ARTIFICIAL INTELLIGENCE

AI

TECHNOLOGY APPLIED TO CONFLICT RESOLUTION IN THE BRAZILIAN JUDICIARY

COORDINATION   LUIS FELIPE SALOMÃO

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PRESENTATION

P R E S E N T A T I O N

The efficiency of the justice system issue involves the idea of management and the use of technology tools, in particular artificial intelligence (AI). Considering this scenario, the Center of Innovation, Administration and Legal Research at Fundação Getulio Vargas, under the coordination of Minister Luis Felipe Salomão, has a mission to identify, understand, systematize, develop and improve solutions aimed at improving justice.

The FGV Center conducts research that focuses on "Technology applied to the management of conflicts within the Judiciary with an emphasis on artificial intelligence". The research is one of the Center's initiatives and is being carried out through the construction of an interinstitutional network of researchers. The choice of the theme was due to the interest in monitoring the goals related to the objective of sustainable development of the UN 2030 Agenda in Brazil.

The general objective of this research was to carry out a survey of the use of intelligence artificial in certain Brazilian courts. The specific objectives were: to identify these projects and their respective functionalities; the current state of technology; the impact produced by the use of AI; the expected and achieved results; and in the cross-analysis of these data to verify the impact of AI on the speed, efficiency and productivity of the courts.

The research sample included the Supreme Federal Court – STF, the Superior Court of Justice – STJ, the Superior Labor Court – TST, the Regional Labor Courts, the Regional Federal Courts and the Courts of Justice. The collection of these data was carried out by filling out a form, which had a 98% response rate.

The relevance of this sampling can be seen in the analysis of the structure of the Brazilian Judiciary, which is divided into five branches: State Justice, Labor Justice, Federal Justice, Electoral Justice and Military Justice, and has a total of 91 courts. The research universe covered 3 of these 5 segments, 59 courts and the National Council of Justice.

In this report, the results of the first phase of the research developed are disclosed by the FGV Center. As will be seen later, the data collected show that about half of the Brazilian courts have an artificial intelligence project under development or have already been imple‐ mented, mostly, by the internal team of the courts, as well as through partnerships between courts that are being captained by the National Council of Justice and the Superior Council for Labor Justice.

This is the first stage of a research that intends to analyze several aspects of the appropriate use of artificial intelligence in other research fronts, which will involve databases, model train‐ ing, specificities of the AI techniques used and which will be developed in the future within the FGV Center.

I

INTRODUCTION

01

INTRODUCTION

1.1. The mission of the Center of Innovation, Administration and Legal Research

The mission of the Center of Innovation, Administration and Legal Research is to contribute to the improvement of the justice system, promoting the development of research, studies, discussion forums, events and academic activities.

1.2. Research Line: Innovation, Administration and Effectiveness of the Justice System

The existence of a well-administered justice system is essential for maintaining a series of structural guarantees of the rule of law. Therefore, for national development, the adequate addressing of fundamental rights and the fulfillment of the organizing function of public administration, also present in the Judiciary of democratic states, it is necessary to adopt good management practices.[29]

Furthermore, the existence of good administration in the Judiciary can directly impact the country's economic arrangement. Studies by international organizations indicate a direct influence on the economy by the existence of a well-managed judicial system.

The OECD, for example, points to the economic consequences of judicialization in the global context of countries.[30] A Similar analysis was made by the European Commission's Joint Research Center. In 2017, the institution identified direct correlations both between the improvement in efficiency of the courts and in the growth rate of the economy and with regard to the perception of entrepreneurs and investors about judicial independence.[31]

The objective of this line of research is to study the justice system from elements that, for decades, have passed away from the horizon of academic research and public policies – or, when they passed, have not been the object of systematization and scientific monitoring. At the same time, more specific goals and evaluation criteria have been included in the guide-

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29   LEAL, Carlos Ivan Simonsen. A evolução da democracia através da Administração Pública. In: **Administração Pública e Gestão do Poder Judiciário**. v.. 15. FGV, 2012, p. 14.

30 OECD. **What makes civil justice effective?** OECD Economics Department Policy Notes. No. 18. June, 2013.

31 Comissão europeia. **The 2018 EU justice Scoreboard**. Luxembourg: Publications Office of the European Union, 2018
Available at: <https://ec.europa.eu/info/sites/info/files/justice_scoreboard_2018_en.pdf>. Accessed on: June 20, 2019.

lines, in addition to indicators originating in the private sector, such as the satisfaction of users of the justice system, cost-benefit, quality management and performance evaluation. Regarding efficiency, the data is not just about quantitative terms, but also qualitative ones.

An interesting question to start with would be: what exactly does it aim to improve? A survey by Université Paris I Pantheón-Sorbonne[32] sought to understand the quality of Justice from the perspective of the actors in the process, such as magistrates, lawyers and "lay judges", and also the variations according to the procedural moment, as in the production of the evidence and other specificities related to litigation.

This study found that even the perceptions of individuals in the same category had great variations. For example, for the question "what is a quality justice?",[33] the responses from the magistrates varied between: a quick and adapted justice for each situation; personalized justice, with good listening and a well-reasoned judgment in a fair time; the display of a good (institutional) image; consistency and predictability.

With regard to new technologies,[34] the report identified that they increase productivity, increase quality, manage shortages in the long run, and, today, are essential tools for court management. In France, research found that the digitization of processes, in general, and decisions in particular, contributes to quality as it expands the possibilities of research and search for precedents.

In general, the theme "management" linked to the administration of justice is recent, and it can be said that the justice system lacked data that would allow mapping its administrative structure. The development of studies on strategic management and organizational performance was driven by the creation of mechanisms that allowed measuring the performance of the justice system. Such studies enabled a mapping about the real situation of the legal systems and, with this, opened an opportunity for the implementation of means that ensure a greater use of the applied resources.

The introduction of new means of administering justice systems requires constant updating so that the legal systems can support the constant changes in society, which impact several aspects of this order, such as the amount of litigation, the type of demands and even the relationship of society with each justice system. In this way, innovations are needed to ensure the successful management of existing social conflicts.

In addition to new management techniques developed to improve efficiency and quality of services in general, most innovations are linked to the development or new applications of technological solutions to justice systems.

From them, it is possible to develop mechanisms that streamline and, eventually, even revolutionize administrative procedures and that, as a result, have several positive factors , among which are greater speed of procedures and bringing citizens closer to the processes , given the ease of access to documents and progress, in each step, of the judicial mechanisms for resolving conflicts.

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32 UNIVERSITÉ PARIS I PANTHEÓN-SORBONNE. **La prise en compte de la notion de qualité dans la mesure de la performance judiciaire** – La qualité: une notion relationnelle, 2015. Available at: <https://halshs.archives-ouvertes.fr/halshs-01220557/document>. Accessed on: October 3, 2019.

33 Ibid, p. 34.

34 Ibid, pp. 92-95.

Nevertheless, these new technologies bring the possibility of observing the justice system by another dimension, i.e., the data dimension, as it becomes possible to process, read and analyze millions of data, texts and documents in a short time, by high computational capacity servers and artificial intelligence systems.

1.3. The context of the research

Among the objectives outlined by the United Nations for the year 2030,[35] one of them addresses the existence of judicial systems accessible to all, endowed with effectiveness, responsibility and inclusion, as transcribed below:

> Objective 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.[36]

Therefore, there is a concern with the quality of the countries' judicial system, which must be effective, adequate and accessible, providing justice to all who need it.

Among public and private organizations that seek to research criteria for measuring quality and effectiveness of the justice system, many of them refer to the use of technology as an important tool.

Within the European Commission for the Effectiveness of Justice (CEPEJ) to ascertain the existence of quality and effectiveness parameters in the judicial systems of the member countries in the European Union, the European Justice Score was established, with indi-cators regarding electronic filing of cases, communication between courts and parties, training of judges, financial resources, as well as ICT systems and standards for process management.

With a purpose more focused on economic and investment purposes, the World Bank publishes an annual report entitled Doing Business, which points out the ease of doing business in the most diverse economies on the planet. The analysis, considered a relevant parameter for foreign investment by large companies, seeks to understand and rank coun-tries according to criteria established for each edition, considered fundamental for verifying the country's scenario for investments and new business.[37]

Among the evaluated criteria, there is a specific one, instituted for the evaluation of the qual-ity of the lawsuits in the 2019 Doing Business Report, which verifies the Court's automation index and has four main requirements:

1) In the first question, if it is possible to file the initial petition electronically, on a specific platform, without the need for a printed copy, a point is awarded to the country under anal-ysis. Otherwise, the score is zeroed in that item of the evaluation.

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35   HOLDEN, LINNERUD, BANISTER, SCHWANITZ, WIERLING. **The imperatives of sustainable development.** Routledge. Nova York, 2018.

36   NAÇÕES UNIDAS BRASIL. **Objetivo 16:** Promover sociedades pacíficas e inclusivas para o desenvolvimento sustentável, proporcionar o acesso à justiça para todos e construir instituições eficazes, responsáveis e inclusivas em todos os níveis. ONU. Available at: <https://nacoesunidas.org/pos2015/ods16/>. Accessed on: June 28, 2019.

37   BANCO MUNDIAL. **Doing Business 2019**: Training for reform. 16th ed. Washington DC, 2019.

2) At that point, the full score is provided in situations where the initial petition can be sent to the defendant electronically, either through a specific system or even through common channels, such as e-mail, fax, messages, among others. It is worth mentioning that the procedure must be automatic, without the need for other procedures or services for its implementation.

3) The possibility of paying court costs and fees by electronic means constitutes the third score of this criterion, which will only be granted in full if that payment works independently for the Judiciary accounting, without the need to prove payment by sending the receipt or by other similar means.

4) The last point in this criterion involves the publication of decisions and judgments in public media, such as major newspapers, newsletters or official diaries. The maximum score is given when all decisions involving Commercial law are published. In situations where only the decisions from the higher levels are published, half a score is necessary, with the score for this item being zeroed in other cases.

One of the first academic approximations made between the justice system and technology was carried out by Boaventura Sousa Santos,[38] when dealing with the courts and new information and communication technologies (NICT). According to the author:

> NICT has enormous potential for transforming the judicial system, both in terms of administration and management of justice, transforming the exercise of legal professions, and in democratizing access to law and justice. Regarding administration and justice management, new technologies can have a positive effect on the speed and effectiveness of judicial proceedings. They can, for example, replace routine tasks, allow a more effective control of the processing of cases, improve the management of human resources, judicial secretariats and judicial agendas, allow the submission of procedural documents in digital support, facilitate access to sources of law and thereby help judicial operators to know and interpret the legal system, for many judicial operators, which is increasingly complex. As regards the democratization of access to the law and justice, the new information technologies enable more circulation of more information and, therefore, a closer and more transparent law and justice. For example, they facilitate access to legal databases, essential information for the exercise of rights, and enable the easy exercise of a set of citizens' rights and duties. Today, it is possible, through electronic networks, to submit applications, receive information, pay for certain fees or taxes, or even consult processes.[39]

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38 SANTOS, Boaventura de Sousa. Os tribunais e as novas tecnologias de comunicação e de informação. In: **Sociologias**, n. 13, Porto Alegre, Jan.-Jun., 2005. Available at: <http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1517-45222005000100004>. Accessed on: August 28, 2019..

39 SANTOS, Boaventura de Sousa. Os tribunais e as novas tecnologias de comunicação e de informação. In: **Sociologias**, n. 13, Porto Alegre, Jan.-Jun., 2005. Available at: <http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1517-45222005000100004>. Accessed on: August 28, 2019.

Boaventura de Sousa Santos[40] states that technology can positively impact several aspects of the justice system:

1. The management of human resources, promoting productivity, efficiency and reducing costs;
2. The promotion of information and communication management within the judicial system;
3. The treatment and organization of large amounts of information and documents, more quickly and efficiently;
4. Accessibility to the public, making the justice system closer to citizens.

AI tools can be used in the justice system for several purposes: a) search for advanced jurisprudence; b) online dispute resolution; c) predictive analysis of decisions; d) screening of processes; e) grouping by similarity jurisprudence; f) voice transcription for texts with context; g) semi-automatic generation of parts; among others.

Regarding these applications, Richard Susskind states that they are disruptive technologies and "it is hard to ignore the recent avalanche of interest in artificial intelligence".[41] Analyzing the applications of AI, the author states that:

> When machines today can make predictions, identify relevant documents, answer questions, and handle emotions at a higher standard than human beings, it is not just reasonable, it is vital than we ask whether people or systems will be doing our legal work in decades in come".[42]

Currently, the automation spectrum of the Judiciary enables, in addition to registration, the classification and organization of information, the grouping of cases by similarity (repetitive judgments), jurimetry, conclusions about evidence, interlocutory decisions and terminative sentences.

Digitization was included as a tool for conflict management, prevention and resolution, gradually, both in consensual means and in some specific cases, in adjudication, in the essential performance of the jurisdiction and the State. There are also experiences of digital courts also known as e-Courts or Electronic Courts, which correspond to judicial bodies that have a structure designed to allow the parties to operate through a secure system anchored on the Internet. As an example, some administrative and procedural aspects related to the court's functions, such as presenting evidence, filing documents (electronic filing) or listening to testimonials remotely goes from the face-to-face and material world to the digital and virtual world.

In general, this subject is usually understood only by the aspect of digitization, that is, as if the goal were just to reduce the use of paper in the judicial spheres. The issue is much deeper and aims to increase the efficiency of the court with the use of algorithms and artificial intelligence, streamlining access to information, managing the process, increasing quality and optimizing decisions.

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40 SANTOS, Boaventura de Sousa. Os tribunais e as novas tecnologias de comunicação e de informação. In: **Sociologias**, n. 13, Porto Alegre, Jan.-Jun., 2005. Available at: <http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1517-45222005000100004>. Accessed on: August 28, 2019.

41 SUSSKIND, Richard. **Tomorrow lawyers.** 2. ed. Oxford: Oxford University Press, 2017, p. 186.

42 SUSSKIND, Richard. **Tomorrow lawyers.** 2. ed. Oxford: Oxford University Press, 2017, p. 187.

In the Portuguese program entitled "Justiça + Próxima", innovative technological mechanisms were used in different sectors, such as case management, electronic filing, document management, digitalization of court functions, HR management tools, help desk and public information systems to facilitate the accessibility of justice, bringing the country's justice system closer to its citizens.[43]

In addition to Portugal, several other European countries have, in the past few years, made significant changes regarding the management of their respective judicial systems from the implementation of new information and communication technologies (ICT).

The book "Justice and Technology in Europe: How ICT is changing the judicial business" brings a compilation of studies presented at a conference on the topic in Italy, in September 2000.[44] It shows the existence of a standard evolutionary line among most European coun-tries, which dates back to the 1980s, with the structuring of databases. In the 1990s, most of these countries developed Interesting IT, but they were applied in isolation, without a specific action plan for their application. Currently, the study points to a joint movement in search of implementing IT platforms for judicial management and expanding access to justice.[45]

From another perspective, the use of AI can also offer risks and raise new challenges. In this way, these new nuances that permeate this type of conflict treatment, although endowed with benefits sought for the justice system, such as speed, low cost and simplicity, do not dispense with analysis of the limits to which they must be submitted, in order to ensure the maintenance of public order and the protection of all the interests, principles and rights involved.

At the global level, the production and capture of new data has been growing dramatically and is currently estimated at around 40 Zettabytes according to IDC, which predicts the growth of this new data to 175 ZB in 2025.[46]

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43   OECD. **Towards People-centred and Innovative Justice in Portugal: Case Study Highlights**. Available at: <https://www.portugal.gov.pt/download-ficheiros/ficheiro.aspx?v=bd954372-e6f7-495c-9c7c-941f99e3762d>. Accessed on: October 3, 2019.

44   FABRI, Marco; CONTINI, Francesco. **Justice and Technology in Europe**: How ICT is changing the judicial business. Dordretch: Kluwer Law International, 2001.

45   Ibidem.

46   REINSEL, David; GANTZ, John; RYDNING, John. **The Digitization of the World From Edge to Core**. November 2018. Disponível em: <https://www.seagate.com/files/www-content/our-story/trends/files/idc-seagate-dataage-whitepaper.pdf>. Accessed on: September 2, 2019.

Figura 1

Source: IDC's Data Age 2025 study, sponsored by Seagate, April 2017
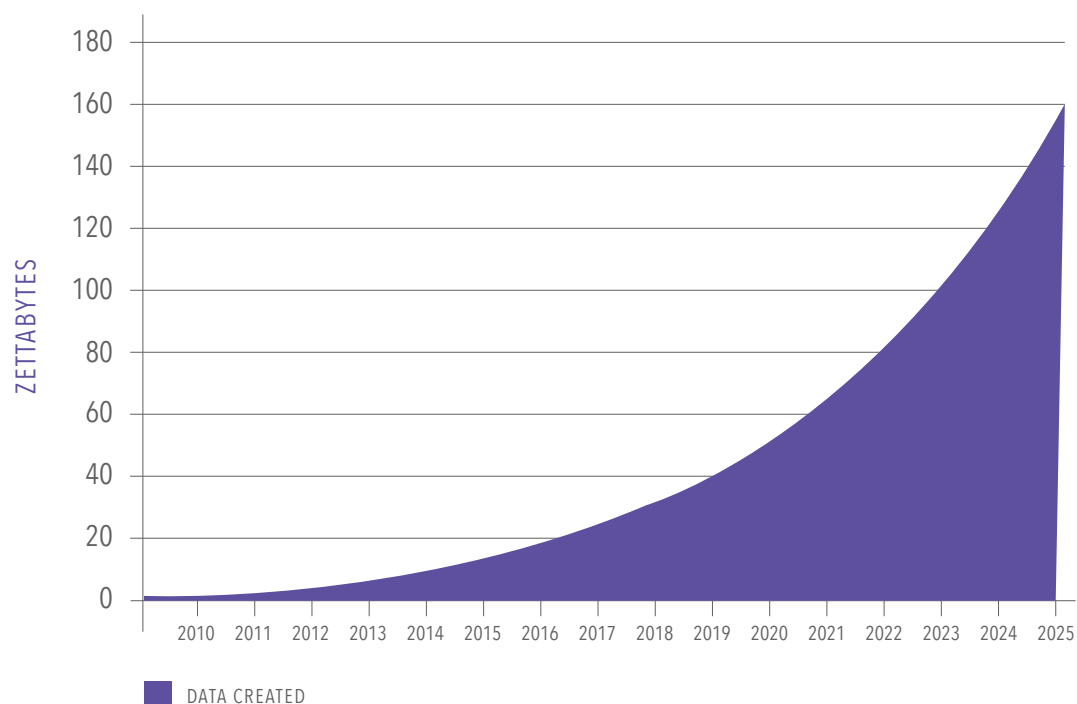
Zeno–Zencovichi claims that data generation has always existed, and that this phenomenon increases with the development of modern societies and with the use of data capture technologies. The significant change, today, is the need for new tools to deal with "judicial big data":

These tools not only go beyond traditional epistemology but tend to suggest predictively what might happen. The law has been for centuries mostly deontic. Now it becomes increasingly an instrument to put into place forecasts that are envisaged through data analytics.[47]

These data are usually within the restricted reach of startups, software developers and large companies, that is, they are concentrated in the private sector. Judges know little about the profile of their decisions and other important elements that make up their jurisdictional acts. In view of this, the great concern on the part of a portion of researchers in digital conflict resolutions is to make this information also accessible to magistrates – indeed, not only to magistrates, but to all the actors in the justice system. The information asymmetry in this aspect is further deepened with the recent use of AI and big data, as well as with the ease of reading texts and natural language processing (NLP), so that a new form of vulnerability and imbalance emergers in the information and justice system.

In the context of discussing AI and the use of new technologies in the legal area, the Law 2019–222 was enacted in France, which, among other items, deals with the use of AI by lawtechs that offer legal solutions for targeted litigation and develop technologies capable

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47 ZENO-ZENCOVICHI. Legal epistemology in the times of Big Data. In: **Knowledge of the law in the Big Data Age**. Ginevra Peruginelli e Sebastiano Faro (ed). Netherlands: IOS Press Bv, 2019, p. 3.

of providing elements for comparison between judges. Some researchers[48] state that the legislator's intention was to ensure functional Independence of magistrates. In its article 33, it is forbidden for data about magistrates to be published with the purpose of evaluating, analyzing, comparing or forecasting actual or supposed practices of such servers, even if with purely statistical scope, with a prison sentence of up to five years.

There are critics of the rule who maintain that there will be damage to a market potentially relevant to the justice system and that allows for the transparency and predictability of de–cisions. Others[49], on the other hand, maintain that there is no movement against the use of AI, but only aim to contain the transformation of data into information and its advertising.

Predictive use of AI can also occur by state actors, as in the case of the COMPAS system. In the United States, the COMPAS platform (Correctional Offender Management Profiling for Alternative Sanctions), developed by Northpointe Inc., analyzes data such as where the prisoner lives, generating a risk score for the purpose of calculating the probability of a criminal's recurrence.

Julia Angwin, Jeff Larson, Surya Mattu and Lauren Kirchner[50] pointed out cognitive biases in analyzes carried out by COMPAS. In a case with a more serious offense, but committed by a white man, who has already been convicted of armed robbery and attempted armed robbery, having served five years in prison, in addition to another charge of armed robbery, the system calculated the recidivism rate as low. In another case, with a less serious offense, committed by a black woman who already had a record for misdemeanors committed when she was a teenager, the system calculated the comparatively less serious recidivism rate to be high, but committed by a black individual.

The conclusion reached by the authors was that, in the United States, there is a greater incarceration of blacks than of whites, and the judicial decisions reflect the prejudices of the judges themselves, generating a database contaminated by this prejudice. At this point, the use of certain AI tools such as machine learning can reflect and even aggravate prejudices and errors not perceptible by judges and legal professionals.

Northpointe Inc. software is among the most widely used assessment tools in the country; however, the company does not publicly disclose the calculations made to arrive at the defendants' risk scores, so there is no transparency in the decision making process through the system – that is, in this context, it is possible to verify a clear lack of transparency in regarding the technical part of this application of AI.[51]

48   ALMADA, Marco. **Reforma judiciária francesa proíbe a construção de perfis estatísticos dos juízes**. Blog Lawgorithm, 04 June 2019. Available at < http://www.lawgorithm.com.br/2019-06-04-reforma-judiciaria-francesa-jurimetria/>. Accessed on: July 19, 2019.

49   MARSHALLOWITZ, Sofia. O que pretende a França em proibir a jurimetria? In: **Portal Jota**, Opinião e Análise, artigos, 18 June 2019. Available at: <https://www.jota.info/opiniao-e-analise/artigos/o-que-pretende-a-franca-em-proibir-a-jurimetria-18062019?utm_source=JOTAFullList>. Accessed on: July 19, 2019.

50   ANGWIN, Julia et al. **Machine Bias**: Investigating the algorithms that control our lives. ProPublica, 23 May 2016. Available at: <www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>. Accessed on: November 27, 2020.

51   NUNES, Dierle; MARQUES, Ana Luiza Pinto Coelho. Inteligência Artificial e Direito Processual: vieses algoritmos e os riscos de atribuição de função decisórias às máquinas. In: **Revista de Processo**, v. 285, pp. 421-447, Nov. 2018.

The study of the potentialities and challenges imposed by the uses of technology in the justice system has been carried out on several fronts. One of them is an initiative launched in 2017, entitled Ethics and Governance of AI Initiative,[52] which involves the MIT Media Lab and the Harvard Berkman–Klein Center for Internet and Society, in order to analyze the use of automation and machine learning in the justice system.

In February 2019, the European Commission for the Effectiveness of Justice published an ethical charter on the use of artificial intelligence in judicial systems and their environment (European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and Their Environment),[53] which recognizes the growing importance of artificial intelligence in socie-ties, as well as the benefits of its use in the service of efficiency and the quality of justice, presenting a study and proposing ethical principles about its use in judicial systems and their environments.

This charter is intended for both public and private systems, which are responsible for designing and implementing artificial intelligence tools and services that involves the proc-essing of court decisions and judicial data, as well as presenting parameters that can be used in regulation, development and auditing of such systems.

The document presents the following principles: a) Principle of respect for fundamental rights; b) Principle of non–discrimination; c) Principle of quality and safety; d) Principle of transparency, impartiality and justice; e) Principle "under user control".

A) Principle of respect for fundamental rights, which seeks to ensure that artificial intelligence tools are compatible with fundamental rights guaranteed by the European Convention on Human Rights (ECHR) and the Convention for the Protection of Personal Data (Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data, ETS nº 108, with the wording given by CETS, which amends Protocol No. 223).

The document emphasizes that when artificial intelligence instruments are used to resolve a dispute or as an instrument to support judicial decision–making or public guidance, they must not undermine the guarantees of the right of access to justice and the right to a fair trial (equality of arms and respect for the adversarial process).

B) Principle of non–discrimination, which seeks to specifically prevent the development or intensification of any discrimination between individuals or groups of individuals.

Faced with the possibility of identifying cognitive biases revealed by intelligence artificial, there must be a control system that identifies, corrects and neutralizes all and any forms of discrimination.

Caution is required at all stages, from the development of the system to its implementation, especially when it involves sensitive data.

C) Principle of quality and safety, which determines the use of certified sources and data in a secure technological environment.

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52 **Ethics and Governance of AI Initiative**. Available at: <https://aiethicsinitiative.org>. Accessed on: November 27, 2020.
53 CEPEJ. **European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and their environment**. Fev. 2019. Available at: <https://rm.coe.int/ethical-charter-en-for-publication-4-december-2018/16808f699c>. Accessed on: May 20, 2019.

The machine learning process must be carried out from certified sources and the data should not be modified until it has actually been used by the learning mechanism. The entire process needs to be consistent and traceable to ensure that there has been no change that changes the content or meaning of the decision that is being addressed.

D) Principle of transparency, impartiality and justice, in order to allow accessibility to data processing methods by external audits.

In this sense, a balance must be sought between the intellectual property of the processing methods and the need for transparency, avoiding system opacity.

E) Principle "under user control", which aims to prevent a prescriptive approach and ensure that users are informed agents and control their choices.

The use of artificial intelligence should provide for the expansion of autonomy, and not its restriction. In the event of a prescriptive approach, the user needs to be informed, in a clear and understandable way, explaining the link and the options available, including the possibility of legal advice.

A court decision that has used artificial intelligence must inform the data that was used for training the model, the algorithm technique, if there is a bias in the training data and the interpretability of the model. In Brazil, Resolution no. 332/2020,[54] of the National Council of Justice deals with ethics, transparency and governance in the production and use of Artificial Intelligence in the Judiciary. The regulation addresses the following points: general aspects; respect for fundamental rights; non-discrimination; publicity and transparency; governance and quality; safety; user control; research, development and implementation of artificial intelligence services; accountability and responsability.

In general, this resolution followed the same recommendations as the "white paper on artificial intelligence – a European approach towards excellence and trust", published by the European Commission in February 2020.

Article 2 of the resolution clarifies the purposes of using artificial intelligence in the Judiciary: promoting the well-being of those in jurisdiction; equitable provision jurisdiction; and the discovery of methods and practices that assist in these previous objectives.

The CNJ also emphasized the issue of protecting fundamental rights in the implantation and use of artificial intelligence, in compliance with both the provisions of the Federal Constitution Government and the treaties to which Brazil is a signatory, and highlighted, in particular, the legal certainty and equal treatment of the parties in absolutely identical cases.

The CNJ highlights a methodological issue regarding data sampling for development and training of artificial intelligence, and warns of the need for these samples to be representative and observe the necessary precautions regarding data sensitive personal data and the secrecy of justice.

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54 CONSELHO NACIONAL DE JUSTIÇA. **Resolução nº 332, de 21 de agosto de 2020**. Dispõe sobre a ética, a transparência e a governança na produção e no uso de Inteligência Artificial no Poder Judiciário e dá outras providências. Available at: <https://atos.cnj.jus.br/atos/detalhar/3429>. Accessed on: October 13, 2020.

Decisions based on artificial intelligence must respect equality, non-discrimination, plurality and solidarity, in order to contribute to a fair trial, to reduce situations of vulnerability of human beings and to eliminate prejudice in judgments.

This concern with the escalation of prejudice in AI-supported decisions made the CNJ choose to establish the need for homologation of artificial intelligence projects developed in the courts, in order to detect bias in the algorithms or discriminatory tendency in the operation of technology. If this inclination is verified, developers should make the necessary corrections. AI projects that use facial recognition techniques require prior authorization from the CNJ for implementation.

Brazilian courts must inform the population about their objectives and intended results. In addition, they need to carry out a survey and documentation of the risks identified with the use of AI, as well as the instruments available, to ensure the security of the parties' data. Courts of Justice must also be able to identify the causes of damage caused by AI and to present their method of auditing the system.

All decision proposals submitted by artificial intelligence are subject to human audit, and the courts must provide satisfactory explanations of the outcome presented by the technology.

Courts may have their own bodies or sectors focused on the development and implementation of AI, but for the purpose of optimizing the financial resources invested in technology, the CNJ requires that they report on any research or use of AI, as well as objectives and results achieved.

The AI project can be developed in partnership with universities, with the initiative of private sector or public institutions through technical cooperation agreements that observe the rules of the CNJ resolution.

The purpose of this orientation is to create a practice that follows a community and collaborative model in the courts, with the prohibition of investment in existing initiatives or already in another court.

This monitoring carried out by the CNJ based on communications from the Courts has the purpose of promoting the consolidation of AI projects and the publication of existing or under development models in the Brazilian Judiciary.

With regard to information security, the CNJ determines that the court system must be able to prevent the data received from being altered prior to its use for training the machine and to avoid any modification, loss, unauthorized access or transmissions. All decisions must be able to be reviewed, and there is no link whatsoever between the judge or the competent authority to the decision pointed out by artificial intelligence. Those computer systems need to be auditable in order to be able to verify the step by step taken by technology to reach the final result.

Specifically in criminal matters, the CNJ has a more protective stance towards not to encourage the use of AI, especially of systems that perform predictive analysis, but establishes some exceptions for the use of automated computational solutions for the calculation of penalties, prescription, recidivism verification, mapping, classification and sorting of records, for process management purposes.

As regards the verification of criminal recidivism, the AI should not indicate a solution that is more harmful to the defendant than that which the magistrate would determine autonomously, that is, without the aid of computational calculation.

The CNJ is also concerned about the accountability of investments carried out by the Judiciary with AI, in order to allow verification of the financial impact of the use of this technology by society and whether the expectations outlined as to the efficiency and productivity gains have been effectively achieved.

All adverse events and unwanted occurrences in the use of artificial intelligence by Brazilian courts will be duly notified to the CNJ. The development or use of AI in disagreement with the principles and rules established in the resolution will be subject to investigation – if applicable, with the punishment of those responsible.

As can be seen, the evolution of the means of managing the judicial system is evident from technological mechanisms, from which arises the need for research and deepening of the theme with respect to national and international initiatives, especially in relation to the Brazilian scenario, as it stands out for the great challenge for Brazil to be among the countries with the greatest judicialization in the world, but also for the potential that it has due precisely to the amount of data produced by the system, called "judicial big data".

1.4. Justification

The good administration of the country's justice system can have a profound impact on its basic pillars, in terms of addressing fundamental rights and basic points of the Democratic Rule of Law or, even, national economic performance.[55] Without adopting good management practices, it becomes difficult, for example, to bring adequate solutions to the conflicts of a society.

The adequacy of the solutions permeates the result itself, with aspects related to social justice, through the application of the mechanisms provided for in the legal system and, also, by the correct timing in which they are checked. A well-constructed solution, based on the norm, but outside the necessary period in which it should occur, can lose its effectiveness, in order to stop protecting or even undermining the rights of those involved.

Likewise, the lack of adequate management mechanisms within the countries' judicial sector has an impact on their economy, an issue that, as mentioned, was the object of study in one of the lines of research carried out by the OECD, in which the influence of judicial management on domestic economies has been investigated.[56]

There is no doubt that technology can make justice more effective and with more quality. Thus, this research aims to analyze national and international initiatives and experiences with the use of AI, in the courts that aim to improve the justice system from the perspective of its management and administration of justice.

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55   MENDES, Gilmar. A importância do constante aprimoramento do perfil da Administração Pública e do poder judiciário brasleiro. In: **Administração Pública e Gestão do Poder Judiciário**. v.. 15. FGV, 2012, p. 17.

56   OECD. What makes civil justice effective? In: **OECD Economics Department Policy Notes**, No. 18. June 2013.

This investigation proposes to carry out a survey on the use of artificial intelligence in justice systems, considering its technical functioning, the functions it performs and the impact it has on the activity and / or the sector in which it is employed.

The construction of this panorama is relevant to the extent that it aims to provide a practical understanding by professionals from different areas of computing – in particular, by the jurists themselves – on the operational part of these technological tools, which will allow a better evaluation of these machines with regard to their performance, the advantages they provide in terms of speed and effectiveness for the procedural progress and how they are compatible with the work of Justice officials.

1.5. Methodology

This research is exploratory and descriptive in order to identify and describe national and international technology initiatives and experiences with the use of IA in the courts, aimed at improving the justice system from the perspective of its functioning and its apparatus (management and administration of justice).

The research sample included the Supreme Federal Court (STF), the Superior Court of Justice (STJ), the Superior Labor Court (TST), the Regional Labor Courts, the Regional Federal Courts and the Courts of Justice.

The data were collected through a form with questions open to the surveyed courts and involved the current situation and the functionalities of each system, the expected and obtained results, the demands that could be met by the intelligence artificial, among other aspects.

The forms were applied as follows: a standard form was created, which was sent to all participants in the research. In some cases, on-site visits were carried out; in other cases, videoconferences. Data collection was also done through documents made available by members of the research universe.

1.6. Objectives

1.6.1. General Objectives

Investigate the state of the art and national technology application initiatives with the use of AI, in the courts (or integrated with them) that aim to improve the justice system from the perspective of its functioning and its apparatus (management and administration of justice).

1.6.2. Specific Objectives

a) Identify national initiatives and experiences in the application of AI technology in the courts;
b) From the delimitation of the results of item a), constitute a study methodology to analyze the following elements: current situation, impact, stakeholders, problems it seeks to solve, technological tools used, expected results and results obtained.

A

PRESENTATION

OF DATA FROM THE
1ST PHASE OF THE RESEARCH

02

PRESENTATION

OF DATA FROM THE 1ST PHASE OF THE RESEARCH

2.1. Methodology for presenting the data collected

The data collected by the court will be presented, indicating the name of the system, the origin, the current situation, the functionalities and the problems it intends to solve, as well as the results.

The data presented below reveal the situation of the referred AI projects at the time the collection took place, between February and August 2020, and consider artificial intelligence projects already implemented, in the pilot project phase or under development, within the scope of the Brazilian Judiciary. Thus, for the purposes of counting the projects, those that are still in the initial stage of development were included, which, in some cases, will be described in the item "other artificial intelligence systems in development" in the tables.

In June 2020, preliminary results indicated the presence of 72 AI in the Brazilian Judiciary.

The continuity of data collection brought an update of this number to 64 projects in 47 Courts, in addition to the CNJ's Synapses Platform. The reduction is due to contact with other courts that allowed us to reconsider some initiatives indicated as AI for IT systems.

In this regard, the research allowed the identification of numerous inconsistencies in publicly released data that pointed to systems such as artificial intelligence and, in fact, were IT systems.

Considering that this is a very dynamic theme, the data update will be carried out with each edition of the project, in order to bring the most accurate picture of the AI systems possible in the Brazilian Judiciary.

2.2. Supreme Federal Court – STF

VICTOR

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2019
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	This tool is able to perform the identification of resources that fall under one of the 27 most recurring themes of general repercussion and the respective return to the courts of origin. It is empowered to proceed to the identification and separation of the five main parts of the case file: judgment under appeal, admissibility judgment of the extraordinary appeal, petition for the extraordinary appeal, sentence and appeal on appeal. The project intends to work with similarity grouping functionality in its next version.
RESULTS	Significant reduction in the time taken by a court employee performing a task: from an average of 44 minutes to five seconds by Victor.

2.3. Superior Court of Justice – STJ

ATHOS

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2019
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Currently, STJ has an artificial intelligence platform, Athos, which was trained to read approximately 329 thousand STJ judgments between 2015 and 2017 and indexed more than 2 million cases with 8 million pieces, enabling automatic grouping by similars, searching for similar ones, monitoring groups and textual research. The Athos system also acts in the routine of identifying judgments similar to those already included in the case law database, in order to be grouped, thus avoiding base pollution. At the Precedent Management Center (NUGEP), the AI tool works to identify processes that have the same legal controversy with a view to fixing binding theses. The system also acts in the identification of material of notorious relevance; convergent and / or divergent understandings between agencies of the STJ; possible distinctions or overruns of qualified precedents.
RESULTS	Increase in allocations, reduction of cases received at the STJ, increase of Representative Controversy Resources (RRC) and Incidents Repetitive Demand Resolution (IRDR) from partner courts, as well as

the standardization of jurisprudence with the use of qualified precedents.

Since the beginning of its use, in September 2019, it has already enabled the creation of 51 controversies (set of processes with suggestion of affecting the repetitive rite) and affecting the qualified rite of 13 repetitive themes, after analyzing large volumes of processes. For this work, the tool analyzes about 30 thousand pieces per month, a volume practically impossible for the unit's servers. The system was able to identify cases received at the Court regarding one of the controversies already identified (topic 1.051 / STJ), in an increasing volume as of March 2019.

Regarding the identification of a material of notorious relevance, convergent and / or divergent understandings between STJ bodies and possible distinctions or overruns of qualified precedents, the analysis and inclusion were done manually by servers, and started to be automatic in May 2020. To illustrate, from the judgments published in May, 29% were automatically included and, in June, around 42%.

SÓCRATES

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2019
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	The Sócrates 1.0 system uses the same AI engine as the Athos System and performs the monitoring, grouping of processes and identification of precedents. Can identify groups of similar processes in a universe of 100 thousand processes, making the comparison of all of them in less than 15 minutes. It is intended for the Ministers' offices.
RESULTS	Reduced effort in screening processes; support of process analysis activities ; and assistance with the selection of representatives of the dispute by the Cabinet. It is possible, by providing an example case, to identify the other processes dealing with the same matter in a universe of 2 million processes and 8 million procedural pieces, covering all the processes in progress at the STJ and another 4 years of history in 24 seconds. In addition, it is possible to automatically monitor the 1,500 new cases that arrive daily at the Court to select matters of interest. Among the gains already observed are more agility in judgment, greater efficiency in the selection of qualified precedents and automation of identification of repetitive processes that reach the Court for faster judgment.
OTHER ARTIFICIAL INTELLIGENCE SYSTEMS UNDER DEVELOPMENT	Sócrates 2.0: Optimized management of the STJ collection, through actions such as: • identification of identical controversies or with limited scope for analysis and allocations to the systematic of repetitive appeals;

• fostering new forms of screening to enhance the prosecution of more cases in less time, whether due to the impact on the Office, the Classes or the respective Sections, as well as in the Special Court;
• identification of cases with potential for failure to register with the Presidency;
• subsidy to the STJ's Corporate School in the definitions of training that best meet the understanding of matters pending judgment.

E-JURIS

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2019
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Extract the legislative references and jurisprudence cited in the STJ ruling to assist the task of registering those who effectively supported the Ministers' votes in the composition of the judgment and disposal of those that were merely mentioned; note of the main and successive published judgments of the same legal topics. It is intended for the Secretariat of Jurisprudence.
RESULTS	Speed in the execution of the work of the Secretariat of Jurisprudence and increased service to the unit's demand.

TUA
Unified Table of Subjects

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	Under development.
CURRENT STATUS	Under development .
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Identification of the subject of the process by the system, automatically, for the purpose of distribution to the sections of the STJ according to the branch of law in which they operate: Public Law (First), Private Law (Second) and Criminal Law (Third).

2.4. Superior Labor Court — TST

BEM-TE-VI

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2018
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Facilitates process management (procedural class, entry to the offices, evaluation of the dates for filing appeals) in the Ministers' offices.
RESULTS	Increase of productivity.
OTHER ARTIFICIAL INTELLIGENCE SYSTEMS UNDER DEVELOPMENT	Assisted voting – system that presents the draft decision. Virtual screening – targeting resources in the Ministers' offices.
ADDITIONAL INFORMATION	All artificial intelligence projects under development at Labor Justice are analyzed by the Superior Council of Labor Justice - CSJT. CSJT Resolution 185, of March 24, 2017, in Article 61, prohibits, without the express authorization of the CSJT, the creation of new IT solutions for the judicial process and making investments in the systems that may exist in TRTs.

2.5. National Council of Justice — CNJ

SINAPSES PLATFORM

ORIGIN	Internally developed by the Justice Court of Rondonia team in partnership with CNJ
YEAR OF IMPLEMENTATION	2018
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	In 2018, the CNJ signed the Cooperation Agreement 42/2018 with the TJ/RO in order to nationalize this initiative. The Synapses system is a platform for development and availability, on a large scale, of artificial intelligence models by other courts that will be able to operate them independently, consuming microservices. Among the functionalities present in the Platform, we can list the following: supervised training for models of machine learning (document classification, text extraction); versioning models, model auditability; interface to import datasets; multi-tenant environment; reinforcement learning. The following models are being developed in the Platform: • Intelligent Movement: aims to suggest the movement that will be applied in the order (gratuitousness of justice, mere expedient, among others); • Prevention: identifies possible cases of prevention; • Procedural similarity: identifies similarity between documents, based on a chosen document; • Sessions judgment: identifies and extracts parts of a judgment, such as menu, report and vote; • Legal text generator (autocomplete); • Summarizer: performs customized summaries of texts, reducing according to the received parameter; • Large Mass Screening: classifies the initial petitions according to pre-established themes; • Check Petition: classifies a document, stating whether or not it constitutes an initial petition.

2.6. Federal Court of the 1st Region — TRF1

SECOR BOT - AUTOMATION OF WORKING PROCESS

ORIGIN	Developed by the Court's internal team in partnership with "Sonda Tecnologia" company
YEAR OF IMPLEMENTATION	Under development.
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Survey of data to be sent to the CNJ. This survey was carried out by analysts and technicians.
RESULTS	Greater speed and economy of human resources.

SENTENCES BANK

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2019
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	The tool aims to create an information bank with precise and quick textual searches in the content of the judicial documents produced by the different units of the instances of TRF 1st Region.
RESULTS	Indexing is already including e-CVD documents (such system includes documents from TRF1 DOC, e-Jur and e-CVD itself) from all Judicial Sections of TRF 1st Region. In March 2020, it had 1,886,842 indexed documents.

SIB
Search Intelligence System

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	Under development.
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	The project was an initiative of the Precedent Management Center – TRF-1ª and aims at indexing the procedural parts to a search tool called Elastic Enterprise Search (ESS). This project is therefore justified, as it proposes automated solutions to streamline the search for content, in a dynamic way, facilitating the identification of process repetitiveness within the Federal Justice within the scope of the 1st Region, given that: • the current repetition identification is done manually; • the Court's reactive action on similarity; • the incorrect classification of subjects in the processes; • the allocation of human resources to identify repetitive processes; • the lack of planning for actions to overturn processes; • the lack of standardization of procedural terms; • the lack of standardization in the collections of the offices; • the difficulty in managing precedents within the Federal Justice; • the lack of control in identifying distortions in the distribution of processes.
RESULTS	To propose automated solutions to streamline the search for content, dynamically, facilitating the identification of processes repetitiveness.
OTHER ARTIFICIAL INTELLIGENCE SYSTEMS UNDER DEVELOPMENT	The initial module (textual search in procedural parts) of the SIB does not contain AI techniques. However, with the database loaded in ESS, it will be possible to apply AI for building models based on different techniques.

ALEI
Intelligent Legal Analysis

ORIGIN	Developed by the Court's internal team in partnership with Machine Learning Research Group – GPAM/UNB
YEAR OF IMPLEMENTATION	Under development.
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	• iPrecedent: AI module that automates the process of analyzing precedents within TRF1; • iJurisprudence: AI module that automates the process of survey of jurisprudence within TRF1; • iAssistant: AI module to help writing drafts for voting within TRF1. The object of research and development (R&D) of this project is to apply machine learning methods in order to use its potentials for pattern recognition in the legal processes related to TRF1 judgments. Pragmatically, the aim is to develop a system composed of machine learning algorithms that enable the automation of textual analysis of these legal processes. This will be done by creating AM models for analyzing the resources received by TRF1, with the objective of integrating the Court's solutions park to assist the servers responsible for analyzing the received resources.

FAST EXECUTION PROJECT

ORIGIN	Technical Cooperation Agreement between TRF 1st Region and the Federal Council of OAB
YEAR OF IMPLEMENTATION	Under development.
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Development of a software platform necessary to optimize the processing of collective demands in compliance with sentence or execution. New features and improvements have been added to existing ones: home screen – process dashboard with statistics; screen to associate the law firm with the process. Functional improvements: integrating the interface of the Fast Execution System with the Federal with the Brazilian Federal Revenue and the Brazilian National Bar Association; in the central webservice, to retrieve information from the TRF1 Judicial systems to the "Célere" Execution System. Survey, documentation requirements with prototypes. Modeling and creation of database object components: • data loads to control maximum value for requesting payment of value; • data load from debtor entities;

	• data load from public servants' bodies; • scripting of database objects for deployment in the production environment.
RESULTS	The project is in its initial phase. Speed in the dispatch of RPV and precatory.

2.7. Federal Court of the 2nd Region – TRF2

VIRTUAL ATTENDANT

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2020 (Federal Justice – Judicial Section of Espírito Santo)
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	It is a chatbot that simulates a human conversation in a chat, on WhatsApp, and automates repetitive tasks, such as frequently asked questions, in the form of a predefined dialogue between him and the user.

2.8. Federal Court of the 3rd Region – TRF3

SINARA

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2019
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Sinara identifies legal texts such as laws, articles, paragraphs, and makes it possible to search for subjects in order to facilitate the work in the offices.
RESULTS	The objective is to extract with an accuracy greater than 92%. It currently stands at 88%.

SIGMA
Intelligent Accessibility Model Management System

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Conduct the production of admissibility judgments. Recognize violation of constitutional provisions or federal law by the judgment under appeal. Automatically generate the productivity of each server.
RESULTS	Facilitates the production of special and extraordinary appeals for admissibility judgment. Centralizes the records. Produces productivity statistics.

PREVENTION

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	Under development.
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Seeks to identify possible cases of prevention.

2.9. Federal Court of the 4ᵗʰ Region – TRF4

CLASSIFICATION OF TOPICS IN THE VICE PRESIDENCY AND APPEALS CLASSES

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Assist the server in identifying the theme, presenting one or more suggestions of topics related to the content of the appeal for the purpose of analyzing the admissibility judgment, by the Vice-Presidency and Presidency of the Appeals Classes, of the resources destined to the higher courts in relation to repetitive STJ themes, issues of general repercussion of the STJ, requests for uniformity of the jurisprudence of the court itself, in addition to other representations of controversy.
RESULTS	84% assertiveness of STJ themes, 86% of STF themes and 95% of TNU themes.

PROCESS SUBJECT ANALYSIS

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Correct subject classification, avoiding the need for redistribution due to incompetence. A functionality integrated with the procedural system was built in order to automatically validate the matter informed by the lawyer / attorney based on the analysis of the text of the initial petition. In case of divergence, it suggests to the server of the poles the correction, presenting the most appropriate subjects.
RESULTS	In 2018, 6% of 1st degree cases (38,117) had their subject classification rectified. In 2019, it was 9% (65,536). 33% reduction in 2nd degree subject rectification events compared to the same period in 2018.

AUTOMATIC PROCESS SCREENING FROM THE INITIAL PETITION

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	From the analysis of the initial petition, the cases with repetitive demands are identified.

SUGGESTED DRAFT MODELS

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	Under Development.
CURRENT STATUS	Under Development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Creation of drafts, in order to facilitate and standardize the editing of documents.
RESULTS	Reduce the time to produce documents and increase the standardization of documents produced by a judicial body.

2.10. Federal Court of the 5ᵗʰ Region – TRF5

JULIA
Labored Jurisprudence with
Artificial Intelligence

ORIGIN	Developed by the Court's internal team
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Assists in jurisprudential research. A second feature is under development, in order to speed up the identification of over-filed processes, whose decisions must be reformed due to the trial of the process on a topic by a Superior Court (General Repercussion/Repetitive Appeal).
RESULTS	Improvement in the productivity of the work of the magistrates' advisors in order to streamline the work of the Resource Unit to identify processes to be reformed due to a higher decision.

2.11. Justice Court of Acre – TJ/AC

LEIA
Legal Intelligent Advisor
Precedents

ORIGIN	Developed by Softplan Company. During the development process, internal Court actors are involved in NUGEP, internal affairs, IT staff and first and second degree judicial units.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Identify the processes linked to the precedent themes, so that magistrates and civil servants may or may not validate the suggestion of overcharging. Avoid making different decisions for similar cases, linked to previous themes, as well as the exasperated expenditure of time used to analyze processes. Automatically suggest, based on the convergence between the content of the initial petition of a lawsuit and a matrix of understanding of a precedent theme, the linking of processes to precedent themes.
RESULTS	Phase 1 implemented and concluded in December 2019, considering the analysis and indication of suggestion of the stock of non-criminal, electronic and ongoing lawsuits, entered until 08/12/2019, for a group of 50 themes. It aims at greater equality in the judgment of similar cases; improvement in the indicators of the net congestion rate and the IPC-jus, which deduces over-filed processes from its calculation; increase the capacity of the judicial units to work, with the consequent reduction in the stock of lawsuits in progress; and procedural speed.

2.12. Justice Court of Alagoas – TJ/AL

LEIA
Legal Intelligent Advisor
Precedents

ORIGIN	Developed by Softplan Company. During the development process, internal Court actors are involved in NUGEP, internal affairs, IT staff and first and second degree judicial units.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Identify the processes linked to the precedent themes, so that magistrates and civil servants may or may not validate the suggestion of overcharging. Avoid making different decisions for similar cases, linked to previous themes, as well as the exasperated expenditure of time used to analyze processes. Automatically suggest, based on the convergence between the content of the initial petition of a lawsuit and a matrix of understanding of a precedent theme, the linking of processes to precedent themes.
RESULTS	The initial phase is completed, contemplating the analysis and indication of suggestion of overestestation of the stock of non-criminal cases, electronic and on-going lawsuits, for a set of 50 themes. Over 1.9 million lawsuits were analyzed and a convergence was found between the initial petition and understanding matrix in 168 thousand cases. Identification of 8.9% of candidate processes to be linked to any of the 50 themes analyzed.

HÉRCULES

ORIGIN	Developed by the Court's internal team in partnership with UFAL.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Group similar petitions into a specific queue, so that the creation of dispatches or other necessary procedures can be automated.
RESULTS	With assertiveness above 95%, the robot has analyzed more than 10,000 intermediate petitions of the 15th Civil Court of the Capital.

2.13. Justice Court of Amazonas – TJ/AM

LEIA
Legal Intelligent Advisor
Precedents

ORIGIN	Developed by Softplan Company. During the development process, internal Court actors are involved in NUGEP, internal affairs, IT staff and first and second degree judicial units.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Identify the processes linked to the precedent themes, so that magistrates and civil servants may or may not validate the suggestion of overcharging. Avoid making different decisions for similar cases, linked to previous themes, as well as the exasperated expenditure of time used to analyze processes. Automatically suggest, based on the convergence between the content of the initial petition of a lawsuit and a matrix of understanding of a precedent theme, the linking of processes to precedent themes.
RESULTS	The initial phase is completed, contemplating the analysis and indication of suggestion of overestestation of the stock of non-criminal cases, electronic and on-going lawsuits, for a set of 50 themes. Over 1.9 million lawsuits were analyzed and a convergence was found between the initial petition and understanding matrix in 168 thousand cases. Identification of 8.9% of candidate processes to be linked to any of the 50 themes analyzed.

LEIA
Legal Intelligent Advisor
Precedents

ORIGIN	Developed by Softplan Company. During the development process, internal Court actors are involved in NUGEP, internal affairs, IT staff and first and second degree judicial units.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Automatically suggest to the petitioning attorney the type of intermediary petition to be attached, according to its entire content.
RESULTS	Implemented and 100% in production in the routine of gathering all intermediary petitions by lawyers on the TJAM e-SAJ portal and in the process of expanding to all SAJ Courts. At TJAM, around 65 thousand petitions are collected per month. There was a 90% reduction in the number of petitions classified in a generic way.

LEIA
Legal Intelligent Advisor
Precedents

ORIGIN	Developed by Softplan Company. During the development process, internal Court actors are involved in NUGEP, internal affairs, IT staff and first and second degree judicial units.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Perform the consultation, blocking and unlocking actions at Bacenjud, in an automated way and from the issuance of expedients in the SAJ directly on the Bacenjud website, with the return of the information to the SAJ.
RESULTS	Implemented and in production in two judicial units of tax enforcement in the district of Manaus, at TJAM, in the process of technical and functional adjustments, with implementation and expansion plans to all judicial units in Manaus; and to be expanded to all SAJ Courts. At TJAM, around 500 blocks were performed in an automated way. 90% of the consultation, blocking and unlocking operations carried out at Bacenjud by Leia.

2.14. Justice Court of Bahia – TJ/BA

QUEIXA CIDADÃ

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	2019
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Perform the identification of the applicant, comparing the identification document used in the opening of the complaint with the user who is operating the application.
RESULTS	Decrease in situations of extensive appointments for assistance, such as: displacement of citizens, several times due to incomplete documentation; de-standardization of complaints from the same subject; and burden of on-site attendance services. Opening of complaints with acknowledgments by users with up to 55% accuracy.

2.15. Justice Court of Ceará – TJ/CE

LEIA
Legal Intelligent Advisor
Precedents

ORIGIN	Developed by Softplan Company, being the Court's internal team involved in the process.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Automatically suggest, based on the convergence between the content of the initial petition of a process and a matrix of understanding precedent theme, linking processes to precedent themes. Support the intensive work in knowledge of offices to identify convergence between the characteristics of the judicial processes in progress in their judicial units and the guidelines of the Superior Courts in relation to the connection with the topics (including the respective leading cases). Today, this analysis is manual and extremely costly in terms of time, as there are more than 3,700 themes, and judicial units are generally highly congested.
RESULTS	The initial phase is completed, contemplating the analysis and indication of suggestion of overestestation of the stock of non-criminal cases, electronic and on-going lawsuits, for a set of 50 themes. Over 1.9 million lawsuits were analyzed and a convergence was found between the initial petition and understanding matrix in 168 thousand cases. Identification of 8.9% of candidate processes to be linked to any of the 50 themes analyzed.

2.16. Justice Court of Distrito Federal – TJ/DFT

HÓRUS

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	2019
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Currently, the Tax Enforcement Court represents 1/3 of the TJDFT's processes. In this sense, it was necessary to automate the totality of its activities, when possible, so that the procedural speed could be a characteristic of this judicial unit. However, this unit still has, in its collection, physical processes that are processed in a 100% manual manner, hindering speed and consuming resources, e.g. by printing the case records. Thus, we envisioned an automated and intelligent solution, called Hórus, which assists in the activities of identification, classification, correction, signature, loading and registration of new processes, which will be processed digitally.
RESULTS	The initial goal of Hórus was to distribute 48 thousand processes already digitized, indexed and fragmented in an automated and intelligent way, counting less than 10 seconds for the execution of all procedural steps. Since its implementation, Hórus has already automatically distributed more than 275 thousand processes of VEF.
OTHER ARTIFICIAL INTELLIGENCE SYSTEMS UNDER DEVELOPMENT	There are currently two other initiatives under development: the extension of the Amon for facial recognition using video cameras; and the Toth project, which aims to suggest classes and judicial matters based on the content of the initial petitions of lawsuit.

AMON

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Amon is the TJDFT facial recognition system that identifies the visitors at the Court's entrance from photos. It aims to bring more security to the physical integrity of the members of the TJDFT, as well as allowing greater control over who enters its dependencies. A problem to be solved by Amon is the detection of possible frauds, if a person's photo is recognized and the stored record shows document data that is different from those presented in the identification.
RESULTS	The initial objective of Amon is to store more than 1 million photos in its records base for later recognition of the Court's visitors. The entire recognition process must occur in less than 10 seconds. The early results obtained with this solution are still under evaluation.
OTHER ARTIFICIAL INTELLIGENCE SYSTEMS UNDER DEVELOPMENT	There are currently two other initiatives under development: the extension of the Amon for facial recognition using video cameras; and the Toth project, which aims to suggest classes and judicial matters based on the content of the initial petitions of lawsuit.

2.17. Justice Court of Espírito Santo – TJ/ES

THREE PROJECTS CURRENTLY IN PRODUCTION, WITH NO DEFINED NAME YET

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	Estimated in 2020
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Text mining in an unstructured database, with machine learning on relevant legal issues. Intelligent conciliation platform.

2.18. Justice Court of Goias – TJ/GO

IA332
(Automatic Identification System of
Repeating Themes and Summaries)

ORIGIN	Developed by the Court's internal team, in partnership with the Federal University of Goiás.
YEAR OF IMPLEMENTATION	2018
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Automatically meet the requirements of Article 332 of the Civil Process Code (CPC). The solution seeks to identify and classify the process, by the initial petition in the act of petitioning, automatically signaling if the present lawsuit contradicts: • a statement from the Supreme Federal Court or Superior Court of Justice; • judgment issued by the Federal Supreme Court or the Superior Court of Justice in judgment of repetitive appeals; • understanding signed in an incident to resolve repetitive demands or in the assumption of competence; • statement of a court summary on local law. Check by the initial petition, in the act of electronic petition, if the chosen class is consistent with the class found by the AI solution.
RESULTS	Predicts repetitive themes and/or consolidated summaries as accurately as possible. Displays draft decisions for certain repetitive topics and / or consolidated summaries, assisting magistrates and legal advisors when preparing documents. It seeks to speed up the processing of processes, taking care of, in an agile way, to the wishes of society. In prediction, accuracy greater than 80% has been achieved.
OTHER ARTIFICIAL INTELLIGENCE SYSTEMS UNDER DEVELOPMENT	Yes. Tests to identify petitions for similarity, as well as improving the learning of clusters.

2.19. Justice Court of Mato Grosso do Sul – TJ/MS

LEIA
Legal Intelligent Advisor
Precedents

ORIGIN	Developed by the Court's internal team, in partnership with Federal University of Goiás.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Automate the identification of possible cases of linking precedent themes. Provide equality in the judgment of similar and / or high repercussion cases, reducing the congestion of the Judiciary and complying with CNJ Resolution 235.
RESULTS	Work in progress

2.20. Justice Court of Mato Grosso – TJ/MT

(no name)

ORIGIN	Developed by the Court's internal team in partnership with Amazon.
YEAR OF IMPLEMENTATION	Under development.
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	It is a robot that assists the magistrates, who will prepare a draft of sentences.

2.21. Justice Court of Parana – TJ/PR

(no name)

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	Under development.
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Project to use AI to indicate the intercurrent prescription of tax executive proceedings for all Judicial Units of the State of Paraná. In the current phase, the base of examples is being assembled for the creation of the AI algorithm. Although some of its phases have been developed, there is no fixed deadline for the start of implementation. Currently, there are more than 900 thousand tax executive processes, of which more than 500 thousand were distributed before 2013. Thus, there is a possibility of archiving many processes which have already been prescribed.
RESULTS	Enable the significant archiving of processes already prescribed.

2.22. Justice Court of Pernambuco – TJ/PE

ELIS

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	2019
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	The TJPE presents a significant number of tax foreclosures: In 2015, there were 51,598 and, in 2019, 187,602. Elis is a tool capable of analyzing and screening tax enforcement processes, which account for more than 50% of all the actions that are in progress in the state of Pernambuco. During the development of the system, a bottleneck was identified in the initial screening (competency analysis, divergence of registration data, prescription, among others), which was developed manually, before the initial dispatch in the process. Given this situation, the system focused on this step in order to create a AI-supported automation design to streamline processing, as well as a dashboard to monitor the evolution of the processing.
RESULTS	Before the system was implemented, the initial conference of about 70 thousand cases took approximately 18 months. Using the AI system, such processing takes around 15 days, which means it's 36 times faster.
ADDITIONAL INFORMATION	Elis was made available on CNJ's Sinapses platform, and can be used by other courts in the country.

2.23. Justice Court of Rio de Janeiro – TJ/RJ

(no name)

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	Under development.
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	The Court is conducting the PoC (Proof of Concept): a proof of concept, with several technologies to verify the most plausible to be used in court. The objective is to deal with repetitive demands, carrying out bureaucratic acts, performing pledges and consultations with external bodies.

2.24. Justice Court of Rondonia – TJ/RO

SINAPSE

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	2018
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Automate repetitive tasks, initially in the Cabinet Module, using tools such as prediction of the type of procedural movement, text generator/autocomplete, identification of sections in a judgment and other features that streamline the work of advisors and magistrates. In Special Courts, it will be applied in repetitive cases that represent a large procedural volume.
RESULTS	Procedural speed. In a testing environment, it was found that each advisor takes, on average, 2 minutes and 50 seconds to perform the screening of a process. Screening about 227,728 processes took only some minutes.
ADDITIONAL INFORMATION	In 2018, the CNJ signed a Cooperation Agreement no. 42/2018 with the TJ/RO adopting this initiative nationwide.

2.25. Justice Court of Roraima – TJ/RR

SCRIBA

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	2018
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Speed up the procedural processing, specifically in the stage of the instruction of the hearing. Scriba is in the stabilization phase of the version released on 09/17/2019. Specifically on the transcription module, actions are planned to: improve the capture process, investing in better quality hardware; implement software filters to improve the quality of the captured audio; improve the editing interface of the transcribed texts; and include new features. Scriba brings together several features to support the process of holding court hearings, among which stands out the tool for transcribing the hearing with the support of artificial intelligence. The Scriba transcription module is compatible with any API SaaS Cloud transcript. The tool is currently configured to use Google Cloud Speech-to-Text to process the streaming of recorded audio at court hearings using Google's machine learning technology.
RESULTS	Transcription with an accuracy of at least 80%. Indexing of at least 80% (seventy percent) of the transcribed content. Integration with Projudi – Electronic Judicial Process of the State of Roraima.

MANDAMUS

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.

FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE

The making of warrants was done manually and involved a series of bureaucratic acts.
The warrants were sent to a Warrants Centre and only the officer was responsible for creating compliance strategy.
Errors in the making of warrants generated a loss of time and financial resources.
The warrant certificate was also done manually.
The system uses AI in three steps:

• decision analysis
• making the warrant
• distribution of warrants that it classifies by urgency, nature, complexity and geolocation of addresses.

The geolocation allows the monitoring of the execution of the warrant until its distribution. The application available to bailiffs allows you to send the warrant by email or WhatsApp. The procedure is electronic, exempting the bailiff from taking any documents in person.
After the execution of the warrant, there is a record of various information about the act of compliance that will become part of a database.
The signing of the certificate by the official is also performed by the application.

RESULTS

Efficiency in carrying out warrants. Sustainability:

• elimination of paper and ink consumption;
• decrease in fuel costs;
• rationalization of public spending.

Reduction of work overload of the servers with the elimination of the need for accomplishment. Elimination of repetitive manual work.

2.26. Justice Court of Rio Grande do Sul – TJ/RS

(no name)

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	2019
CURRENT STATUS	In production. The Project System is implanted in the District of Tramandaí and in the 14th of the Public Finance. There is an expansion plan for the Caxias, Santa Maria and Passo Fundo counties.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Automate the initial analysis of the demand in tax enforcement proceedings, using data mining techniques, associated with the classification task, which allow the prediction of what type of dispatch must be made in this initial stage of the judicial process.
RESULTS	Automate dispatches, minimizing the judge's intervention in the initial analysis of the case. It is intended that about 90% of this task will be without human analysis. As the implementation is recent and the number of tax executives is incipient until this time, it has not yet been possible to evaluate the results.
OTHER ARTIFICIAL INTELLIGENCE SYSTEMS UNDER DEVELOPMENT	Yes. Due to the implementation of e-Proc (from the Federal Justice), which also has initiatives in the field of artificial intelligence with a focus on repetitive features and the validation of procedural classification, studies have already begun to adapt such functionalities for the State Justice.

2.27. Justice Court of Santa Catarina – TJ/SC

(no name)

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	Under development.
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	The first tests are being carried out through the development of e-Proc System features.

2.28. Justice Court of São Paulo – TJ/SP

JUDI

ORIGIN	Developed by the Court's internal team in partnership with Microsoft.
YEAR OF IMPLEMENTATION	2019
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Judi is a chatbot with machine learning. It was born from the realization that, in the current context of more complex and dynamic contractual and consumer relations, citizens increasingly have doubts about the situations that can be solved through the Special Civil Courts, leading to the exhaustion of service channels of these judicial units – as they are, necessarily, in person. Problems in consumer relations and less complex conflicts have led an increasing number of citizens to seek help in the Judiciary, for which the system of Special Civil Courts is one of the entry doors. Added to this is the fact that the history of appreciation of the minimum wage in the last years, despite its undeniable social importance, has greatly expanded the boundaries of access to these courts. Such increasing demand, in opposition to the present limitation of material resources and human resources of the Court, ends up compromising the provision of jurisdiction to those who seek preliminary information from Special Civil Courts and, often, only during the face-to-face service does the citizen discover that their specific case is beyond the competence of these units. In this scenario, Judi was conceived to scale the reach of the service to any citizen with Internet access, allowing it to clarify general doubts about the functioning of the courts and, mainly, to validate whether they offer the appropriate means to solve the problem that motivates you to seek the Judiciary. The service provided by Judi intends not only to inform the citizen about the logic of the courts, but also to guide him on the requirements (conditions and preliminary documents) to file his complaint in a more objective and qualified way.
RESULTS	Ensure that the citizen receives the correct information according to their problem / doubt and, if applicable, go to the nearest Special Civil Court, indicated by the bot itself, with the necessary documentation to file the case. Since 12/17/2019, Judi has already performed more than 10,000 virtual assistance, in which users were informed about the competence and the necessary documentation for eventual filing in the Special Civil Courts. In the optional evaluations recorded by users, the average score of the attendances is 4.3 (with 5.0 being the maximum possible score), and the feedbacks of free expression indicate, in general, a great expectation from citizens for the chatbot to improve some points and expand the possible subjects for assistance. Like any machine learning tool, Judi still requires constant training and curation of its bases, so that it can continue evolving based on the interactions of users.

LEIA
Legal Intelligent Advisor
Precedents

ORIGIN	Developed by Softplan company. Internal Courts teams involved in the process.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Automatically suggest, based on the convergence between the content of the initial petition of a process and a matrix of understanding precedent theme, linking processes to precedent themes. Support the intensive work in knowledge of offices to identify convergence between the characteristics of the judicial processes in progress in their judicial units and the guidelines of the Superior Courts in relation to the connection with the topics (including the respective leading cases). Today, this analysis is manual and extremely costly in terms of time, as there are more than 3,700 themes, and judicial units are generally highly congested.
RESULTS	LEIA Precedents is in the process of being implemented in the routine of entering new processes, which means it would already carry out the convergence analysis and possible link suggestion based on the distribution of the process. In addition, this same technique allows the extraction and classification of almost any type of text, by induction. The initial phase is completed, contemplating the analysis and indication of suggestion of overestestation of the stock of non-criminal cases, electronic and on-going lawsuits, for a set of 50 themes. Over 1.9 million lawsuits were analyzed and a convergence was found between the initial petition and understanding matrix in 168 thousand cases. Identification of 8.9% of candidate processes to be linked to any of the 50 themes analyzed.
OTHER ARTIFICIAL INTELLIGENCE SYSTEMS UNDER DEVELOPMENT	• LEIA Petitioning: Automatically suggests, for the petitioner lawyer, the type of intermediate petition to be attached, according to its entire content. Using the same technique and same technology stack, any other fields in the petitions board that are determined by the textual content of the petition are amenable to automation. • LEIA Online Attachment: performs the consultation, blocking and unlocking actions at Bacenjud in an automated way, based on the content of the magistrate's file at the SAJ, directly on the Bacenjud website, returning the information to the SAJ. The same technique can be replicated in all of the Court's internal procedures that involve interaction with systems external to the SAJ (ex.: RENAJUD, INFOJUD, general "nothing on record" consultations and issuing of electoral certificates, for example).

2.29. Justice Court of Tocantins – TJ/TO

MINERJUS

Procedural classification support
solution with the use of artificial
intelligence

ORIGIN	Developed by the Court's internal team in partnership with Federal University of Tocantins.
YEAR OF IMPLEMENTATION	2019
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	It classifies the initial petitions according to the TPU.
RESULTS	Pilot project started in the Special Civil Court of the District of Palmas.

2.30. Regional Labor Court of the 1st Region – TRT1

ARTIFICIAL INTELLIGENCE AND EFFICIENCY OF THE JUDICIARY

use of predictive analysis in conciliation, sentences and judgements at the Regional Labor Court of the 1st Region

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	Under analysis by the Regional Committee of the PJe to comply with CSJT Resolution 242/2019.
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	The objective of the research is to use deep learning (an advanced subtype of artificial intelligence) in the creation of computational models capable of performing three types of predictive analysis: a) probability of success in a conciliation hearing; b) probability of reversal or modification of the sentences handed down by the labor courts; c) probability of reversing or modifying the judgments handed down by the TRT/RJ classes. The predictive model will be implemented through an application programming interface (API), which can be easily incorporated into the PJe system or any other of interest to the Court.
RESULTS	The proposed solution will directly benefit the managers of the Regional Labor Court – RJ, since it will make it possible to add a new element of analysis in improving quality, efficiency and equality in the jurisdictional provision.
OTHER ARTIFICIAL INTELLIGENCE SYSTEMS UNDER DEVELOPMENT	Artificial intelligence model for automatic identification of matters of general repercussion of the Labor Court in the PJe.

2.31. Regional Labor Court of the 4ᵗʰ Region – TRT4

CLUSTERING OF PROCESSES

ORIGIN	Developed by the Court's internal team.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	In production.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Grouping of similar processes in order to speed up the admissibility analysis of the Review Resources. Grouping of similar processes in the offices of the Judges in order to optimize the elaboration of votes.
RESULTS	Faster preparation of votes and dispatches.
OTHER ARTIFICIAL INTELLIGENCE SYSTEMS UNDER DEVELOPMENT	Yes. Reconcilability index to support the selection of processes with the greatest potential for conciliation.

2.32. Regional Labor Court of the 5ᵗʰ Region – TRT5

GEMINI

ORIGIN	Project in an early stage, conducted jointly by the following Courts: TRT – 7ᵗʰ Region, TRT – 5ᵗʰ Region, TRT – 15ᵗʰ Region and TRT – 20ᵗʰ Region.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Reduce the human effort and the time spent to identify and group similar ordinary appeals, pending judgment, since this task is currently performed by the Office's employees, by reading resource by resource. This activity aims to optimize the production of votes and avoid divergent decisions.
RESULTS	Increase productivity in drafting of votes in offices, by grouping ordinary resources by similarity and keywords, as well as identifying agreements that originate from similar resources, contributing to the uniformity of votes on the same matter in the office.

2.33. Regional Labor Court of the 7th Region – TRT7

GEMINI

ORIGIN	Project in an early stage, conducted jointly by the following Courts: TRT – 7th Region, TRT – 5th Region, TRT – 15th Region and TRT – 20th Region.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Reduce the human effort and the time spent to identify and group similar ordinary appeals, pending judgment, since this task is currently performed by the Office's employees, by reading resource by resource. This activity aims to optimize the production of votes and avoid divergent decisions.
RESULTS	Increase productivity in drafting of votes in offices, by grouping ordinary resources by similarity and keywords, as well as identifying agreements that originate from similar resources, contributing to the uniformity of votes on the same matter in the office.

2.34. Regional Labor Court of the 11th Region – TRT11

B.I. TRT 11

ORIGIN	Project in an early stage, conducted jointly by the following Courts: TRT – 7th Region, TRT – 5th Region, TRT – 15th Region and TRT – 20th Region.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	Under development. This system is already implemented at TRT11. It's currently being improved to contemplate features that use artificial intelligence.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Data analysis for comparisons and performance insights of the Court, also assisting in corrections and monitoring of the Court's procedural activities. Performance prediction based on information from the past. Indication of improvement items (alert) based on past performance, in order to achieve previously set goals in a given period.

2.35. Regional Labor Court of the 12ᵗʰ Region – TRT12

CONCILIA JT

ORIGIN	Project in an early stage, conducted jointly by the following Courts: TRT – 7ᵗʰ Region, TRT – 5ᵗʰ Region, TRT – 15ᵗʰ Region and TRT – 20ᵗʰ Region.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	Pilot Project.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Reduction of the average duration of a process in the knowledge phase. Recognition of processes with potential for conciliation. Schedule optimization.
RESULTS	Improvement in the selection of processes that are sent to the conciliation centers. Better use of schedules and audience guidelines, based on the potential for agreement of each process. Still, there is not enough data to evaluate the results, as the system is still being introduced in daily routines of the judicial units.
OTHER ARTIFICIAL INTELLIGENCE SYSTEMS UNDER DEVELOPMENT	LIA – Virtual Attendant: this system is a virtual attendant, whose initial functional prototype was developed within the TRT-12. In November 2019, an assignment agreement was signed between TRT-12 and the CSJT, so that the CSJT can have access to the source code and improve the system.

2.36. Regional Labor Court of the 15th Region – TRT15

GEMINI

ORIGIN	Project in an early stage, conducted jointly by the following Courts: TRT – 7th Region, TRT – 5th Region, TRT – 15th Region and TRT – 20th Region.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Reduce the human effort and the time spent to identify and group similar ordinary appeals, pending judgment, since this task is currently performed by the Office's employees, by reading resource by resource. This activity aims to optimize the production of votes and avoid divergent decisions.
RESULTS	Increase productivity in drafting of votes in offices, by grouping ordinary resources by similarity and keywords, as well as identifying agreements that originate from similar resources, contributing to the uniformity of votes on the same matter in the office.

2.37. Regional Labor Court of the 20th Region – TRT20

GEMINI

|	
ORIGIN	Project in an early stage, conducted jointly by the following Courts: TRT – 7th Region, TRT – 5th Region, TRT – 15th Region and TRT – 20th Region.
YEAR OF IMPLEMENTATION	2020
CURRENT STATUS	Under development.
FUNCTIONALITIES AND PROBLEMS IT AIMS TO SOLVE	Reduce the human effort and the time spent to identify and group similar ordinary appeals, pending judgment, since this task is currently performed by the Office's employees, by reading resource by resource. This activity aims to optimize the production of votes and avoid divergent decisions.
RESULTS	Increase productivity in drafting of votes in offices, by grouping ordinary resources by similarity and keywords, as well as identifying agreements that originate from similar resources, contributing to the uniformity of votes on the same matter in the office.

A

ANALYSIS AND CONSOLIDATION

OF THE DATA FROM THE
1ST PHASE OF THE RESEARCH

03

ANALYSIS AND CONSOLIDATION

OF THE DATA FROM THE 1ST PHASE OF THE RESEARCH

3.1. Distribution of AI initiatives by Court

States that have AI projects
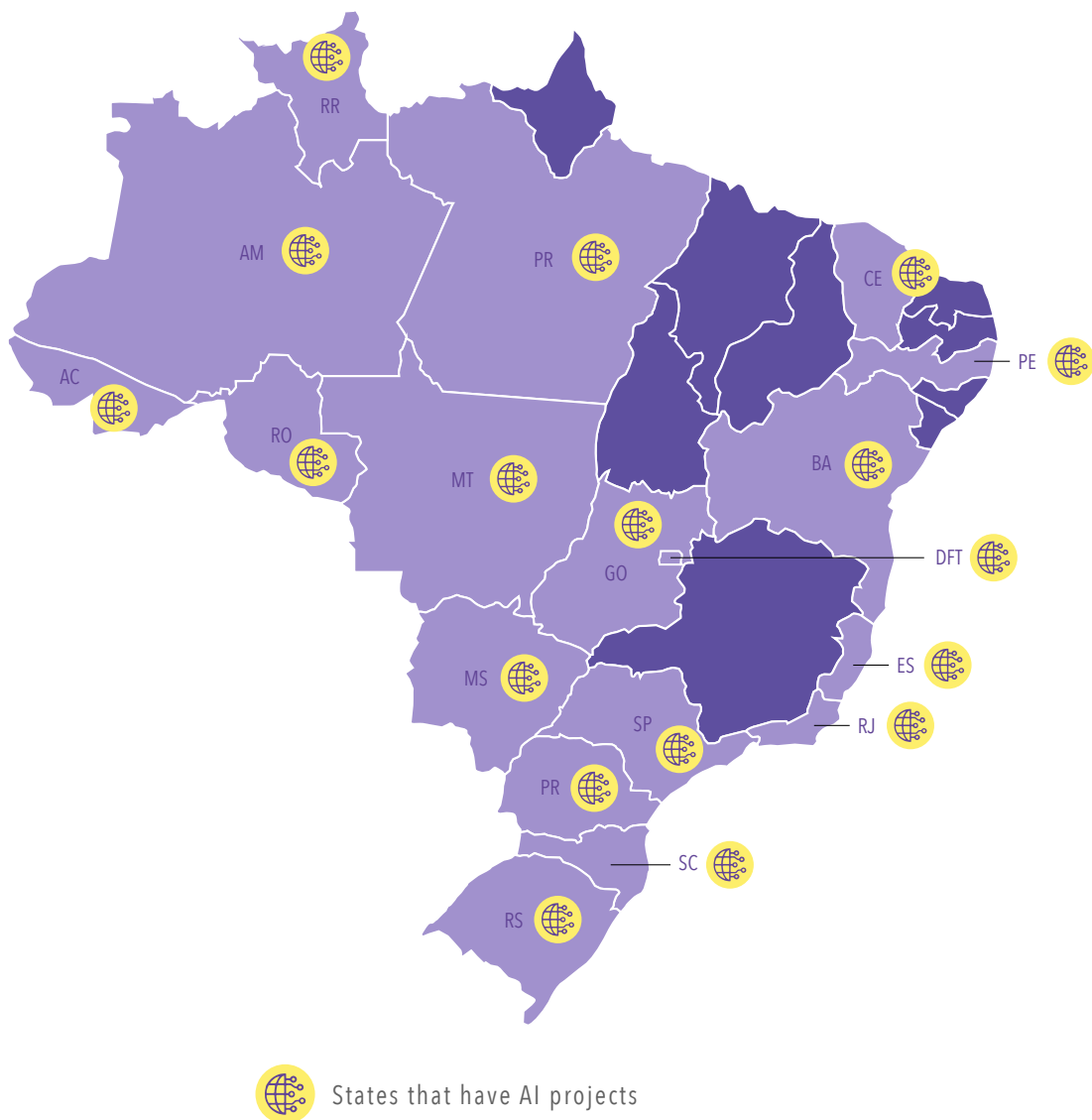
3.2. Projects by Implementation Phase

The research detected the existence of artificial intelligence projects already implement–
ed, in the pilot project or under development, within the scope of the Brazilian Judiciary.
All Superior Courts and Federal Regional Courts have AI initiatives, as well as in Regional
Labor Courts and in a large part of the Courts of Justice, AI projects were identified in dif–
ferent stages of implementation.
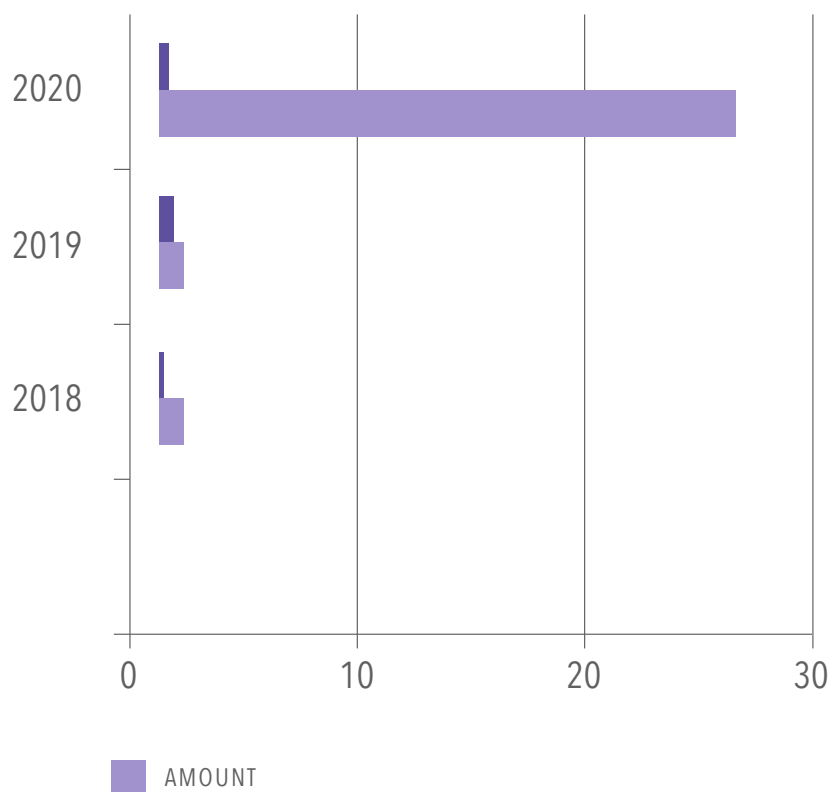
Table 1 – Development phases of AI projects

COURTS	DEVELOPMENT PHASES		
	UNDER DEVELOPMENT	PILOT PROJECT	IN PRODUCTION
Superior Courts (STF, STJ and TST)	4	-	5
Regional Federal Courts	8	2	6
Regional Labor Courts	5	1	1
State Justice Courts	12	4	15
Total per phase	29	7	27

3.3. Year of Implementation

3.3.1. Pilot projects

■ AMOUNT
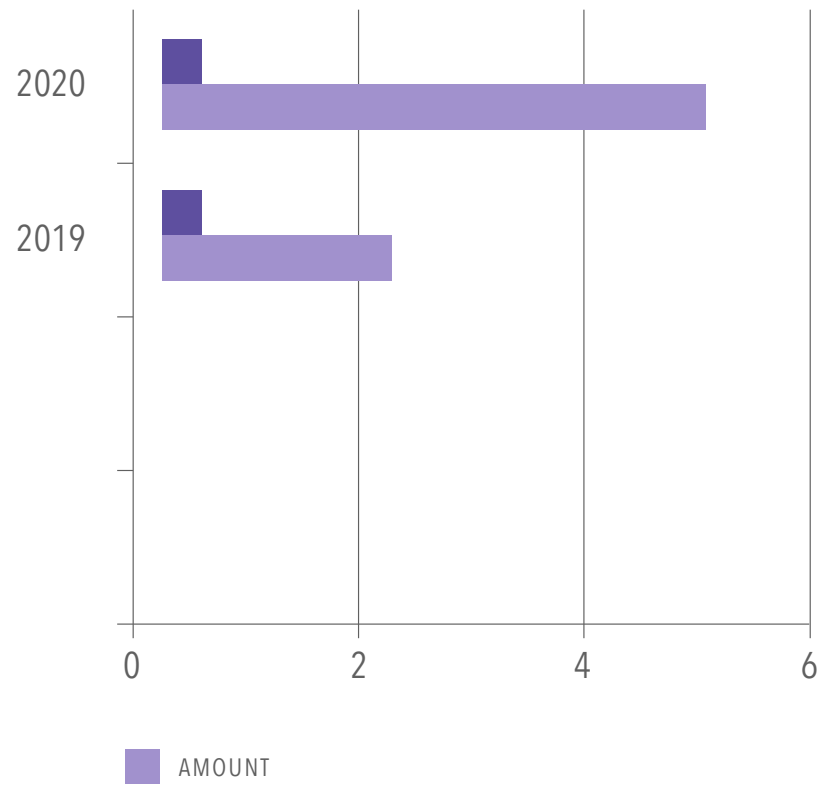
3.3.2. Projects under development

■ AMOUNT

3.3.3. Projects in production


AMOUNT
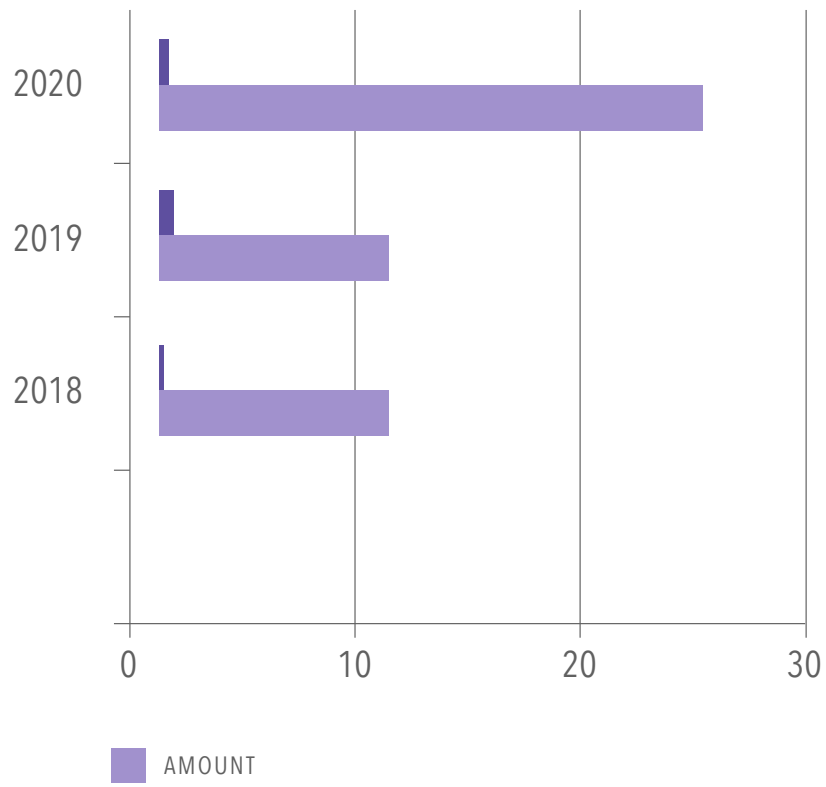
3.4. Developer's origin

A considerable portion of these projects were developed over the years 2019 and 2020 as follows: 47 by the court's own internal team; 3 resulted from a partnership with universities, 13 were developed in partnership with a private company, and one, by other bodies.

This investment in artificial intelligence projects did not result in an increase in the expenses of the Judiciary. According to data from the Justice in Numbers Report 2020, from the CNJ, the historical series of IT expenses was practically stable at the level of R$ 2.2 billion.

3.5. Functionalities and problems it aims to solve

In general, the AI projects in the courts included the following features: verification of the hypotheses of preliminary unfounded application in the manner listed in the items of article 332 of the Civil Procedure Code; draft suggestion; grouping by similarity; making the judgment of appeals admissibility; classification of processes by subject; treatment of mass demands; online attachment; extraction of judgment data; facial recognition; chatbot; calculation of probability of reversal of decisions; classification of petitions; prescription indication; standardization of documents; hearing transcription; automated distribution; and classification of sentences.

The main objectives served by artificial intelligence are: service optimization to lawyers and the public; greater security; automation of activities; better management of human resources for the Judiciary's core activity; increased speed in the procedural process.

F
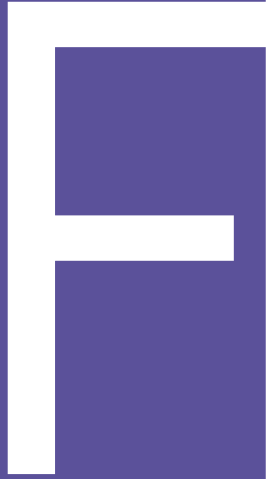
FINAL
CONSIDERATIONS

FINAL CONSIDERATIONS

In Brazil, the number of litigations, estimated at about 78.7 million,[29] demonstrates the existence of space and the need to improve the management techniques of the agencies, processes and people linked to the Judiciary, so that the appropriate and successful innovations are relevant to improve the economic and social impacts linked to judicial action.

Thus, either to ensure the fulfillment of the organizational and constitutional duties of the Judiciary, or to assign its adequate dimension, in the economy, it is important that the Judiciary Power has its operations well managed, with the use of mechanisms to better allocate resources, increase the quality of the provided service and the maximization of its efficiency.

In the first phase of this research, an unprecedented survey was carried out, which allowed to consolidate data on AI systems implemented in Brazilian courts. The data presented in this report allowed to verify the development of artificial intelligence systems, which has been treated as the great ally in increasing the productivity of the Brazilian Judiciary, with an important investment directed to the automation of some activities. There is no doubt that technology can make justice more effective and with more qualified services.

This is the first phase of a research that will continue in 2021 in its second phase, which intends to update the data already collected and analyze other aspects of the use of artificial intelligence involving the Judiciary.

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29   CNJ. **Justiça em Números 2020**: ano-base 2019. Brasília: CNJ, 2020.

B

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