Fabrício Bertini Pasquot. Inteligência artificial entre estratégias nacionais e a corrida regulatória global: rotas analíticas para uma releitura internacionalista e comparada. *Rev. Fac. Direito UFMG*, Belo Horizonte, n. 76, p. 229-256, jan./jun. 2020.

2 COMMISSION EUROPEENNE POUR L'EFFICACITE DE LA JUSTICE (CEPEJ). *Charte éthique européenne d'utilisation de l'intelligence artificielle dans les systèmes judiciaires et leur environnement* – Adoptée par la CEPEJ lors de sa 31ème réunion plénière, Strasbourg, 3-4 décembre 2018, p. 36-45.

AI, however, is not a single and homogeneous item, but a set of sciences and techniques (mathematics, statistics and computer science) used according to human preconfiguration and will that does not produce intelligence in itself, but a set of observations (input) and results (output).[3] In other words, it refers to machines or software that are able to learn something in order to act or indicate a response or action.[4] They are capable, in short, of selecting, cutting and organizing a big volume of data disponible in order to indicate, through the use of algorithms (a set of instructions or rules), a solution or answer.[5]

Its operation, as well as its conception, is also varied. Initially the machine learned through algorithms offered by an external agent, a programmer. Today, however, the machine itself can already offer these rules and algorithms, since it is able to learn them by "studying" the data and finding patterns, which is called machine learning. This learning can be supervised or unsupervised by humans, as well as can in some cases have opacities.[6]

Artificial intelligence works, therefore, through massive data analysis, processing present and past information – quickly and efficiently – and through this processing and the use of mathematics and statistics can present in synthesis two functions: it will be able to predict a future situation (prediction function) or to make a decision (decision function).[7]

An example of the predictive function is the massive analysis of public data (input) made available about the confirmed cases and deaths from the COVID-19 virus in Brazil by an artificial intelligence model created by researchers at the Federal University of Paraná, whose analysis (output) statistically presents the expected amount of daily cases or deaths for two future weeks. Such automated analysis could help the State in planning with the previous allocation of human and financial resources to fight the pandemic, besides the respective decision making focused on damage prevention with respective public policies.[8]

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3 COMMISSION EUROPEENNE POUR L'EFFICACITE DE LA JUSTICE (CEPEJ). *Charte éthique européenne d'utilisation de l'intelligence artificielle dans les systèmes judiciaires et leur environnement* – Adoptée par la CEPEJ lors de sa 31ème réunion plénière, Strasbourg, 3-4 décembre 2018, p. 36-45.

4 MARTINS, Humberto. A Constituição Federal de 1988, o sistema de justiça e a inteligência artificial: conciliar a dimensão jurídica com a ética. *In*: *Democracia e sistema de justiça*: obra em homenagem aos 10 anos do Ministro Dias Toffoli no Supremo Tribunal Federal. Belo Horizonte: Fórum, 2020, p. 297-309.

5 CORVALÁN, Juan Gustavo. Inteligencia artificial: retos, desafíos y oportunidades – Prometea: la primera inteligencia artificial de Latinoamérica al servicio de la Justicia. *Revista de Investigações Constitucionais*, Curitiba, vol. 5, n. 1, p. 295-316, jan./abr. 2018.

6 VIEITEZ, Diego Losada. *Controle de Políticas Públicas pelos Tribunais de Contas e GovTechs*. Porto Alegre, 2018. Dissertação (Mestrado) – Programa de Pós-Graduação em Direito, Universidade Federal do Rio Grande do sul, p. 73-91.

7 COMMISSION EUROPEENNE POUR L'EFFICACITE DE LA JUSTICE (CEPEJ). *Charte éthique européenne d'utilisation de l'intelligence artificielle dans les systèmes judiciaires et leur environnement* – Adoptée par la CEPEJ lors de sa 31ème réunion plénière, Strasbourg, 3-4 décembre 2018, p. 36-45.

8 In this sense, available at: https://www.ufpr.br/portalufpr/noticias/em-duas-semanas-mortes-diarias-por-covid-19-no-brasil-podem-passar-de-1-600-revela-modelo-da-ufpr-baseado-em-inteligencia-artificial/?fbclid=IwAR2qReQxtbxIT6Gt13e8cIJVXpD2gjJ2TfCiBclbPogfuBxo9XCUlgQ3Tz8. Accessed on: 05 Sep. 2020.

Another example of the predictive function is the use of artificial intelligence for purposes of making master plans, since it is possible to make automated predictions about the growth of the city and artificial analyses based on this prognosis.[9] And along this line there are numerous examples of the use of artificial intelligence with predictive function in the Public Administration, such as the City Hall of Curitiba-PR;[10] the State of Paraná;[11] the Federal Audit Court – TCU[12] and the Federal Revenue.[13]

And even within administrative processes that became compulsorily digital by Decree No. 8.539/2015 it is possible to use artificial intelligence for predictive or decision-making purposes, so it is not surprising that the Administrative Law Journey of the Federal Justice Council has approved the enunciation 12, according to which "the robotic administrative decision must be sufficiently motivated, being its opacity a reason for invalidation". Along the same lines is the provision of the right to an explanation of the automated decision in art. 20 of the General Law of Data Protection – LGPD, which is in accordance with the already previous art. 50 of the Law of Administrative Procedure (Law No. 9,784/1999), which requires that the administrative decision be motivated.[14]

More daring are the virtual monitoring or surveillance projects, such as, for example, one carried out in 2020 in São Luiz – MA, which verified and predicted the social distancing during the COVID-19 pandemic in public places through data collected by smart cameras.[15]

In the Judiciary, the predictive function is also present, for example, in the procedural management program "Bem-te-vi" from the Superior Labor Court (TST), which brings the main information of the processes concluded in the office, such

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9 In this sense, available at: https://www.unicamp.br/unicamp/index.php/ju/noticias/2017/10/09/uso-de-inteligencia-artificial-pode-tornar-cidades-mais-agradaveis. Accessed on: 05 Sep. 2020.

10 Artificial intelligence triages patients with suspected COVID-19 in Curitiba/PR. In this regard, available at: http://www.saude.curitiba.pr.gov.br/noticias/1453-inteligencia-artificial-faz-triagem-de-pacientes-com-suspeita-de-covid-19-em-curitiba.html. Accessed on: 05 Oct. 2020.

11 An artificial intelligence tool developed by the Information Technology and Communication Company of Paraná (Celepar) was launched by the State Government and makes available about 380 services from different agencies. In this regard, available at: https://www.pia.pr.gov.br/pagina-39.html. Accessed on: 05 Oct. 2020.

12 Robots daily scan the Official Gazette of the Union (DOU) and the Comprasnet, a site with bids and contracts promoted by the federal government, to alert Court auditors of possible indications of irregularity in acquisitions related to the pandemic. In this sense, available at: https://portal.tcu.gov.br/imprensa/noticias/inteligencia-artificial-auxilia-fiscalizacao-do-tcu-sobre-compras-relacionadas-a-covid-19.htm. Accessed on: 05 Oct. 2020.

13 The Harpy project conceived by the IRS to combat tax evasion in the country makes use of artificial intelligence to assist inspectors in identifying possible fraud. In this sense, available at: http://intra.serpro.gov.br/noticias/receita-federal-implanta-com-apoio-do-serpro-primeiros-modulos-do-software-de-inteligencia-artificial. Accessed on: 05 Oct. 2020.

14 Available at: https://www.cjf.jus.br/cjf/noticias/2020/08-agosto/i-jornada-de-direito-administrativo-aprova-40-enunciados. Acessed on: 06 Oct. 2020.

15 VELSIS, Fábio dos Santos. 6º Seminário Internacional sobre análise de dados na Administração Pública. Tribunal de Contas da União. Brasília, 2020. Available at: https://www.youtube.com/watch?v=klLD30x6xdg&feature=youtu.be. Accessed on: 30 Set. 2020.

as the name of the parties, filing date or procedural subject, besides allowing searches.[16] There are also programs that use AI in the Legislative Branch.[17]

As for the decision-making function, there is the "Victor software" at the Supreme Federal Court (STF), named after former minister Victor Nunes Leal, a project developed in conjunction with the University of Brasília (UnB) under the coordination of Professor Fabiano Hartmann.[18] The project's objective is to systematize the STF's jurisprudence and facilitate the application of judicial precedents to appeals with the use of technology.[19]

In the initial phase, Victor has "read" 14,000 thousand cases, classifying the documents, identifying the extraordinary appeals and, using algorithms, verifying which of them are linked to certain themes of general repercussion (input data), finding "judgment patterns" for future appeals to the Court (output data).[20] These patterns are "learned" by the software with the use of algorithms and through this reading and response, Victor will increase the efficiency and speed of proceedings by up to 2 (two) years.[21]

In summary, it is up to Victor to investigate whether the extraordinary appeals are linked to a general repercussion theme and therefore meet the requirement set by art. 102, §3º of the Federal Constitution. It is important to emphasize that the machine does not judge, but rather, indicates such paths, seeking to anticipate or predict admissibility judgments as to whether the appeals are linked to general repercussion themes general, and its result is only "approved" by one person. For now, Victor checks only the 27 most recurrent themes that represent 60% of all extraordinary appeals.[22]

For the creators of the Victor project, its use results in the materialization of the principle of efficiency, in addition to the predictability and standardization of

16 In this sense, available at: http://www.tst.jus.br/web/estatistica/bem-te-vi. Accessed on: 30 Set. 2020.

17 The Ulysses software helps the distribution of parliamentary requests among the knowledge areas of the Legislative Consultancy and is learning to do automatic translation, recognize parliamentarians in photos and videos, and answer questions from citizens. In this regard, available at: https://www.camara.leg.br/assessoria-de-imprensa/568452-consultoria-legislativa-da-camara-utiliza-inteligencia-artificial-para-agilizar-trabalhos/. Accessed on: 30 Sep. 2020.

18 SILVA, Nilton Correia da. Notas iniciais sobre a evolução dos algoritmos do Victor: o primeiro projeto em inteligência artificial em supremas cortes do mundo. *In*: FERNANDES, Ricardo Vieira de Carvalho; CARVALHO, Angelo Gamba Prata de (Coord.). *Tecnologia jurídica & direito digital*: II Congresso Internacional de Direito, Governo e Tecnologia – 2018. Belo Horizonte: Fórum, 2018.

19 In this sense, available at: http://www.stf.jus.br/portal/cms/verNoticiaDetalhe.asp?idConteudo=380038. Accessed on: 30 Sep. 2020.

20 MAIA FILHO, Mamede Said; JUNQUILHO, Tainá Aguiar. Projeto Victor: perspectivas de aplicação da inteligência artificial ao direito. *Revista de Direitos e Garantias Fundamentais.* Vitória: Faculdade de Direito de Vitória – FDV, v. 19, n. 3, p. 219-238, set./dez. 2018.

21 In this sense, available at: http://www.stf.jus.br/portal/cms/verNoticiaDetalhe.asp?idConteudo=380038. Accessed on: 30 Sep. 2020.

22 In this sense, available at: http://www.stf.jus.br/portal/cms/verNoticiaDetalhe.asp?idConteudo=380038. Accessed on: 30 Sep. 2020.

jurisprudence. And similar to Victor, there are already 72 projects in the Brazilian courts, according to a survey by the Getulio Vargas Foundation – FGV.[23]

Juarez Freitas, in the same vein, but in relation to Public Administration, highlights how computer science can assist in the management of gigantic volumes of data, on one hand protecting sensitive data, and on the other assisting in public decision making that goes beyond the mere monetary reductionist cost-benefit analysis and reaches, therefore, acceptable levels of efficiency.[24]

However, despite its potential, artificial intelligence presents problems. The processing of the data may reveal and unduly maintain in the prediction some persistent discrimination in society. The method, therefore, must be cautious and ethical so as not to reproduce, legitimize, and aggravate unjustified discrimination.[25]

The use of artificial intelligence can also favor institutions and people with technological resources that could "manipulate" a desired result.[26] In this sense, there are already programs that seek to "guess" the outcome of a lawsuit, and these can indicate to a lawyer, for example, the statistically most appropriate way to win a case. And this would transform Law into a simple game to be played.[27]

In this context, it is also important to emphasize that artificial intelligence should not be seen as a great oracle that is not subject to misinterpretation, since (i) it cannot perform value analysis, which is relevant to the science of Law that no longer admits mechanical and exegetical interpretation of the law, (ii) statistics deals with correlations (if A then B) and not causalities (if A must be B), which also hampers legal readings, and finally (iii) statistics can also "lie", a concern that is not irrelevant within a post-truth scenario.[28]

As Darell Huff points out in his book on how to lie with statistics, statistics can be used in a corrupted way due to small sampling or built-in bias to support dishonest arguments. And this lie within an artificial intelligence program would be

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23 In this regard, available at: https://www.jota.info/coberturas-especiais/inova-e-acao/judiciario-brasileiro-tem-ao-menos-72-projetos-de-inteligencia-artificial-nos-tribunais-09072020. Accessed on: 30 Sep. 2020.

24 FREITAS, Juarez. Direito Administrativo e Inteligência Artificial. *Interesse Público*, Belo Horizonte, v. 114, p. 15-29, 2019.

25 COMMISSION EUROPEENNE POUR L'EFFICACITE DE LA JUSTICE (CEPEJ). *Charte éthique européenne d'utilisation de l'intelligence artificielle dans les systèmes judiciaires et leur environnement* – Adoptée par la CEPEJ lors de sa 31ème réunion plénière, Strasbourg, 3-4 décembre 2018, p. 36-45.

26 COMMISSION EUROPEENNE POUR L'EFFICACITE DE LA JUSTICE (CEPEJ). *Charte éthique européenne d'utilisation de l'intelligence artificielle dans les systèmes judiciaires et leur environnement* – Adoptée par la CEPEJ lors de sa 31ème réunion plénière, Strasbourg, 3-4 décembre 2018, p. 36-45.

27 HACHEM, Daniel Wunder; FARIA, Luzardo. Regulação jurídica das novas tecnologias no Direito Administrativo brasileiro: impactos causados por Uber, WhatsApp, Netflix e seus similares. *Revista Brasileira de Direito*. Passo Fundo: vol. 15, n. 3, p. 180-203, Setembro-Dezembro, 2019.

28 FRAZÃO, Ana. Plataformas digitais, big data e riscos para os direitos de personalidade. *In*: MENEZES, Joyceane Bezerra de; TEPEDINO, Gustavo (Coord.). *Autonomia Privada, liberdade existencial e direitos fundamentais.* Belo Horizonte: Fórum, 2019, p. 333-349.

more serious since it is unknown and lost in the opacity of algorithms or machine learning.[29]

These problems have been faced by specialists who point out that the use of this tool must observe basic principles and rights. They argue, therefore, that the use of artificial intelligence should be used in an ethical and responsible way, using data from reliable sources without violating fundamental rights, focusing on the constitutional goals and especially cautiously so as not to adopt discriminatory standards based on the very sensitive data extracted and analyzed.[30]

In other words, it is known that the use of AI will bring numerous benefits only if it observes human or fundamental rights, as well as numerous legal principles, among which the principles of legality, non-discrimination, and also transparency and algorithmic traceability.[31]

3 Regulating technologies in light of the precautionary principle

As seen in the previous section, the understanding is well known that the use of artificial intelligence should respect numerous principles, but that its use should not be disregarded, given its enormous potential even in the administrative or judicial field.

There is not much disagreement that artificial intelligence should seek to reinforce the guarantees of the Rule of Law and the enforcement of fundamental rights, as well as be inclusive and focus on sustainable development. As for its tough and more specific regulation on how to achieve such results, however, is where the controversy lies.

Administrative Law justifies the possibility of regulation and indirect state intervention in the economy given the impossibility or incompetence of the free market system to determine desirable behaviors or consequences, which generates market failures such as the non-preservation of competition. Another reason for regulation is the need to respect, promote, and protect fundamental rights due to the constitutional objectives of sustainable development.[32]

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29 HUFF, Darell. *Como mentir com estatística*. Rio de Janeiro: Intrínseca, 2016.

30 COMMISSION EUROPEENNE POUR L'EFFICACITE DE LA JUSTICE (CEPEJ). *Charte éthique européenne d'utilisation de l'intelligence artificielle dans les systèmes judiciaires et leur environnement* – Adoptée par la CEPEJ lors de sa 31ème réunion plénière, Strasbourg, 3-4 décembre 2018, p. 36-45.

31 CORVALÁN, Juan Gustavo. Inteligencia artificial: retos, desafíos y oportunidades – Prometea: la primera inteligencia artificial de Latinoamérica al servicio de la Justicia. *Revista de Investigações Constitucionais*, Curitiba, vol. 5, n. 1, p. 295-316, jan./abr. 2018.

32 BAPTISTA, Patrícia; KELLER, Clara Iglesias. Por que, quando e comoregular as novas tecnologias? Os desafios trazidos pelas inovações disruptivas. *RDA – Revista de Direito Administrativo*, Rio de Janeiro, v. 273, p. 123-163, set./dez. 2016.

But when one talk about regulating the new technology there is always the suspicion that state intervention is authoritarian and more harmful than beneficial because of the possibility of prematurely suffocate an innovation about which there is still no predictability. It is also argued that the regulatory activity is not inherent to immediate answers, because it requires a long process, including, for example, the regulatory impact analysis, which ends up generating state procrastination.[33]

In the meantime, the Internet giants (Facebook, Google, Amazon, Twitter, Youtube, etc.) that use artificial intelligence have already become the market itself and dominate it through "monopolies". Besides controlling the market, these platforms also possess a gigantic array of their users' personal data spread all over the world. This leads to two concerns: the first about the use of users' data, and the second of political and democratic nature, given their tendencies to control consciences, generate interference in elections, and increase polarization.[34]

This is because these digital platforms that use artificial intelligence are based on the "attention economy" in which people's audience is the greatest asset in dispute. The more time people spend on these platforms, the more time they will be subject to advertising and data delivery. The difference between these platforms and traditional services (of sound and image, for example) is their much broader capacity to manipulate individuality and alter consciousness.[35]

Such platforms can even interfere with people's own futures or life choices due to the definition, classification and judgment made by unknown algorithms, which can be used, for example, in a job selection.[36]

In this context, the regulatory procrastination of artificial intelligence only benefits these new technologies and digital platforms, but it will not necessarily lead to greater innovation or healthy competition, much less an egalitarian environment; on the contrary, it will allow the total domination of the big technology giants, which will even define human behavior and choices.[37]

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33 BAPTISTA, Patrícia; KELLER, Clara Iglesias. Por que, quando e como regular as novas tecnologias? Os desafios trazidos pelas inovações disruptivas. *RDA – Revista de Direito Administrativo*, Rio de Janeiro, v. 273, p. 123-163, set./dez. 2016.

34 FRAZÃO, Ana. Plataformas digitais, big data e riscos para os direitos de personalidade. *In*: MENEZES, Joyceane Bezerra de; TEPEDINO, Gustavo (Coord.). *Autonomia Privada, liberdade existencial e direitos fundamentais.* Belo Horizonte: Fórum, 2019, p. 333-349.

35 FRAZÃO, Ana. Plataformas digitais, big data e riscos para os direitos de personalidade. *In*: MENEZES, Joyceane Bezerra de; TEPEDINO, Gustavo (Coord.). *Autonomia Privada, liberdade existencial e direitos fundamentais.* Belo Horizonte: Fórum, 2019, p. 333-349.

36 FRAZÃO, Ana. Plataformas digitais, big data e riscos para os direitos de personalidade. *In*: MENEZES, Joyceane Bezerra de; TEPEDINO, Gustavo (Coord.). *Autonomia Privada, liberdade existencial e direitos fundamentais.* Belo Horizonte: Fórum, 2019, p. 333-349.

37 FRAZÃO, Ana. Plataformas digitais, big data e riscos para os direitos de personalidade. *In*: MENEZES, Joyceane Bezerra de; TEPEDINO, Gustavo (Coord.). *Autonomia Privada, liberdade existencial e direitos fundamentais.* Belo Horizonte: Fórum, 2019, p. 333-349.

The issue, therefore, goes far beyond regulating market failures or data protection, but brings to discussion even more sensitive topics such as personality rights and the survival of democracy. The application of artificial intelligence by the government brings even more problems, especially if it is the case to use one of the decision-making function, because as seen above this tool cannot be seen as an oracle immune to mistakes for not even being able to perform evaluative or causal analysis.

However, despite these numerous problems, currently the idea has prevailed that if there is a general legislation on data protection and also on the control of fake news, in other issues these platforms will self-regulate themselves. There is in the popular imagination and also in the scientific environment the notion that since these companies provide good and cheap services, they would therefore be able to self-regulate themselves.[38] Self-regulation is advocated because these platforms are often able to generate competition among sellers and regulate prices, provide information, and publicize the quality of services.[39]

However, to think of a market that acts freely and independently – and that can manipulate the personal data of billions of people – is a mistake of incalculable proportions. Thus, although the notion of self-regulation should not be disregarded, it should not rule out the need for some, even minimal, hetero-regulation over algorithms and artificial intelligence.[40]

It should be noted that the complete absence of state regulation is just a myth created for the less inhibited performance of large corporations in international markets.[41]

Of course, it is not possible to think that the new digital service platforms that make use of artificial intelligence (*e.g.*, Netflix, Youtube, WhatsApp or Uber) should be regulated in the same way as existing traditional services (e.g., sound and image services, telecommunications and transportation), which is as mistaken as imagining that because they are such diverse segments they are not subject to any regulation. The solution may lie in creating the same regulation for both or in the elaboration of a new regulation for the new platforms in conjunction with regulatory alternatives for the more traditional services without generating excessive burdens or benefits for

[38] FRAZÃO, Ana. Plataformas digitais, big data e riscos para os direitos de personalidade. *In*: MENEZES, Joyceane Bezerra de; TEPEDINO, Gustavo (Coord.). *Autonomia Privada, liberdade existencial e direitos fundamentais.* Belo Horizonte: Fórum, 2019, p. 333-349.

[39] FRAZÃO, Ana. Plataformas digitais, big data e riscos para os direitos de personalidade. *In*: MENEZES, Joyceane Bezerra de; TEPEDINO, Gustavo (Coord.). *Autonomia Privada, liberdade existencial e direitos fundamentais.* Belo Horizonte: Fórum, 2019, p. 333-349.

[40] FRAZÃO, Ana. Plataformas digitais, big data e riscos para os direitos de personalidade. *In*: MENEZES, Joyceane Bezerra de; TEPEDINO, Gustavo (Coord.). *Autonomia Privada, liberdade existencial e direitos fundamentais.* Belo Horizonte: Fórum, 2019, p. 333-349.

[41] SENA, Lucas. Regulação de novos mercados e inovação: uma abordagem a partir do Estado empreendedor e do interesse público. *Revista de Direito Setorial e Regulatório,* Brasília, v. 6, nº 1, p. 99-116, maio 2020.

either service. By focusing on market failures, regulation should therefore ensure minimally healthy competition without stifling innovation.[42]

Part of the solution may also lie in a general framework on artificial intelligence, since this innovation cannot serve as an excuse to disregard basic norms that exist in order to achieve sustainable development and preserve human dignity. In other words, technology cannot result in the circumvention of personality, competition, labor or environmental rights - as has often occurred.[43]

In Brazil there are some normative and regulatory initiatives that address issues related to artificial intelligence and these new platforms, such as the Marco Civil da Internet (Law No. 12,965/2014) with provisions for net neutrality and personal data protection, and also the Lei Geral de Proteção de Dados – LGPD (Law No. 13,709/2018) with provisions for net neutrality and personal data protection. There are also sparse norms and regulations, as well as the General Law of Data Protection – LGPD (Law No. 13,709/2018) with the provision for the creation of a National Authority for Data Protection – ANPD which must prepare guidelines for the National Policy of Protection of Personal Data and Privacy and supervise and apply sanctions in case of data processing performed in non-compliance with the legislation.

There are also sparse and sectorial norms, such as Resolution 332/2020 of the National Council of Justice – CNJ, which determines the respect for fundamental rights when using artificial intelligence by the Brazilian Courts, and the determination of community action and interface standards among the Courts, as well as that the team responsible for programming be diversified in order to avoid discrimination, is commendable. The resolution also provides for the right to explanation without, however, expressly restricting the substitution of complex decisions that involve restriction or denial of rights or analysis of value and causality by the automated decision, since it only determines the need for supervision. It also does not expressly forbid the use of AI for decisions in criminal cases, although it recommends that this use should not be encouraged.

There are also other proposals in progress that surround the theme, such as the Bill No. 2630/2020 (Fake News Law), which seeks to establish rules regarding the transparency of social networks and private messaging services, especially regarding the responsibility of providers to combat misinformation.[44] But specifically

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42 FRAZÃO, Ana. Plataformas digitais, big data e riscos para os direitos de personalidade. *In*: MENEZES, Joyceane Bezerra de; TEPEDINO, Gustavo (Coord.). *Autonomia Privada, liberdade existencial e direitos fundamentais.* Belo Horizonte: Fórum, 2019, p. 333-349.

43 FRAZÃO, Ana. Plataformas digitais, big data e riscos para os direitos de personalidade. *In*: MENEZES, Joyceane Bezerra de; TEPEDINO, Gustavo (Coord.). *Autonomia Privada, liberdade existencial e direitos fundamentais.* Belo Horizonte: Fórum, 2019, p. 333-349.

44 Available at: https://www25.senado.leg.br/web/atividade/materias/-/materia/141944. Accessed on: 10 Sep. 2020.

regarding the use of algorithms and artificial intelligence, the legislative initiative has been timid, with general rules and little technical rigor (soft law).[45]

Thus, despite these regulations, there is no federal legislation or general legal framework that specifically regulates the use of algorithms and artificial intelligence, not even a legislative proposal with tough regulation. And there is also no centralized coordination with specialized technicians by a regulatory agency to address the issue as noted in the public hearing on the issue held on October 15, 2018 where crass mistakes were made. Perhaps with the creation of the ANPD this scenario will change, even though it does not have the nature of a regulatory agency, nor does it deal specifically with artificial intelligence.[46]

In fact, the LGPD itself is overdue, since several data leaks have already occurred in the country and culminated, due to the lack of regulation, in the solution through civil liability. This is the case, for example, of the SOS Consumidor Association, which filed a public civil action against Facebook in Brazil for the leak of the data of 443,000 Brazilian users.[47] Similar to this situation is the public civil action filed by the Public Ministry against Microsoft to prevent the operating system of Windows 10 computer continues to obtain users' personal data without their express consent, in addition to the legal claim for collective moral damages.[48]

The fact is that minimally adequate state regulation of artificial intelligence cannot consist of mere generic predictions of respect for fundamental rights and data protection or the right to an explanation of the automated decision, even though these initiatives are important and deserve due recognition. It is also not possible for regulations to be treated in a sectored way or without coordinated planning or with little technicality.

Finally, it is still necessary to have a more specific and harsh regulation of artificial intelligence so that irreversible damage affecting large collectives is avoided. This is the case of the use of artificial intelligence in robotic cars or in health care, as well as in the manipulative and polarizing form of algorithms by the titans of the Internet. There must also be an express legal prohibition on the use of automated

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45 Bill 21/2020 wants to establish the Legal Framework for Artificial Intelligence in Brazil and was proposed by congressman Eduardo Bismarck (PDT-SP). Other projects are analyzed in: PARENTONI, Leonardo Netto; VALENTINI, Rômulo Soares; ALVES, Tárik César Oliveira e. Panorama da regulação da inteligência artificial no Brasil: com ênfase no PLS N. 5.051/2019. *Revista Eletrônica do Curso de Direito da UFSM*, Santa Maria, RS, v. 15, n. 2, e43730, mai./ago. 2020.

46 POLIDO, Fabrício Bertini Pasquot. Inteligência artificial entre estratégias nacionais e a corrida regulatória global: rotas analíticas para uma releitura internacionalista e comparada. *Rev. Fac. Direito UFMG*, Belo Horizonte, n. 76, p. 229-256, jan./jun. 2020

47 Available at: http://www.migalhas.com.br/Quentes/17,MI278853,11049-Associacao+processes+Facebook+for+leaking+of+data+of+users. Accessed on: 09 Apr. 2018.

48 Available at: https://oglobo.globo.com/economia/defesa-do-consumidor/mpf-entra-com-acao-contra-microsoft-para-que-windows-10-deixe-de-coletar-dados-dos-usuarios-22631101. Accessed on: 09 Apr. 2018.

decisions to substitute administrative or judicial decisions that involve value or causality analysis, especially in criminal proceedings.

It is in this context that it is understood that regulation can be carried out in light of the precautionary principle in order to avoid such irreversible damage. This principle, which is the cornerstone of all Environmental Law, fits in Administrative Law.[49]

This principle states that it is not credible to wait for damage to occur and only then protect the environment, determining its recovery, especially because the degradation will often be irreversible, i.e., the degraded environment is often unrecoverable. Thus, attention must be focused on the moment prior to the damage, i.e., the risk of degradation.[50]

In this context, the Law of National Environmental Policy in Brazil – LPNMA (Law No. 6,938 of 1981) inserted as objectives of public policy, the compatibility of economic and social development with the preservation of environmental quality, ecological balance, and the preservation of environmental resources. Thus, prevention, through sustainable development, has been positivized in this pioneering law in Latin America.[51]

Precaution (broader than prevention), as a principle, according to Lemes Machado, gained strength at the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992. In the Rio 92 Declaration 27 principles were voted on, among them the precautionary principle, according to which action to eliminate possible harmful impacts on the environment must be taken before a causal link has been established with scientific evidence.[52]

Leite and Ayala summarize the issue by stating that "the prevention principle is directed at concrete danger, whereas, in the case of the precautionary principle, prevention is directed at abstract danger".[53]

Paulo de Bessa Antunes has a different view, arguing that banning any activity supposedly harmful to the environment on the grounds that scientific certainty is not necessary for such a ban would be a maximalist application of the precautionary principle. Antunes asserts that scientific uncertainty cannot make the precautionary principle a general, open and indeterminate clause. He states that in applying this principle, it is necessary to define the risk to be avoided. In other words, he argues

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49 DIONISIO, Pedro de Hollanda. Princípio da precaução e contradições na regulação do risco: uma análise comparada entre Estados Unidos e Europa. *In*: BECKER, Daniel; FERRARI, Isabela (Coord.). *Regulação 4.0* – Novas tecnologias sob a perspectiva regulatória. São Paulo: Thomson Reuters Brasil, 2019 (livro eletrônico).

50 MILARÉ, Édis. *Direito do ambiente*: doutrina, prática, jurisprudência, glossário. 4. ed., rev., atual. e ampl. São Paulo: Revista dos Tribunais, 2005, p. 756.

51 MACHADO, Paulo Affonso Leme. *Direito Ambiental Brasileiro.* 12. ed. São Paulo: Malheiros, 2004, p. 55.

52 LEITE, José Rubens Morato. *Dano Ambiental* – Do Individual ao Coletivo. 7. ed. São Paulo: Revista dos Tribunais, 2015, p. 52.

53 LEITE, José Rubens Morato. *Dano Ambiental* – Do Individual ao Coletivo. 7. ed. São Paulo: Revista dos Tribunais, 2015, p. 52.

that the precautionary principle cannot be trivialized, and that the only legally legitimate application of it is that which takes into account existing laws in the country and determines the assessment of an activity's environmental impacts.[54]

That is, according to this understanding one cannot apply the precautionary principle as a precautionary measure regardless of the nature of the damage that must be avoided, which would be a maximalist position. A minimalist position, in turn, considers socioeconomic development above sustainability, a thought that Antunes also refutes.[55]

For Bessa Antunes, therefore, an intermediate thought should be adopted in order to reach a balance between all aspects involved in the concrete case, thus privileging rationality. Meanwhile, he argues that there must be a real possibility of concrete damage for the precautionary principle to be applied, thus prohibiting polluting activities.[56]

Despite disagreeing with Bessa Antunes as to the application of this principle in Environmental Law, it is understood that this intermediate understanding is welcome and justifiable in Administrative Law, especially for regulatory purposes.

This is because it is important that, starting from individual or collective damages with a real possibility of occurrence through the use of artificial intelligence, regulations are made focusing on the precaution of such damages. Thus, it is essential that, considering these damages and problems, regulatory impact analyses are conducted by specialists, public hearings and other instruments that seek to identify an adequate regulation of artificial intelligence taking into consideration the precautionary principle.

It should be noted that data protection alone is not enough to defend fundamental rights, democracy and, above all, avoiding irreversible damage caused by the use of artificial intelligence. As we have seen, these regulations do not deal with the damage that can occur using robotic cars, AI applied to health care or in automated and opaque decisions.

In this context, Juarez Freitas points out that "sustainable development requires an incisive and cohesive administrative intervention to guarantee, to the present and future generations, the right to the future.[57] It is with focus on this foundation that it is urgent that the regulation of artificial intelligence aims at sustainable development and, therefore, has a strategic multisectoral and coordinated regulation, considering

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54 ANTUNES, Paulo de Bessa. *Direito Ambiental.* 11. ed., rev., atual. e ampl. Rio de Janeiro: Lumen Juris, 2008, p. 29-45.

55 ANTUNES, Paulo de Bessa. *Direito Ambiental.* 11. ed., rev., atual. e ampl. Rio de Janeiro: Lumen Juris, 2008, p. 29-45.

56 ANTUNES, Paulo de Bessa. *Direito Ambiental.* 11. ed., rev., atual. e ampl. Rio de Janeiro: Lumen Juris, 2008, p. 29-45.

57 FREITAS, Juarez. Teoria da regulação administrativa sustentável. *RDA – Revista de Direito Administrativo*, Rio de Janeiro, v. 270, p. 117-145, set./dez. 2015.

its impacts and aims to effectively realize the fundamental rights of present and future generations.

Moreover, the normative basis for applying the precautionary principle in Administrative law is based on the provisions of art. 174 of the Federal Constitution, which states that State planning is mandatory, and must look to the future in order to achieve constitutional objectives and goals. And there can be no planning without damage analysis, precaution, or regulation. Moreover, there is also the provision of art. 6, VII and VIII of LGPD that deals specifically with the need for data processing to observe the principle of security and prevention.

In short, a tough regulation of algorithms and artificial intelligence is urgent in order to avoid, at least for now, irreversible damages by using public hearings, prior impact analysis or other instruments, as provided by the LGPD, Law No. 13,874/2019 (Economic Freedom Law) and Law No. 13,848/2019 (Law on Agencies), especially considering that the tool is already being widely used in the market and in the government.

4 The entrepreneurial state and AI

It is also important to emphasize that what most stifles innovation is not regulation, but the absence of a coordinated and vigorous national entrepreneurial state.

In this context, Mazzucato points out that there is a mistaken image that the State is a paralyzing force, and that only commercial activity has innovative force. However, in her studies, the author demonstrates how the riskiest investments driven by uncertainty or innovation (such as green technology, internet, biotechnology and nanotechnology) do not attract the attention of private investors, relegating this task to the public sector. And so, consequently, she argues that the State is not a mere facilitator of the private sector, nor is it an intruder, but operates in true partnership and as an entrepreneurial agent.[58]

The author cites as an example the case of Jobs' iPhone, which was only created because of public investments. She also exemplifies the case of the pharmaceutical industry when producing revolutionary drugs, in which public investment is once again a driver of innovation. Mazzucato emphasizes, finally, that it is necessary to understand this entrepreneurial function of the State so that the public sector can carry out more appropriate policies and maximize its capacity in the meantime.[59]

[58] MAZZUCATO, Mariana. *O estado empreendedor*: desmascarando o mito do setor público *vs.* setor privado. Tradução: Elvira Serapicos. São Paulo: Portfolio-Penguin, 2014, p. 29 e 33.

[59] MAZZUCATO, Mariana. *O estado empreendedor*: desmascarando o mito do setor público *vs.* setor privado. Tradução: Elvira Serapicos. São Paulo: Portfolio-Penguin, 2014, p. 26.

Therefore, if the intention is to foster innovation and achieve sustainable development when it comes to artificial intelligence, the Brazilian state will need to do much more than regulate the new technologies after their consolidation.

An important example of state support for the application of AI is mentioned by Amy L. Stein, who refers to its use in the electric power sector in order to reduce carbon emissions and contain global warming climate change. Stein points out that this application is not only less controversial than the use of AI in administrative or judicial proceedings, but its cost is also much more justifiable and beneficial. This application can accelerate the development of clean energy technologies, improve electricity demand forecasts, and even enable the discovery of new substances for use in batteries that store energy.[60]

The use of machine learning in a predictive or decision-making role in this sector can also, for example, assist in the design and operation of wind and also solar farms to make these renewable energy systems much more efficient at generating electricity. But for this to occur, public funding is essential.[61]

However, despite the clear importance of public investments for innovations to occur, in Brazil as in the United States, due to a current liberal market orientation, there is not a strong state program or a coordinated strategy that manages such investments for the artificial intelligence sector, not even in the Brazilian Strategy for Digital Transformation regulated by Decree No. 9.319/2018 of the Federal Executive.[62]

Currently, policies on the subject are the responsibility of the Secretariat of Applied Technologies, a body of the Ministry of Science, Technology, Innovations, and Communications, and there is a project in this direction in public-private partnerships aimed at promoting the creation of Applied Research Centers in Artificial Intelligence. However, there is no information if there were interested parties, if the proposals involve coordinated planning, or even if any proposal was approved.[63]

The artificial intelligence has already been used in certain scale by brazilian´s Public Administration), but as highlighted above this is taking place in a sectorized manner and without coordination or central planning. The Administration therefore faces several problems for the use of this tool. One of these is the absence of a

[60] STEIN, Amy. Artificial Intelligence and Climate Change. *Yale Journal on Regulation.* New Haven, Connecticut: vol. 37, issue 3, p. 890-939, 2020.

[61] STEIN, Amy. Artificial Intelligence and Climate Change. *Yale Journal on Regulation.* New Haven, Connecticut: vol. 37, issue 3, p. 890-939, 2020.

[62] POLIDO, Fabrício Bertini Pasquot. Inteligência artificial entre estratégias nacionais e a corrida regulatória global: rotas analíticas para uma releitura internacionalista e comparada. *Rev. Fac. Direito UFMG*, Belo Horizonte, n. 76, p. 229-256, jan./jun. 2020

[63] PARENTONI, Leonardo Netto; VALENTINI, Rômulo Soares; ALVES, Tárik César Oliveira e. Panorama da regulação da inteligência artificial no Brasil: com ênfase no PLS N. 5.051/2019. *Revista Eletrônica do Curso de Direito da UFSM*, Santa Maria, RS, v. 15, n. 2, e43730, mai./ago. 2020.

sufficient data base for big data formation, because there is no sharing between entities belonging to the government or this data does not have interoperability due to the diversity of systems. This creates difficulties, because as said the machine will only learn what is in the data base and if the base is bad, there is no way to apply with security and artificial intelligence. Another difficulty it's to capacitate the public agents to identify the opportunities of using this technology.[64]

Federal Decree No. 10,046/2019, which establishes the "base register of the citizen" brings some solutions in this regard, but besides these solutions being weak, they only refer to the federal level, i.e., they disregard the need for interoperability of data between the Union, states and municipalities. In addition, this Decree can only be applied to what is in line with the LGPD, which is another limiting factor.[65]

Decree No. 10,332/2020, in turn, brings a good goal, as it establishes new digital government strategies for the period from 2020 to 2022 and contains the forecast of applying AI resources in at least twelve federal public services. It is noteworthy, however, that although the initiative is commendable, it will not be the number of projects that will determine the success of the application of AI in public services, but whether its use will take into account the cost-benefits, a universalized and equal service to society, the resolution of the most serious and critical problems that require technology, as well as the focus on sustainable development.

Thus, while Brazil remains almost omitted in coordinated planning for the use of AI, other countries are investing in new technologies and in the application of artificial intelligence not only for economic activities, but also for public policies and services.

Canada, for example, is a global leader in this theme, with study and application initiatives since 1970, although specifically in terms of state promotion and regulation, the initiatives are much more recent, having resulted in the Montreal Declaration as an important instrument, although not binding, on the humanistic use of AI. The UK has proposed regulation and fostering since 2018. China, meanwhile, has an aggressive state project to become the market leader in artificial intelligence by 2025, although it does not address regulation, nor security.[66]

The United States of America, with a memo of the White House had propose in 2020 a guide for the sector agencies be able to draw up the AI regulation by

[64] VIEITEZ, Diego Losada. *Controle de Políticas Públicas pelos Tribunais de Contas e GovTechs*. Porto Alegre, 2018. Dissertação (Mestrado) – Programa de Pós-Graduação em Direito, Universidade Federal do Rio Grande do Sul, p. 73-91.

[65] VIEITEZ, Diego Losada. *Controle de Políticas Públicas pelos Tribunais de Contas e GovTechs*. Porto Alegre, 2018. Dissertação (Mestrado) – Programa de Pós-Graduação em Direito, Universidade Federal do Rio Grande do Sul, p. 73-91.

[66] POLIDO, Fabrício Bertini Pasquot. Inteligência artificial entre estratégias nacionais e a corrida regulatória global: rotas analíticas para uma releitura internacionalista e comparada. *Rev. Fac. Direito UFMG*, Belo Horizonte, n. 76, p. 229-256, jan./jun. 2020

indicating ten principles to be followed, being one of them, the one about the analytics and risk management.[67] Finally, the European Union, which has a strong support in the area, also presented in early 2020 a proposal for regulation for popular before legislative conversion.[68]

5 Conclusion

The new technologies raise again in the question about the role of the State. And while there is much discussion about this, especially with the growth of neoliberal currents, there is no way to deny, despite there signation of some, that the Federal Constitution of 1988 is interventionist and social,[69] so the state must observe the public interest, represent the interests of the collective and act directly in favor of the realization of the fundamental economic and social and environmental rights.[70]

To reach those and other constitutionals objectives, it's fundamental, to have planning on the Public Power. And planning, reach all the regulation and the fomentation of new Technologies.

Therefore, through the research carried out, it was concluded that both a Member State regulator is needed to avoid irreversible damage as a state-entrepreneur that encourages the application of artificial intelligence in economic activities and also to public policies and services, with a view to its potential to ensure more efficiency. For now, the Brazilian state is missing when it comes to regulating, promoting and planning, therefore, it is increasing its distance to reach their constitutional objectives in a society that in the 21st century, besides being at risk, is already algorithmic.

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67 The principles are: (i) public trust n AI; (ii) public participation; (iii) scientific integrity and quality of information; (iv) risk assessment and management; (v) costs and benefits; (vi) flexibility; (vii) fairnessand non-discrimination; (viii) disclosure and transparency; (ix) safety and security; and (x) inter-institutional coordinationl. Avaiable at : http://participa.br/estrategia-brasileira-de-inteligencia-artificial/blog/contribuicao-google. Accessed on: 06 Oct. 2020.

68 Available at: http://participa.br/estrategia-brasileira-de-inteligencia-artificial/blog/contribuicao-google. Accessed on: 06 Oct. 2020.

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70 HACHEM, Daniel. A maximização dos direitos fundamentais econômicos e sociais pela via administrativa e a promoção do desenvolvimento. *Revista de Direitos Fundamentais e Democracia*, v. 13, n. 13, p. 340-399, jan./jun. 2013, p. 342.

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Informação bibliográfica deste texto, conforme a NBR 6023:2018 da Associação Brasileira de Normas Técnicas (ABNT):

SCHIER, Adriana Ricardo da Costa; MAKSYM, Cristina Borges Ribas; MOTA, Vitória Dionísio. The urgency of regulating and promoting artificial intelligence in the light of the precautionary principle and sustainable development. *International Journal of Digital Law*, Belo Horizonte, ano 2, n. 3, p. 133-152, set./dez. 2021. DOI: 10.47975/IJDL.schier.v.2.n.3.

IJDL – INTERNATIONAL JOURNAL OF DIGITAL LAW

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Rua Paulo Ribeiro Bastos, 211 – Jardim Atlântico – CEP 31710-430
Belo Horizonte – Minas Gerais – Tel.: (31) 2121.4900
www.editoraforum.com.br / E-mail: editoraforum@editoraforum.com.br

Impressa no Brasil / Printed in Brazil / Distribuída em todo o Território Nacional

IN61 International Journal of Digital Law – IJDL. – ano 1, n. 1 (abr. 2020) –.– Belo Horizonte: Fórum, 2020-.

Quadrimestral; Publicação eletrônica
ISSN: 2675-7087

1. Direito. 2. Direito Digital. 3.Teoria do Direito. I. Fórum.

CDD: 340.0285
CDU: 34.004

Coordenação editorial: Leonardo Eustáquio Siqueira Araújo
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