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Artificial intelligence in criminal prosecution: digital evidence, procedural guarantees, and the limits of criminal investigation in Brazil.

Artificial intelligence in criminal prosecution: digital evidence, procedural guarantees and the limits of criminal investigation in Brazil

Ivan Muniz

SUMMARY

The incorporation of artificial intelligence tools and digital forensic analysis technologies into criminal investigations has created new possibilities for identifying perpetrators, obtaining, extracting, and analyzing digital evidence. At the same time, the use of these resources raises questions regarding the protection of fundamental rights and the observance of procedural guarantees assured to the investigated party and the accused. In this context, this study aims to analyze the legal limits imposed on the use of technological tools based on artificial intelligence in Brazilian criminal prosecution, with special attention to digital evidence, the chain of custody, the legality of evidence, the adversarial process, the right to a full defense, the presumption of innocence, and the need for judicial authorization.

To this end, bibliographic and documentary research was conducted, complemented by a jurisprudential survey of the Courts of Justice and the Superior Courts, especially the Superior Court of Justice and the Supreme Federal Court. The jurisprudential analysis identified decisions mainly involving the use of the Cellebrite digital forensic tool in the investigation of crimes such as homicide and drug trafficking. It was also found that there is limited jurisprudential production specifically related to the use of artificial intelligence in the prosecution of cybercrimes, highlighting a significant gap in the judicial treatment of the matter. The results indicate that the use of these technologies is not, in itself, incompatible with criminal proceedings, provided that it is subject to constitutional and legal limits, especially regarding judicial authorization, the preservation of the integrity of evidence, the transparency of procedures, and the effective access of the defense to evidentiary elements. It is concluded that technological advancement must be accompanied by the strengthening of procedural guarantees, in order to prevent investigative efficiency from overriding fundamental rights.

Keywords: Artificial Intelligence. Criminal Prosecution. Digital Evidence.

ABSTRACT

The incorporation of artificial intelligence tools and digital forensic technologies into criminal investigations has created new possibilities for identifying perpetrators and obtaining, extracting, and analyzing digital evidence. At the same time, the use of such technologies raises concerns regarding the protection of fundamental rights and compliance with procedural guarantees afforded to suspects and defendants. In this context, this study aims to analyze the legal limits governing the use of technology-based tools and artificial intelligence in Brazilian criminal proceedings, with particular attention to digital evidence, chain of custody, admissibility of evidence, adversarial proceedings, the right to a full defense, the presumption of innocence, and the requirement of judicial authorization. To this end, bibliographic and documentary research was conducted, complemented by a case-law survey involving Brazilian Courts of Justice and Superior Courts, particularly the Superior Court of Justice and the Federal Supreme Court. The case-law analysis identified decisions mainly involving the use of the Cellebrite digital forensic tool in investigations of crimes such as homicide and drug trafficking. The research also revealed limited case law specifically addressing the use of artificial intelligence in the investigation and prosecution of cybercrimes, highlighting a significant gap in the judicial treatment of the subject. The findings indicate that the use of these technologies is not, in itself, incompatible with criminal proceedings, provided that it remains subject to constitutional and statutory safeguards, particularly regarding judicial authorization, preservation of evidentiary integrity, procedural transparency, and effective defense access to evidentiary materials. It is concluded that technological advancement must be accompanied by the strengthening of procedural safeguards in order to prevent investigative efficiency from overriding fundamental rights.

Keywords: Artificial Intelligence. Criminal Prosecution. Digital Evidence.

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1 INTRODUCTION

The technological transformation of recent decades has significantly altered the ways of
Social interaction, communication, information storage, and knowledge production.
At the same time, these transformations also had repercussions on crime and on the mechanisms...
employed by the State for its investigation and prosecution. The increasing use of devices
Electronics, digital platforms, computerized systems, and virtual environments have caused a portion
a significant portion of the elements relevant to the investigation of criminal offenses would come to exist in a format
digital, highlighting the importance of digital evidence in contemporary criminal proceedings.
In this scenario, the development of artificial intelligence tools and expert systems
In the field of digital forensics, new possibilities have emerged for investigative work. Resources
capable of processing large volumes of information, identifying patterns, organizing data, retrieving
Files and assistance in the analysis of electronic devices can contribute to greater efficiency.
to criminal investigation. The use of these technologies proves particularly relevant given the
growth in the quantity and complexity of data produced in the digital environment, circumstance
which makes it difficult to analyze the information obtained during an investigation using only a manual method.
However, the pursuit of greater efficiency in criminal prosecution cannot occur in a detached manner.
of the fundamental guarantees ensured by the Brazilian legal system. The use of
Advanced technologies for obtaining and processing data can directly affect rights.
related to intimacy, private life, confidentiality of communications, the right to a fair hearing, and the right to a full defense.
and to due process. For this reason, the incorporation of artificial intelligence into the investigation.
Criminal law requires the definition of legal limits capable of preventing technological efficiency from becoming...
transform it into an instrument for violating fundamental rights.
The 1988 Federal Constitution establishes a set of guarantees designed to limit the exercise of
state punitive power, among which stand out due process of law, the right to a fair hearing, and broad jurisdiction.
defense, the presumption of innocence, and the inadmissibility of evidence obtained by illicit means (Brazil,
(1988). Such guarantees take on particular relevance when criminal prosecution involves technology.
capable of accessing, extracting, cross-referencing, and interpreting large amounts of information from
electronic devices.
The discussion also involves the reliability of digital evidence itself. Unlike certain
Unlike traditional evidence, digital data can be easily copied and modified.
transferred or eliminated, making it essential to adopt procedures designed to preserve
its authenticity and integrity. In this context, the chain of custody constitutes an important mechanism.
control of the trace's trajectory from its identification to its use in the process, allowing
greater assurance regarding the preservation of the evidentiary elements' characteristics.
The use of artificial intelligence tools adds new challenges to this scenario. Systems

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Automated systems can help in locating and organizing relevant information, but their
Results must remain subject to human scrutiny and judicial review.
possibility that technological mechanisms may produce conclusions from large volumes of
The data requires sufficient transparency so that those involved in the process can understand it.
to question and, when necessary, challenge the elements used to support a given claim.
investigative conclusion.
In this sense, the central question of this study is to verify to what extent the use of
Artificial intelligence tools and digital forensic analysis technologies in criminal prosecution.
Brazilian law can be reconciled with the procedural guarantees assured to the investigated party and to...
accused. The aim is to understand, in particular, what limits must be observed so that the
The use of these instruments does not result in the violation of fundamental rights or in the production of
evidence incompatible with due process of law.
To achieve this objective, the research was developed through bibliographic and documentary review.
encompassing studies related to artificial intelligence, digital evidence, chain of custody, and...
Procedural guarantees in criminal law. A case law review was also conducted before the Courts.
of Justice and the Superior Courts, with special attention to the decisions of the Superior Court of Justice.
and the Supreme Federal Court. Among others, keywords related to the main issues were used.
digital forensic analysis tools identified in the literature and case law, such as Cellebrite,
Peritus, Avilla Forensics, NuDetective, Watson Explorer, Nuix Workstation and Autopsy Forensics.
Case law research revealed a limited number of decisions that directly address the relationship.
between artificial intelligence, criminal investigation and procedural guarantees, especially when it comes to
of cybercrimes. The precedents found focus mainly on the use of
Cellebrite is a tool used in investigations involving common crimes, such as homicide and drug trafficking.
Although decisions related to cybercrimes have also been found, especially
Those foreseen in article 241-A of the Statute of the Child and Adolescent, the resources analyzed do not
They presented as a central issue the existence of a violation of procedural guarantees arising from
use of technological tools.
Given this scenario, the study seeks to contribute to the debate regarding the legal limits of the use of...
artificial intelligence in criminal prosecution, considering that technological development does not
It eliminates the need to observe fundamental guarantees. On the contrary, the greater the
The greater the state's capacity to access, process, and interpret digital information, the greater it should be.
concern with control mechanisms, transparency, and protection of individual rights.
Thus, the article is structured to initially address the constitutional foundations and the
limiting principles of Criminal and Criminal Procedure Law, subsequently moving on to the analysis of
Illegally obtained evidence, the limits of criminal prosecution, and the use of artificial intelligence in criminal
investigations are discussed. Following this, digital evidence and mechanisms for preserving its integrity are examined.

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with particular emphasis on the chain of custody. Finally, a jurisprudential analysis of the precedents is presented.
identified, seeking to understand how the Brazilian Judiciary has been addressing the use
technological research tools and what parameters can be extracted from these decisions.
for the protection of procedural guarantees.

2. THEORETICAL FRAMEWORK

2.1 Constitutional Foundations and Limiting Principles of Criminal and Criminal Procedure Law

Criminal law plays an essential role in organizing life in society, especially
in the face of conduct that significantly affects legally protected rights and interests.
Although different mechanisms of social control contribute to the maintenance of order and
In collective living, certain situations require state intervention through the penal system.
especially when other available instruments prove insufficient to address the
severity of the injury caused. In this sense, criminal intervention represents one of the most
Intense state intervention in the individual sphere justifies the existence of limits.
legal mechanisms designed to prevent the arbitrary exercise of punitive power (LIMA, 2017).
This need for restraint is also evident in the context of criminal proceedings. Criminal prosecution
State action is developed through an ordered succession of acts, carried out by different subjects and
bodies that are part of the procedural relationship, according to procedures previously established by
legal system. The existence of this procedural apparatus represents not only an instrument for
to enable the application of the penalty, but also a guarantee against possible abuses arising from it.
exercise of state power. Thus, the greater the state's capacity to intervene in individual rights, the greater the
requirement for observance of procedural guarantees must be (BADARÓ, 2021).
From this perspective, criminal and criminal procedural principles assume a central position in
structure of the legal system. They function as parameters for the elaboration, interpretation and
application of the rules, establishing limits to state action and guiding the activity of operators.
of Law. The Federal Constitution, sub-constitutional legislation, and international treaties of
Human rights comprise a set of norms that establishes guidelines for the functioning of
punitive system, imposing that the application of criminal sanctions be subject not only to the rules
legal aspects, but also the principles and postulates that structure the rule of law.
For this reason, Criminal Law cannot be understood merely as a set of provisions.
intended to define crimes and establish penalties. Their function also involves outlining the conditions under which...
in which the power to punish can be exercised, reaching the moments of imposition, application and
execution of sanctions. The limiting dimension of Criminal Law constitutes, therefore, a mechanism for protecting the
individual against the possibility of excesses on the part of the State (BADARÓ, 2021).

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Similarly, fundamental principles and guarantees constitute indispensable elements to legitimacy of judicial action in the criminal sphere. In addition to structuring the process and guiding the In the actions of the procedural subjects, these guarantees function as instruments for the protection of rights. individual rights, especially in the face of the possibility of restrictions on freedom and other rights. arising from criminal prosecution. The preservation of human dignity, in this context, constitutes... a fundamental element for ensuring that state repressive activity remains subject to limits. established by the legal system.

The 1988 Federal Constitution gave special importance to fundamental rights and guarantees. to dedicate Title II to them. As Muniz observes, this constitutional set is organized in different categories, encompassing individual and collective rights and guarantees, social rights, rights relating to nationality, political rights, and those concerning existence, organization, and participation in political parties (LIMA, 2017). This systematization highlights the breadth of protection. conferred by the constitutional text to individuals and their participation in the social and political structure of State.

Fundamental rights, in this context, have a dual dimension of action. On the one hand, They have a defensive character, establishing limits to the interference of public authorities in the legal sphere. of individuals. On the other hand, they present a performance or protective dimension, imposing on the State the Adoption of measures aimed at preventing or impeding violations and harm to legally guaranteed rights (BADARÓ, 2021). This dual function is especially relevant in the criminal field, where the State action can produce intense restrictions on individual rights. The constitutional structure Brazilian law also includes both explicit and implicit principles. The former are directly foreseen. in the normative text, while the latter are identified from the systematic interpretation of legal system, considered as a coherent and purposeful unit.

In this way, understanding constitutional norms is not limited to reading their provisions in isolation. also requiring consideration of the principles that guide and give meaning to the system as a whole. legal (LANTYER, 2023).

However, the protection afforded to fundamental rights does not mean that these rights possess absolute character. The Supreme Federal Court recognizes that fundamental rights and guarantees can to suffer limitations, especially when they come into conflict with other equally important rights or values. constitutionally protected. Therefore, a general and pre-established hierarchy is not established. defined among these rights, making it necessary to seek, in concrete situations of conflict, a A solution that preserves the legal values involved as much as possible.

In these situations, the interpretative activity should seek to harmonize the conflicting rights. According to constitutional doctrine, the solution does not necessarily consist of the complete elimination of One of the rights involved, but in carrying out a balancing test that considers the particularities of the specific case, the intensity of the restriction, and the conflicting legal interests.

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The objective is to reach a compromise capable of preserving the constitutional values involved to the greatest extent possible (BADARÓ, 2021). Balancing, in this sense, constitutes an important mechanism for... the resolution of conflicts between fundamental principles and rights. Alves (2022) highlights its use. as a method of applying principles in both Brazilian and foreign legal doctrine. In From Ronald Dworkin's perspective, principles carry a significant dimension, while Robert Alexy distinguishes the logic of operation of principles from that attributed to rules. The technique of *Balancing,* also developed in the North American legal tradition, relates precisely to need to resolve normative conflicts involving values that cannot be adequately solved solely by traditional methods of interpretation.

The distinction between principles and rules is also relevant for understanding the structure of norms. fundamental. The principles have a guiding function and serve as the foundation for the The drafting, interpretation, and application of legal norms. The rules, in turn, confer greater to give concrete form to the commands derived from these principles, establishing specific prescriptions for certain situations (LANTYER, 2023). From this relationship arises a normative structure in which Principles and rules work together in the organization and functioning of the legal system.

This understanding takes on particular importance when applied to Criminal Law and Criminal Procedure. since the exercise of state punitive power must remain permanently subject to Legal boundaries. The definition of criminal conduct, investigation, prosecution, and trial. and the eventual application of the sanction must observe not only the specific legal provisions, but It is also the set of principles and guarantees that prevent the arbitrary use of state power.

Given these premises, the analysis of cybercrimes requires consideration of principles. fundamental principles capable of guiding both the interpretation of criminal law and the actions of the The State in the face of new forms of crime. Although the legal system has several... While the present approach focuses on the most relevant principles, it also emphasizes those that are most pertinent. for understanding crimes committed in digital environments.

Thus, without attempting to exhaust the theoretical discussion, the fundamental principles of will be examined. The material and formal nature related to the limits of repressive state intervention, and to the theory of crime. and to the application of criminal sanctions. The choice of these principles allows for the establishment of a theoretical basis. to understand how Criminal Law can respond to the challenges arising from Cybercrime without disregarding the constitutional guarantees that condition the exercise of power. to punish.

2.2 Illegally Obtained Evidence, Limits of Criminal Prosecution, and Artificial Intelligence in Investigations Criminal

The inadmissibility of evidence obtained by unlawful means constitutes an important fundamental guarantee.

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as provided for in the Brazilian legal system. Article 5, item LVI, of the Federal Constitution establishes that evidence obtained by unlawful means is inadmissible in court proceedings. This provision represents a A direct limitation on state power, since it prevents the State, in the exercise of its activity... persecutory, resorting to mechanisms that violate legal norms or fundamental rights to obtain elements intended for procedural instruction. It is, therefore, a guarantee of a negative nature. because it imposes on public authorities the duty to refrain from certain practices that may affect the legal sphere of individuals.

In this context, Fabiano Augusto Petean and Bruno Cardenal Castilho (2020) highlight that the prohibition

> The constitutional right against illegally obtained evidence constitutes a manifestation of the protection of fundamental rights in the face of of state action. The rule establishes a limit to investigative and procedural activity, preventing the The pursuit of criminal accountability is carried out through the violation of the very guarantees that They structure the rule of law.

The distinction between illegal, illegitimate, and illicit evidence is also relevant to understanding... institute. As Gustavo Henrique Badaró (2021) explains, Brazilian doctrine, based on the distinction formulated by Ada Pellegrini Grinover based on Nuvolone, includes the contrary evidence. within the legal system as belonging to the category of illegal evidence.

On one side, there is illegitimate evidence, produced through violation of procedural rules, and, on the other hand, illicit evidence, obtained in violation of substantive law or the guarantees provided for. constitutionally.

The difference between these categories has significant legal consequences. Illegally obtained evidence may resulting, for example, from the violation of fundamental rights related to public freedoms and to Personality rights. From this perspective, when obtaining the evidentiary element occurs by violating constitutionally protected guarantees, its use in the process finds legal obstacle precisely because the State cannot legitimize an investigative action based on violation of fundamental rights. Badaró (2021) emphasizes, in this sense, that protection extends to goods legal matters of high relevance, the violation of which may even constitute a criminal offense, as occurs in obtaining evidence by violating domicile.

The Federal Constitution, by establishing the inadmissibility of illegally obtained evidence, promotes an articulation between the rules of substantive law and those that govern the process. As Badaró (2021) observes, Inadmissibility can be understood as a procedural consequence arising from the violation. of a rule of a substantive nature. Although the constitutional text expressly establishes the Prohibition, it is the criminal procedural law that governs in a more specific way the effects resulting from the use of these elements in the process.

Article 157 of the Code of Criminal Procedure establishes that illegally obtained evidence is inadmissible and must be discarded. to be removed from the proceedings. Thus, the consequence is not limited to the abstract recognition of the irregularity in obtaining the evidence, but extends to its retention in the records and its use as

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an element fundamental to judicial activity. The withdrawal of evidence seeks to prevent a
an element produced in violation of the legal system is used to support
validly the criminal prosecution (ALMEIDA, 2014).

The prohibition also extends to evidence that has been obtained as a consequence of evidence.
Originally illegal. This construction is known as the "fruit of the poisonous tree" doctrine.
(fruit of the poisonous tree), developed in the North American legal tradition. As explained
Badaró, derivative evidence can be affected by the illegality of the original evidence when a relationship exists.
causal link between the two. This consequence, however, has exceptions when the link between the evidence
initially illegal and the evidence subsequently obtained is broken.

Among the hypotheses traditionally related to overcoming this contamination are...
macular attenuation *(attenuation of the taint),* the existence of an independent source *(independent*
(source) and inevitable discovery . In these situations, the existence of circumstances
autonomous means capable of leading to the obtaining of evidentiary elements prevent the illegality of the evidence.
The original result necessarily contaminates the result subsequently achieved.

In the Brazilian legal system, this matter received specific treatment with Law No.
Law 11.690/2008, responsible for amending provisions of the Code of Criminal Procedure related to evidence.
The legislation now establishes that evidence derived from illegal sources is also inadmissible.
except in situations where the causal link between them is not demonstrated or when the
Derivative evidence can be obtained from an independent source. The standard itself defines a source as such.
independent that which, following the ordinary and proper procedures of the investigation or
Criminal investigation would be capable of independently leading to the fact that is the object of the evidence.

The discipline of illegally obtained evidence demonstrates, therefore, that the state's prosecutorial activity does not possess
unlimited character. As Badaró (2021) points out, the existence of the state power of investigation and punishment
It must be accompanied by legal mechanisms capable of preventing this power from being exercised in
disagreement with the rights guaranteed by the legal system itself. The prohibition of illegally obtained evidence is found-
Thus, it is directly related to due process and functions as a restraining instrument.
of the *right to punish.*

This concern takes on particular importance in light of the increasing incorporation of resources.
Technological tools have been applied to criminal investigation activities. The development of digital tools has expanded
significantly increases the capacity for collecting, storing, cross-referencing, and analyzing information.
providing new possibilities for investigating complex crimes. At the same time, these
Technologies can create additional risks to fundamental rights, especially when
used to access, process, or correlate information belonging to the private sphere of
individuals.

Among the technologies that have come to occupy a relevant space in this context is Artificial Intelligence. According to
Camel André de Godoy Farah (2019), the European Commission, in 2018, described the

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Artificial intelligence as a system capable of exhibiting intelligent behavior based on analysis.
of their environment and the performance of actions with a certain degree of autonomy, aimed at achieving
of specific objectives. These systems can operate through software designed, for example, to
image analysis, data processing and facial recognition, or even functioning as
integrated into hardware devices.

The use of intelligent systems in criminal investigations stems, to a large extent, from the capacity
these tools for processing large amounts of information and identifying patterns that could
being difficult to perceive using exclusively conventional methods. Farah (2019) highlights the importance
of technological evolution and intelligent systems, highlighting their potential use in analysis.
of complex phenomena and in the search for solutions applicable to concrete situations.

In the criminal field, artificial intelligence can therefore assume an auxiliary role in the activity.
investigative, contributing to the identification and analysis of information relevant to the investigation of
crimes. Its use can be particularly significant in investigations involving environmental crimes.
digital systems, in which the volume of data and the speed of information circulation make the methods
Traditional analytical methods are becoming increasingly limited. Technology is therefore becoming integrated into the instruments.
available for the penal system to perform its function of repressing crimes, observing the
a characteristic of last *resort* attributed to Criminal Law (ALMEIDA, 2014).

However, the technological capacity to produce or locate information does not mean that everyone
The element obtained through these mechanisms can be automatically used as evidence.
Technological innovation does not eliminate the constitutional and procedural requirements that govern its validity.
of investigative activity. On the contrary, the use of tools capable of expanding
The power of surveillance, identification, and information processing significantly requires special...
Pay attention to the limits imposed by fundamental rights.

In this sense, the application of artificial intelligence in criminal investigations must be compatible.
with the guarantees that structure the criminal process. The pursuit of greater efficiency in the investigation of crimes.
This cannot serve as justification for indiscriminately relativizing privacy, intimacy, and...
due process of law or other constitutionally guaranteed rights. Technology must
to function as a tool to support research, and not as a mechanism capable of overriding the limits.
legal constraints imposed on the exercise of state power (FONTENELE; HOMSI; GONÇALVES, 2021).

This issue becomes even more relevant given the expansion of cybercrimes. The nature
The digitalization of certain offenses means that investigations are increasingly dependent on tools.
capable of locating, preserving, organizing, and interpreting large volumes of information. At the same time
Over time, the acquisition of this data must adhere to legal criteria, so that efficiency
The investigation should not result in the production of evidence that is subsequently deemed illegal.

In this way, technological development introduces new possibilities for criminal prosecution, but also poses new
challenges to the protection of fundamental rights. The use of intelligence

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artificial intelligence, facial recognition, automated data analysis, and other digital tools.
It must be subordinate to the principles that limit state action. The legitimacy of the investigation does not
It depends exclusively on your ability to achieve results, but also on observing the...
procedures and guarantees that confer legal validity to the elements obtained (ALMEIDA, 2014).
The relationship between technology, evidence, and criminal prosecution thus highlights the need to reconcile
Investigative efficiency and protection of individual rights in combating crime.
contemporary times, especially regarding crimes committed in digital environments, technological resources
They can represent important instruments for the State. However, their use only becomes apparent.
legally legitimate when it remains subject to the constitutional and procedural limits that
They prevent the pursuit of punishment from transforming the investigative activity itself into a source of violation of rights.

2.3 Digital Evidence in Criminal Proceedings

Evidence occupies a fundamental position in criminal proceedings, since it constitutes an instrument intended to...
To provide elements for the reconstruction of facts submitted for judicial review. In the Brazilian legal system, its
use finds constitutional support, including within the set of guarantees.
related to the protection of the individual against criminal prosecution. Article 5, item LXIII, of
The Federal Constitution guarantees prisoners, among other rights, the possibility of remaining silent.
establishing an important safeguard against self-incrimination. This protection also finds
correspondence in article 8, § 2, subparagraph “g”, of the American Convention on Human Rights,
enacted in Brazil by Decree No. 678/1992, which guarantees the accused the right not to be compelled to appear in court.
neither to testify against himself nor to plead guilty.
The right to evidence, however, is not limited to the possibility of presenting a specific element before a court.
the Judiciary. As Lantyer (2023) explains, the guarantee also includes the possibility
to request the production of evidence, to comment on the elements presented in the proceedings and to obtain
its effective assessment by the adjudicating body. The evidentiary activity, therefore, is directly
related to the adversarial process and the right to a full defense, requiring that the parties have adequate conditions.
to participate in the formation of the body of evidence.
Regarding the relationship established between the evidence and the fact that one intends to demonstrate, Lantyer (2023)
It differentiates between direct and indirect evidence. The former has an immediate connection to the event.
subjected to demonstration, as occurs, for example, in the testimony of a witness who
witnessed a certain fact. The second, in turn, initially relates to an event.
distinct from the one that one seeks to prove, but allows, through logical reasoning, to establish a
Conclusion regarding the main fact. An expert report analyzing the position of vehicles after an accident.
This can illustrate the second type of observation, as the observed elements allow for conclusions to be drawn.

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about the dynamics of the event.

Renato Brasileiro de Lima (2017) further proposes understanding evidence from three perspectives.
complementary: as evidentiary activity, as a result, and as a means. In the first sense, the evidence
This refers to the set of actions and instruments used by the parties to demonstrate to the...
The judge must verify the veracity of their allegations. In this dimension, the right to evidence is part of the guarantees.
fundamental aspects related to legal action, defense, and the right to a fair hearing, such that their undue restriction may
to compromise the effective exercise of the right to defense or prosecution.

Evidence can also be understood as the result of the activity carried out during the process.
In this case, it refers to the formation of the judge's conviction regarding the existence or non-existence of
a given fact. Although the procedural reconstruction does not allow for a complete reproduction.
Regarding past events, the evidentiary process seeks to provide sufficient elements to establish...
a legally sound conclusion regarding the situation discussed. Finally, evidence as a means
corresponds to the instruments used to enable the formation of this judicial conviction (Lima,
2017).

Technological evolution, however, has significantly modified the traditional production landscape.
evidentiary. The incorporation of information technology into daily activities and the growth of
Crime committed in digital environments has given rise to new forms of obtaining and preserving evidence.
of evidentiary elements. In this context, criminal investigations have come to depend, in certain cases, on evidence.
situations, of information stored or transmitted by electronic devices and networks of
communication.

Fontenele, Homsi and Gonçalves (2021) highlight that the production of evidence must remain subject to
to meet the requirements of legality and cannot result in the violation of constitutional guarantees or
infraconstitutional. The authors also distinguish between typical and atypical evidence, situating digital evidence within this context.
Among the latter, since their use does not necessarily stem from a legislative provision.
specific requirements for each type of electronic data. Even so, its procedural use may...
to be admitted as an instrument to obtain sources of evidence and clarify relevant factual issues.
for the resolution of the controversy.

The presence of digital evidence in criminal proceedings has therefore become increasingly significant.
Bill No. 4,939/2020, presented in the Chamber of Deputies, sought to establish guidelines.
specific requirements for obtaining and admissibility of these elements in the investigation and the process. According
According to the proposal, digital evidence refers to information stored or transmitted electronically.
that presents probative value. The project also differentiates evidence originally produced in
electronic environment, called born-digital evidence, from that which originated in physical media and
It was later converted to electronic format (Brazil, 2020).

Although there are attempts to establish a normative definition, the conceptualization of digital evidence still presents
different perspectives in the specialized literature. Casey (2011), based on the doctrine

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foreign, understands digital evidence as data stored or transmitted by
computers that can help confirm or refute a particular hypothesis about a crime
or to clarify elements relevant to its understanding, such as the intention or existence of an alibi.
From a similar perspective, Vaz (2012) defines digital evidence as the set of data recorded in
digital format, stored on electronic devices or transmitted over communication networks,
capable of representing facts or information relevant to the investigation. From this perspective, files
stored on computers, cell phones, servers, or other digital environments can
to constitute relevant sources for the reconstruction of the events investigated.
Almeida (2014) emphasizes that the digital nature of the evidentiary element does not eliminate the need for
It must possess sufficient probative value to be submitted for judicial review. The main
Its unique feature lies precisely in its medium and in its form of storage or transmission, which
They allow information to be preserved and shared across different devices and environments.
technological.
The breadth of digital evidence sources is significant. Lantyer (2023) relates these elements.
photographs, videos, message logs, information obtained from websites and software, metadata, data
originating from Radio Base Stations (RBS) and information extracted from smartphones, tablets,
Laptops and other electronic devices. Due to the nature of these items, the author
highlights the importance of metadata and documentation of the procedures used during its
collection and preservation, allowing for subsequent verification of its authenticity and integrity.
The sources used to obtain digital evidence can be broadly grouped into...
Open sources and closed sources. The former corresponds to publicly available information.
on the Internet, such as content published on websites, search engines, news portals, and networks.
Social media, provided that access to it occurs within legal limits. Closed sources, on the other hand,
They depend on specific procedures and, in certain situations, on judicial authorization, such as
This occurs during the seizure and analysis of protected electronic devices or the obtaining of certain...
data stored in computer systems (Lantyer, 2023).
Bill No. 4,939/2020 outlines different mechanisms for obtaining digital evidence.
among them the search and seizure of electronic devices and computer systems, the remote collection of
data, telematics interception, forced access to systems or networks, and information processing.
made available from open sources (Brazil, 2020). The proposal also includes technical considerations.
intended to preserve integrity, completeness, authenticity, auditability, and reproducibility.
of the procedures employed.
The requirement for specific technical knowledge to collect this information, however, raises concerns.
discussions. Ferreira (2021) questions the idea of restricting certain procedures exclusively
to the involvement of official experts or technical assistants in the field of computer science, considering that
police investigation structures may include multidisciplinary teams. In this context,

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Agents with different backgrounds and responsibilities may participate in investigations related to the collection and preservation of information, provided they are properly trained and equipped with the necessary skills. necessary for carrying out their respective activities.

Another aspect that differentiates digital evidence from traditional means of proof is related to its... unique characteristics. Minto (2021) highlights immateriality, volatility, fragility, and dispersion. as particularly relevant elements. Digital data does not depend on a physical medium. specific to exist and can be transferred between different devices without their nature being affected. informational data can be altered. This characteristic, however, also increases its vulnerability, because the Data can be modified, deleted, or destroyed with relative ease.

Dispersion also presents a challenge. Certain information may be found... distributed across devices, servers, remote storage systems, computing services in the cloud, email inboxes and various digital platforms, including those located in countries distinct. This characteristic makes it difficult to identify the source, collect and preserve the elements. relevant, especially when the research involves multiple technological environments.

Given these particularities, the need for specific procedures became established. Identification, collection, preservation, analysis, and presentation of digital evidence. Forensic science. In this scenario, digital technology plays a relevant role in developing methods designed to ensure that the data obtained during an investigation can be subsequently submitted for judicial review. with the highest possible degree of reliability. Fidalgo (2022) notes that the expansion of storage Digital technology and its growing presence in daily life have simultaneously contributed to the increase. from requests for forensic analysis and to the exponential growth in the volume of information that They need to be examined.

The admissibility of digital evidence is directly related to demonstrating its authenticity and to the preservation of procedural guarantees. Lantyer (2023) emphasizes that these elements can be used before the Judiciary, provided that the principles of adversarial proceedings, full defense, and the... mechanisms designed to verify its authenticity. The Code of Civil Procedure also It includes rules related to the use of electronic documents and reproductions of different types of documents. nature as a means suitable for demonstrating facts, provided that the legal requirements are observed. authenticity and reliability (Brazil, 2015).

In this validation process, certain technologies can help preserve the original characteristics of the data. Lantyer (2023) mentions, for example, the use of solutions technologies capable of collecting information from different sources, such as images, videos, messages, social networks and emails, organizing them into accompanying technical reports. of the respective metadata. The use of authentication mechanisms and cryptographic signatures. It can also contribute to providing greater security and reliability to electronic documents, including through the use of the Brazilian Public Key Infrastructure (ICP-Brasil).

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The use of digital evidence offers significant advantages for criminal investigations.
especially due to its ability to gather large volumes of information and allow for more detailed analyses.
quick and comprehensive. However, ease of use is one of the main advantages.
concerns related to these elements. In the context of cybercrimes, criminals may
to use resources designed to conceal one's identity, modify information, or eliminate traces,
making it difficult both to identify the perpetrator and to reconstruct the evidence of the crime.
Freitas, Silva and Souza (2023) highlight precisely that the investigation of cybercrimes faces
difficulties related to the volatility of the virtual environment and the possibility of its alteration or elimination.
from the evidence. Identifying the person responsible for the conduct is one of the main challenges, because the
The existence of digital information does not necessarily mean that it is simple to establish,
In a reliable way, the correspondence between certain data and the person who actually committed the crime.
In this scenario, preserving the chain of custody is of fundamental importance. Article 158-A
The Code of Criminal Procedure, introduced by Law No. 13.964/2019, defines the chain of custody as the
a set of procedures designed to preserve and document the chronological trajectory of the trace,
allowing tracking of its possession and handling from recognition to disposal (Brazil, 1941).
In the case of digital evidence, this concern becomes even more relevant due to the ease of access.
data alteration, reproduction and transfer.
Prado (2021) understands the chain of custody as a mechanism designed to preserve the integrity of
evidentiary element and ensure its authenticity. Following this procedure constitutes an element...
relevant for assessing the reliability of the evidence, since it allows one to verify how the
The evidence was identified, collected, transported, stored, analyzed, and presented in the proceedings.
Preserving the integrity of digital data can also be achieved through technological resources.
specific. Lordelo (2024) highlights the use of *hashing tools,* which produce a code.
The only code associated with the dataset submitted to the procedure. The comparison between the obtained code
The initial calculation, and the one calculated later, allows for the identification of any potential changes in the content.
analyzed. In this way, the *hash* functions as a mechanism for verifying the integrity of the evidence.
digital, allowing the detection of modifications made after its collection.
The use of this feature is especially relevant when applied to electronic devices.
such as smartphones and computers. Once the code corresponding to the collected content is calculated,
Any subsequent modification to the data may result in a different code, allowing identification.
the occurrence of changes. The mechanism thus contributes to preserving the reliability of
evidence and for chain of custody control (Lordelo, 2024).
The increasing use of digital documents and data as evidence demonstrates that
The need to adopt procedures capable of guaranteeing its integrity, authenticity, and security.
Although the Brazilian legal system has made progress in incorporating mechanisms related to digital evidence,
challenges remain due to the speed at which technologies are evolving.

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They develop and the diversity of formats and environments in which information can be produced. and stored.

In this context, the absence of uniform procedures can hinder the collection and preservation of... evidence, especially in investigations involving cybercrimes. The need for Regulation and standardization stem from the need to ensure that the elements presented to The Judiciary must maintain sufficient conditions of authenticity and integrity.

The problem becomes even more complex when one considers that, in crimes committed in In digital environments, electronic evidence can constitute one of the main, or even the only, elements. capable of demonstrating the materiality and assisting in identifying authorship. For this reason, the collection Inadequate documentation, the absence of documentation, or the unidentified alteration of certain data may significantly compromise the investigation.

In this way, digital evidence should be understood as a relevant instrument for the confronting contemporary crime, but its use requires technical procedures and legal systems compatible with their specific characteristics. The efficiency provided by the technologies Digital security must be accompanied by mechanisms capable of ensuring authenticity and integrity. and the traceability of the elements obtained.

The consolidation of forensic investigation methods, the proper documentation of the chain of custody and The use of technological verification tools, such as *hashing,* constitutes mechanisms. important for increasing the reliability of digital evidence. At the same time, the evolution Regulation remains necessary to establish clearer and more uniform parameters for production. preservation and use of these elements in criminal proceedings.

Thus, the contemporary challenge consists not only in expanding the state's capacity to locate and analyze digital information, but ensure that this activity is carried out within the established limits. Constitutional and procedural aspects. Digital evidence only achieves its full relevance in criminal proceedings. when, in addition to contributing to the reconstruction of the facts, it preserves the fundamental guarantees that They uphold the legitimacy of the criminal prosecution itself.

2.4 Artificial Intelligence in Criminal Investigation: Procedural Guarantees and Admissibility of Digital Evidence

The incorporation of artificial intelligence tools into activities related to the investigation of cybercrimes has provoked new discussions about the limits of state action and... Preservation of procedural guarantees in criminal cases. The use of systems capable of processing large amounts of data. Expanding the volume of information, identifying patterns, and extracting data from electronic devices increases This considerably expands the possibilities for research, but also demands attention regarding the impacts. produced on fundamental rights. In this scenario, the legitimacy of using these technologies

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It depends on balancing investigative efficiency with respect for the guarantees ensured by...
legal system.

The increasing complexity of cybercrime contributes to making technology a key component.
increasingly relevant to investigative activity. According to Stoykova (2021), digital forensic science
and technological mechanisms for obtaining evidence are assuming increasing importance in the face of
The increased volume of information involved in criminal investigations. Investigative activity.
This therefore leads to a demand for methods capable of handling large amounts of data and traces.
which may exhibit characteristics distinct from those found in traditional crime.

Despite the advantages offered by these tools, their use also raises concerns.
questions related to privacy and individual rights. Alves (2022) draws attention to
the risks arising from the use of technological mechanisms capable of collecting and analyzing large
Large amounts of personal data. When used without proper criteria, these resources can
excessively expand surveillance over individuals and produce disproportionate interference in
privacy. The use of algorithms for information analysis, therefore, must observe limits.
legal measures that prevent technological efficiency from being transformed into a surveillance tool
indiscriminate.

The concern also extends to the presumption of innocence. Stoykova (2021) points out that investigations
Supported by digital technologies, these can generate problems when they are not accompanied by...
appropriate procedures, especially in light of the possibility of parallel fabrication of facts,
use of incomplete or unreliable evidence, restriction of the defense's access to evidence
evidentiary and prolonged retention of data belonging to individuals subject to investigation or
used for comparison purposes. These factors can compromise procedural balance and make it difficult.
the effective exercise of the defendant's rights.

The existence of these risks, however, does not mean that the use of technological tools for
Obtaining digital evidence is not necessarily incompatible with fundamental guarantees.
Brazilian jurisprudence has admitted, under certain circumstances, the use of technologies.
intended for the extraction and analysis of data stored on electronic devices, provided that they are
provided that the relevant legal requirements are met and, where required, judicial authorization exists.
An example can be found in Criminal Appeal No. 0800985-17.2023.8.12.0002, judged by the 2nd Chamber.
Criminal Court of the State of Mato Grosso do Sul, August 29, 2023. On that occasion,
The court examined the use of the Cellebrite platform for extracting information stored in
The defendant's cell phone was seized, and the admissibility of the evidence obtained was acknowledged, considering the
existence of judicial authorization for the performance of the procedure (Court of Justice of the State of
Mato Grosso do Sul, 2023).

The understanding adopted by the TJMS (Court of Justice of Mato Grosso do Sul) stemmed from the finding that access to
the content of the electronic device occurred through judicial authorization. Therefore, the court dismissed the allegation of...

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violation of privacy and private life and did not recognize the existence of nullity arising from the use of the tool. The case demonstrates that the technology used to obtain the data does not constitute, in isolation, this is sufficient grounds to invalidate the evidence; it is necessary to verify the circumstances. specific circumstances in which access to the information occurred.

The discussion also reached the Supreme Federal Court. In the Regimental Appeal in Claim No. 33.727, from the State of Goiás, judged on May 6, 2019, under the reporting of Minister Alexandre de Moraes, the situation related to the use of the Cellebrite platform for obtaining and was analyzed. sharing of information extracted from cell phones seized during an investigation criminal (Federal Supreme Court, 2019).

In that case, the defense questioned the extent of access to the information obtained through the tool. arguing that the case files contained only screenshots and reports prepared by the agents. those responsible for the investigation. It was argued that the lack of full access to the data could to compromise constitutional and procedural guarantees, especially the exercise of the right to defense and the possibility of contesting the evidence used against the accused.

Upon analyzing the controversy, the Supreme Federal Court understood that there was no violation of guarantees. alleged, considering that the defense had received access to the necessary documentation and that the Relevant information was available for consultation. The understanding therefore reaffirmed that the The use of technological tools to obtain data does not automatically imply a violation. due process is guaranteed, provided that the conditions necessary for exercising the right to a defense are preserved. (Supreme Federal Court, 2019).

Another relevant discussion was examined by the STF in Claim No. 49,369/RS, judged in 2021 under The case was reported by Minister Ricardo Lewandowski. The controversy involved the use of the tool. Cellebrite Physical Analyzer for analyzing information extracted from electronic devices and... defense's claim of impossibility of accessing certain encrypted chat files.

The defense sought, among other things, to question the validity of the evidence used in the trial. (Supreme Federal Court, 2021).

In this case, the controversy was also related to pretrial detention, based on articles 312 and 313 of the Code of Criminal Procedure, and to the allegation that the digital elements used in the decision would have been obtained from information stored in cloud services without the corresponding Search and seizure of the device belonging to the suspect.

The Supreme Federal Court, however, considered that the use of the forensic tool employed The information gathered by the Federal Police was not, in itself, sufficient to compromise the validity of the evidence obtained. The decision highlighted that the Cellebrite Physical Analyzer is one of the tools available for the analysis of large volumes of information from technology companies, enabling the Reading, organizing, and categorizing data through partially automated procedures (Supreme Federal Court, 2021).

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The allegation of violation of Binding Precedent No. 14 was also dismissed. According to the understanding
As recorded in the trial, access to materials obtained through breaches of confidentiality may be
performed using commercially available software, eliminating the need for the use of
unique mechanisms or special keys for processing specific data.
encrypted. The central point, therefore, would not be the tool used, but the observance of the
procedural guarantees and the right of the defense to access relevant information.
The decision reinforces the understanding that the use of technological resources in criminal investigations...
This does not automatically lead to the invalidity of the evidence. The legitimacy of the procedure must be analyzed.
based on how the information was obtained, the legal limits imposed on the investigation, and the
Conditions offered to the defense to understand and question the elements used in the process. In this
In this sense, the use of technological tools can coexist with due process of law when
accompanied by transparency and respect for procedural guarantees.
The Superior Court of Justice also addressed a similar issue in the Appeal in Special Appeal.
No. 2,083,614/SC, judged on February 12, 2023, under the reporting of Minister Reynaldo Soares da Silva.
Fonseca. In that case, the defense alleged nullity due to curtailment of the right to defense and alleged...
A break in the chain of custody raises questions about the sufficiency of the evidence related to authorship and...
materiality of the crimes investigated (Superior Court of Justice, 2023).
In the case analyzed by the Superior Court of Justice (STJ), there was a court order for the seizure of the cell phones of those involved.
investigated and subsequent data extraction using the Cellebrite platform. The decision
He also considered that the defense was aware of the evidence obtained during the investigation.
relevant circumstance for the analysis of the allegation of violation of procedural guarantees (Superior
Court of Justice, 2023).
A joint analysis of these precedents reveals that Brazilian jurisprudence does not establish
a complete incompatibility between artificial intelligence, digital forensic tools, and the process.
penal. Alves (2022) argues that there is no impediment, in principle, to the incorporation of
Technological tools can be incorporated into criminal proceedings, provided that their use is subject to parameters.
legal mechanisms capable of protecting the fundamental rights involved.
This possibility, however, does not eliminate the risks associated with the use of technologies.
automated processes in the production and analysis of evidence. Fidalgo (2022) emphasizes the need to ensure,
Specifically, the principles of adversarial proceedings and the right to a full defense. The effectiveness of these principles presupposes that the accused...
have the concrete means to know and contest the elements used against you. When tools
Technological tools produce or organize information that serves as the basis for an accusation.
It is necessary to ensure that the relevant content can be effectively examined by the defense.
The issue becomes even more sensitive when dealing with systems whose operation is not easily...
Understandable by the parties involved in the proceedings. The adoption of transparent and explainable mechanisms is
a way to reduce this problem, as it allows for an understanding of the procedures used and the reasons behind them.

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which led to a certain conclusion. Fidalgo (2022) highlights the explainability of the tools
Artificial intelligence contributes to making the process of obtaining and analyzing evidence more efficient.
accessible, facilitating the monitoring and contesting of the results presented.
Technological transparency therefore assumes a role directly related to the exercise of defense.
It is not enough for the State to have a tool capable of producing a certain result; it is
It is necessary that conditions exist to verify the manner in which this result was achieved and
to assess the reliability of the elements presented. The inability to understand or question
The origin of evidence can compromise the effectiveness of the adversarial process.
This concern is also related to the presumption of innocence. According to Branco (2021), the use
The use of digital means of obtaining evidence must respect procedural guarantees that prevent the...
the accused is placed at a disadvantage in relation to investigative mechanisms whose
Technical complexity makes it difficult to contest. In situations of reasonable doubt, the resulting protection
The presumption of innocence also extends to the evaluation of the evidence used to support the claim.
the accusation.
For this reason, the use of technological tools in criminal investigations requires a balance.
between the need to combat contemporary forms of crime and the preservation of rights.
Individuals. The use of resources capable of accessing, processing, and correlating large amounts of data.
Data can increase the efficiency of investigations, but it also increases the potential for interference.
in the privacy and legal sphere of individuals.
The creation of specific mechanisms for preserving the digital chain of custody constitutes another
This is an indispensable aspect. The reliability of the evidence depends on the technology used to extract it.
of the documentation and traceability of all the steps the data went through until its presentation.
to the magistrate. The adoption of procedures capable of demonstrating the authenticity, integrity and
Knowing the source of the information helps to reduce questions about its validity.
In this sense, Steffen (2022) emphasizes that artificial intelligence should not be considered problematic.
by its very nature. The central question lies in establishing the conditions for its creation,
implementation and use should occur within parameters that respect human rights and
guarantees recognized by the legal system. Regulation, while important, must be
accompanied by principles capable of guiding the entire operational cycle of these tools.
In the Brazilian context analyzed, it is observed that the use of technologies such as Cellebrite has been...
admitted by the courts in certain situations, when there is judicial authorization and when they are
provided that the conditions necessary for exercising the right to defense are preserved. The precedents examined indicate that...
The technological tool used does not determine the illegality or validity of the evidence. The element
The decisive factor is related to the legality of obtaining the data, preserving its integrity, and guaranteeing its integrity.
access to the relevant elements of the process.
Thus, the incorporation of artificial intelligence and digital forensic tools into criminal investigations.

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This represents an important transformation in the mechanisms for combating crime.
cybernetics. However, technological innovation must remain subordinate to the principles that
They structure the criminal process. Efficiency, speed, and processing capacity cannot replace
the requirements of legality, transparency, adversarial process, full defense, and respect for the presumption of
innocence.

The analysis of the aforementioned judgments therefore demonstrates a trend toward recognizing that
The possibility of using these technologies in criminal proceedings, provided that the guarantees are observed.
fundamental. The contemporary legal challenge lies in ensuring that the advancement of instruments
the investigation should be accompanied by sufficient mechanisms of control, transparency and
accountability, preventing the pursuit of efficiency in suppressing cybercrimes from resulting in
Weakening of the guarantees that legitimize the very functioning of the criminal justice system.

2.5 Case law research on the use of artificial intelligence tools in criminal prosecution

With the aim of deepening the jurisprudential analysis regarding the use of tools of
Research on artificial intelligence in criminal prosecution was conducted in conjunction with the Courts of Justice and...
Superior Courts, the Superior Court of Justice (STJ) and the Supreme Federal Court (STF). A
The investigation sought to identify judicial decisions involving specific situations in which appeals
technologies based on artificial intelligence or digital forensic analysis tools have been
employed in the investigation and prosecution of criminal offenses in Brazil. The aim was to verify the existence
of controversies submitted for judicial review in which the defense has questioned the use
These technologies must be considered in light of the procedural guarantees afforded to the accused.
The survey identified four judgments relevant to the topic, one of which was...
originating from the Court of Justice of the State of Mato Grosso do Sul, one from the Superior Court of Justice and
two from the Supreme Federal Court. The decisions analyzed involve the use of the tool of
Cellebrite digital forensic analysis , used in the extraction and examination of data stored in
electronic devices, in investigations related to crimes that are not limited to the environment.
Cybercrime. Among the cases found are proceedings related to the crimes of homicide and
drug trafficking, which will be examined in the following subsections, taking into account the particularities
of each decision and the grounds adopted by the respective adjudicating bodies.
Although the research sought decisions related to the use of intelligence tools
In the artificial investigation and prosecution of cybercrimes, the existence of a
There is a significant gap in case law on this topic. To broaden the scope of the survey, the following were...
The names of different tools used in were used as keywords.
investigation and analysis of digital evidence, including “Cellebrite”, “Peritus”, “Avilla Forensics”,

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"NuDetective", "Watson Explorer", "Nuix Workstation", and "Autopsy Forensics". The search resulted in
Location of decisions related to the crime of storing and sharing material
containing pornography involving children and adolescents, as provided for in article 241-A of the Statute of
Children and Adolescents (Brazil, 1990).
However, although such decisions were related to the use of technological tools in
investigation of crimes committed or facilitated by digital means, the subject of the appeals
The analysis did not focus on any potential violation of the defendant's procedural guarantees arising from
The use of these technologies. In certain cases, the controversy submitted to the Judiciary does not
It covered the validity or limitations of using artificial intelligence tools as a means of...
obtaining or analyzing the evidence. In others, the appeal was not even considered on its merits, due to
of its termination due to the inadequacy of the chosen procedural route.
Thus, the case law review reveals a limited production of judicial decisions.
Brazilian women who directly and specifically face the compatibility between the use of
Technological tools for digital forensic analysis and the procedural guarantees of the accused, in the context
of cybercrimes. This finding reinforces the need to examine precedents.
found, even if related to different crimes, since they allow the identification of the criteria.
which have been considered by the Brazilian Judiciary regarding judicial authorization for access
to the data, to the possibility of oversight by the defense, and to the preservation of fundamental guarantees during
the use of these technologies.

CONCLUSION

The incorporation of artificial intelligence and digital forensic analysis tools into criminal prosecution.
This represents a significant transformation in contemporary investigative activity. The ability to
process large volumes of information, retrieve data, identify patterns, and assist in
Interpreting digital elements offers the State important tools for clarification.
of criminal offenses. However, the efficiency provided by technology cannot be understood
as sufficient grounds to disregard constitutional guarantees that limit the exercise of power.
punitive.
The analysis developed throughout this study demonstrates that the use of technologies applied to
Criminal investigations must remain subordinate to constitutional and procedural principles that
These principles structure the Brazilian criminal process: due process of law, the right to a fair trial, the right to a full defense, and so on.
presumption of innocence, protection of privacy and private life, and the inadmissibility of evidence
evidence obtained through illicit means constitutes indispensable parameters for evaluating the legitimacy of
Technological procedures employed in criminal prosecution.
In the context of digital evidence, preserving the integrity and authenticity of the data is paramount.

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of even greater importance. The possibility of altering, duplicating, or deleting digital information.
requires proper procedures for collection, storage, analysis, and documentation. In this context, the
The chain of custody plays a fundamental role, as it allows tracking the trajectory of the item.
evidentiary and establish control mechanisms over its integrity. The use of tools
sophisticated technologies, therefore, do not eliminate the need for rigorous procedures.
preservation of evidence.

The case law analysis also revealed that the production of Brazilian precedents
Research focused on the use of artificial intelligence in the prosecution of cybercrimes is still limited.
The identified cases focus on the use of the Cellebrite digital forensic tool in
investigations related to crimes such as homicide and drug trafficking. In the cases examined, the
The courts considered relevant factors such as the existence of judicial authorization and the possibility of...
access to evidence by the defense and compliance with procedural mechanisms intended for
protection of fundamental rights.

On the other hand, the research revealed a significant gap when searching for case law in which the
The central issue may be the compatibility between artificial intelligence tools and procedural safeguards.
in the context of cybercrimes. Although decisions involving tools have been found.
technological and investigative measures related to article 241-A of the Statute of Children and Adolescents, the
The resources examined did not have as their main subject the discussion about the violation of guarantees.
The defendant's claims arising from the use of these technologies, or their merits were not analyzed because...
of procedural issues.

This lack of established case law demonstrates that technological development is...
occurring at a faster pace than the maturation of the judicial discussion regarding its limits. The non-existence
A significant number of specific precedents, however, does not mean an absence of parameters.
Legal aspects. Constitutional guarantees and current procedural rules remain applicable to the new [legal aspects].
forms of investigation, even if certain technologies were not foreseen by the legislator.
at the time of its creation.

In this sense, judicial authorization, when required by the nature of the measure, is important.
an instrument for controlling the use of research technologies. Similarly, the
The possibility of oversight by the defense must be preserved, allowing the elements obtained by
Technological systems should be known, analyzed, and questioned. The transparency of the procedure is
relevant when the technology used has a high degree of complexity or employs
Automated analysis mechanisms.

It can be concluded, therefore, that artificial intelligence can represent an important tool for
Modernization of criminal prosecution is possible, but its application must occur within legal parameters.
established and subject to effective control mechanisms. Technology should not replace procedural guarantees,
nor should it transform the pursuit of investigative efficiency into a justification for...

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indiscriminate relativization of fundamental rights.

The challenge facing the law lies in establishing a balance between technological innovation and...

Protection of individual liberties. Addressing contemporary crime requires...

Instruments compatible with the digital age, but the modernization of research cannot

This would signify a setback in the guarantees achieved by the Democratic Rule of Law. In this scenario, the

The development of more specific case law criteria and appropriate regulation shows-

if necessary to provide legal certainty to the use of artificial intelligence in criminal prosecution,

ensuring the effectiveness of the investigation and the protection of the fundamental rights of the accused.

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