

When Artificial Intelligence (AI) Penetrates Public Procurement Contracts: Major Advantages or Adverse Impacts?

DEBABHA Nardjes *

University of Algiers -1- Benyoucef Benkhedda / Algeria

n.debabha@univ-alger.dz

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Abstract:

The progressive integration of Artificial Intelligence (AI) into our daily lives has profoundly transformed the world, raising numerous questions, particularly in the fields of public administration, economics, business organization, ethics, as well as public investment and procurement.

Like all Sectors that have undergone major technological shifts, public procurement has not been immune to this technological revolution. At first glance, the impacts of (AI) on public procurement contracts align with two main hypotheses: major advantages or adverse effects, potentially present at every stage of the public deal process and implementation of the deal. Accordingly, this article aims to examine the legal issues inherently linked to the introduction of (AI) into the public

procurement process. Examples include: the ethics of artificial intelligence, responsibility and risks involved.

Keywords: Public procurement, Artificial Intelligence (AI), Risk, (AI) Ethics, Responsibility.

1.Introduction:

Gradually and sometimes imperceptibly, Artificial Intelligence (AI) has embedded itself at the core of our daily lives in recent years. This progressive integration has disrupted the world, society, and human lifestyles. Virtual assistants such as Siri and Alexa, to name the most well-known, are perfect examples of how AI can assist humans in multiple ways.

In light of this reality, numerous questions arise, particularly in the fields of economics, business organization, public administration, ethics, employment, as well as public investment and procurement. This concern has grown even stronger with the sudden emergence of Generative AI (GenAI), such as ChatGPT, which stands out for its remarkable ability to imitate human responses.

Just like other fields that have undergone technological transformation, public procurement has not been able to escape this revolution. Undeniably, this evolution is reshaping the field of public procurement and transforming practices in public contracting.

According to global statistics from developed countries, technological risk ranks third among the top ten risks worldwide, reaching 73% according to experts.¹

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Furthermore, the global AI market — estimated to increase from USD 241 billion in 2023 to more than USD 511 billion by 2027 — highlights the growing importance of this technology across various sectors, including public procurement.²

Although the approach adopted in this article is primarily legal in nature, the origins of Artificial Intelligence as a branch of computer science,³ closely linked to Big Data, computational neurobiology (artificial neural networks), and, of course, mathematical logic, inevitably lead us toward the reality of the subject's transdisciplinary nature.

In its simplest form, Artificial Intelligence (AI) is a field that combines computer science with large and reliable datasets to enable problem-solving. It relies on AI algorithms designed to create expert systems capable of making predictions or classifications based on input data.

The history of Artificial Intelligence began shortly after the Second World War, in the 1950s. While the term Artificial Intelligence was coined by *John McCarthy* in 1956 during the very first AI conference at Dartmouth College, the concept had

¹ *Le Monde* newspaper: "Future of Risks: From Polycrisis to Hope?" National daily newspaper (France), published Tuesday, 31 October 2023, p. 09, No. 24517, 79th year. Available at: www.lemonde.fr. Accessed on 03/11/2023.

² Rémy Juston-Coumat, *AI in Public Procurement in 2025*, CNFPT AURA – ATEXO, 2025, p. 02. Available at: <https://commande-publique.info/wp-content/uploads/2025/02/ia-et-commande-publique.pdf>

³ Artificial Intelligence (AI) has evolved significantly since the 1950s, following the pioneering work of Alan Turing and John McCarthy.

The emergence of the debate on artificial intelligence was marked by *Alan Turing's* seminal paper, (*Computing Machinery and Intelligence*) published in 1950.

Often regarded as the "father of computer science," Alan Turing raised the crucial question of machine intelligence: "*Can machines think?*" — a question that laid the foundation for what would later become the field of artificial intelligence.

already been explored both in science fiction and philosophy. According to historians, the idea of a “thinking machine” dates back to Ancient Greece.

Similarly, the year 1956 was marked by the development of the *Logic Theorist*, the very first functional AI software, created by *Allen Newell*, *J. C. Shaw*, and *Herbert Simon*. Later, *McCarthy* would invent the Lisp programming language.⁴

Likewise, the establishment of links between Artificial Intelligence (AI) and Economic Intelligence (EI)⁵ which are gradually extending into the legal domain, further reinforces this trans-disciplinarity.

On the international geopolitical stage, with the clear objective of becoming the world leader in AI by 2030, the Chinese State Council published China’s official Artificial Intelligence strategy — as an emerging global powerhouse — in July 2017.⁶

⁴ The LISP programming language (short for *List Processor*) is an applicative language designed for symbolic manipulation of expressions. It was created by John McCarthy in the 1960s.

LISP uses conditional expressions alongside recursive function calls as its main control structure, and lists as its primary data structure. In this way, symbolic computation and automated theorem proving are facilitated.

⁵ Moreover, contrary to common belief, the earliest writings on the offensive role of open information in economic competition did not stem from academic reflections on corporate productivity and competitive strategies. Instead, they resulted from highly targeted studies focusing on the non-military stakes of nation-states.

In : Christian Harbulot & Philippe Baumard, *Perspectives historiques de l’intelligence économique*, p. 02.

Revue d’intelligence économique, 1997, 1(1), pp. 50–65. HAL Id : hal-03230171. Available at: <https://cnam.hal.science/hal-03230171v1> Submitted on 19 May 2021.

⁶ Notice of the State Council Issuing the New Generation of Artificial Intelligence Development Plan State Council Document [2017] No. 35

See also the official website of the strategy in Chinese: https://www.gov.cn/zhengce/content/2017-07/20/content_5211996.htm

China is now able to develop its own technologies after having adopted for many years a so-called “shortcut” policy to catch up with its economic and industrial lag. AI is developing rapidly in China, notably thanks to the

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As for the United States of America (USA) — the birthplace of Artificial Intelligence — its AI strategy was published under the title *“Winning the Race: America’s AI Action Plan”* in July 2025.⁷

Similarly, Algeria’s official AI strategy was introduced with the ambition of positioning the country as a technological leader in Africa by 2035.⁸ The national objective is therefore to make AI a driver of economic growth, capable of generating up to 5% of GDP by 2035.⁹

Today, AI in Algeria goes beyond the academic sphere and is expanding into several key sectors such as energy and agriculture. It is worth noting that Algeria’s

BATX companies — Baidu, Alibaba, Tencent, and Xiaomi — which constitute the pillars of its digital economy.

⁷ The White House: “Winning the Race: America’s AI Action Plan”, July 2025. <https://www.whitehouse.gov/wp-content/uploads/2025/07/Americas-AI-Action-Plan.pdf>.

Regarding the U.S. Artificial Intelligence strategy, President Trump stated the following:

“Today, a new frontier of scientific discovery lies before us, defined by transformative technologies such as artificial intelligence... Breakthroughs in these fields have the potential to reshape the global balance of power, spark entirely new industries, and revolutionize the way we live and work. As our global competitors race to exploit these technologies, it is a national security imperative for the United States to achieve and maintain unquestioned and unchallenged global technological dominance. To secure our future, we must harness the full power of American innovation.”

Donald J. Trump, 45th and 47th President of the United States

It is worth noting that the United States has been active in the new technologies market since the advent of the Internet, of which it is the pioneer. The development of GAFA companies (Google, Apple, Facebook, and Amazon), along with Silicon Valley, constitutes undeniable evidence of this leadership.

⁸ The strategy was developed by the Algerian Scientific Council for Artificial Intelligence in July 2024. In <https://aicouncil.dz>

⁹ Djallal Bouabdallah, Algeria in the Age of AI: A Strategic Vision for 2035, in Tech Pulse Insights, a bi-monthly magazine published on LinkedIn, published on December 12, 2024. Accessed on 29/08/2025 at 15:20.

participation in various international competitions in the field of artificial intelligence has enabled the country to win several awards, including *Farm AI*, a start-up that was awarded at the *Tech4Good 2023* international competition in China.¹⁰

Returning to the core of the topic, and at first glance, the impacts of AI on public procurement contracts will not depart from one of two assumptions: major advantages or adverse effects, which may potentially arise at every stage of the public deal process¹¹ : preparation, tendering, and contract execution.

This article seeks to clarify the implications of AI on public procurement contracts, following its integration into the public procurement process. It raises essential questions about the legal obligations and precautionary measures necessary to ensure compliance with legal ethical standards in contractual practice in order to uphold the governing public procurement: equality, transparency, and freedom of access.

In light of the above, the research question can now be formulated as follows: What will be the impact of Artificial Intelligence (AI) on the public procurement process? In other words: What new legal issues arise in public procurement contracts in the era of AI ?

To address these questions, our study is structured as follows: we will first examine the position of Artificial Intelligence and its integration into the public

¹⁰ The Farm AI start-up, which specializes in developing AI solutions for agriculture, won second place and the Public Choice Award at the global Tech4Good competition organized by Huawei in 2023. Its project uses AI-equipped drones to detect wheat rust — a disease affecting cereal crops — at an early stage.

¹¹ Public procurement refers to all public contracts concluded by a public entity in order to meet its needs. (Article 4, Law No. 23-12 of 18 Muharram 1445 corresponding to 5 August 2023, establishing the general rules governing public procurement, *Official Journal of the Algerian Republic*, No. 51, p. 5.)

procurement process (I), in order to subsequently examine the limits and risks associated with these modern AI techniques in public procurement contracts (II). Finally, a set of recommendations will be presented to illustrate and support the conclusion of our article.

2. The Integration of Artificial Intelligence into the public procurement process

To begin, a concise introduction to the fundamental concepts of Artificial Intelligence is required (2.1). Understanding these core concepts is essential not only to keep pace with this ongoing evolution, but also to support the interpretation of the issues discussed in the second part of this article.

Accordingly, the following section will demonstrate how AI reinforces the principle of transparency within the public procurement process (2.2).

2.1 Fundamental Concepts of Artificial Intelligence (AI)

Even without being a mathematician, a computer scientist, or a data scientist, it is important to understand in some detail how this technology functions in order to discuss it appropriately.

According to The *Oxford English Dictionary* Artificial Intelligence (AI) is defined as: “The capacity of computers or other machines to exhibit or simulate intelligent behavior; the field of study concerned with this. In later use also: software used to perform tasks or produce output previously thought to require human intelligence, esp. by using machine learning to extrapolate from large collections of

data. Also, as a count noun: an instance of this type of software; a (notional) entity exhibiting such intelligence. Abbreviated AI.”¹²

Marvin Minsky, one of the founding figures of the discipline, defines Artificial Intelligence as: “the science of making machines do things that would require intelligence if they were done by humans.”

Ultimately, AI relies on mathematical formulas and algorithms that use probabilities and statistics to mimic cognitive functions such as learning and decision-making.

Significant milestones have marked its evolution, such as Alan Turing’s *Turing Test* in 1950, which challenged machines to behave in a way that would be indistinguishable from humans, and the development of **ELIZA** in 1965¹³, a precursor to contemporary chatbots that illustrated AI’s vision and aspirations from the very beginning.

Early research in AI initially led to the creation of computer programs capable of proving mathematical theorems, which later laid the foundations for machine learning. During the same period, researchers — computer science pioneers, mathematicians, and linguists — developed new programming languages based on symbolic structures, enabling the processing of data using symbols and predefined rules in order to perform specific tasks. Symbolic structures thus laid the groundwork for communication between humans and machines.

The 1960s, often regarded as optimistic and ambitious years, saw the emergence of the first ideas of a machine capable of solving a wide range of complex problems — from automatic translation to autonomous robotics. The first conversational

¹² Oxford English Dictionary. (n.d.). *Artificial intelligence*. Oxford University Press. https://www.oed.com/dictionary/artificial-intelligence_n?tab=meaning_and_use#38531565/. Accessed on

06/11/2025.

¹³ Chatbot: an artificial intelligence software program designed to converse with users.

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human—machine “chatbot” was developed during this period, followed by “Shakey”, the very first autonomous robot of its kind, built between 1966 and 1972.

One of the most intriguing and captivating advancements in AI is what is referred to as Generative AI (GenAI),¹⁴ recognized for its ability to create, imagine, and produce original content — a capability that surged with the advent of ChatGPT.

Generative AI (GenAI) is based on deep learning neural networks such as Generative Adversarial Networks (GANs), as well as Transformers, Vision Transformers (ViT), and Convolutional Neural Networks (CNNs), which were initially designed for Natural Language Processing (NLP)¹⁵.

¹⁴ Generative Adversarial Networks (GANs) originated in **2014** when a Canadian PhD student, Ian Goodfellow, proposed an idea as simple as it was brilliant: setting two artificial intelligence models against each other so that they can mutually improve. The concept immediately captivated the scientific community, and the first demonstrations followed shortly thereafter. By **2015**, GANs were already capable of generating human faces so realistic that it became difficult to determine whether they were authentic or synthetic. By **2025**, Generative Adversarial Networks had become a core component of the evolution of AI and could be found almost everywhere — in advertising, video games, music videos, and even in museums.

¹⁵ For further information, see: GAN-ViT-CMFD: A novel framework integrating Generative Adversarial Networks and Vision Transformers for enhanced copy-move forgery detection and classification with spectral clustering, by Jyothsna Ravula and Nilu Singh, In Intelligent Systems with Applications (ISWA), Volume 26, June 2025, Article 200524. Available at: https://www.sciencedirect.com/science/article/pii/S266730532500050X?ref=pdf_download&fr=RR-2&rr=987bb98d29c52820.

All of this leads us to highlight the different AI systems before presenting the sub-fields of Artificial Intelligence. Two main types of AI systems can be distinguished¹⁶:

- A. - **Symbolic Systems:**¹⁷ Known as traditional AI systems, these rely on expert systems based on a knowledge base. This type of AI was largely abandoned at the turn of the century in favor of statistical approaches used in machine learning.
- B. - **Machine Learning Systems:** These systems enable machines to learn from data and improve their performance over time.

Regarding **the sub-fields of AI**, and to fully understand how it functions, the following concepts must be distinguished:

- A. **Machine Learning (ML):** Machine Learning and its algorithms represent a true cornerstone of AI¹⁸. ML is a subset of Artificial Intelligence that enables machines to learn from data and make informed decisions based on it.
- B. **Deep Learning (DL):** Deep Learning is, in turn, a subset of Machine Learning. It works through nonlinear representations, similar to those of the human brain, using artificial neural networks to process and interpret vast amounts of information and conceptual patterns with high accuracy.

Among the various Deep Learning (DL) algorithms, the most common include: Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), Radial Basis Function Networks (RBFNs), and Long Short-Term Memory networks (LSTMs).

¹⁶ Manuel Mondal & Denis Lalanne: *Artificial Intelligence – An Overview*, Human-IST, University of Fribourg, Department of Computer Science, Internal Working Paper No. 21-03, October 2021.

¹⁷ For a more detailed introduction to this subject, see Symbolic Reasoning (Symbolic AI) and Machine Learning.

¹⁸ There are three main types of Machine Learning : • Supervised Learning • Unsupervised Learning
• Reinforcement Learning

As a result of these evolutions, the concept of **Explainable Artificial Intelligence (XAI)** has emerged.

Since the results generated by AI rely on Machine Learning (ML) algorithms and collected data, Explainable AI refers to the set of processes and tools that enable the interpretation and understanding of these results. Therefore, any system that operates with AI must be capable of providing an explanation that users can understand.

Consequently, Explainable AI (XAI) should allow the evaluation of the criteria considered to reach a given output, the reasoning behind a decision, the level of confidence in the process, and the types of errors that may occur.¹⁹

Explainability may be integrated from the design phase — known as the **ante-hoc model** — such as in decision tree systems.²⁰ Conversely, explainability may only be achieved after results are generated, in **post-hoc models**, typically represented by ML neural networks, where the aim is to retrace the decision-making pathway to

¹⁹ In the context of an AI-assisted medical diagnosis, the explainability of an AI system and the results produced by its algorithms depend on a specific context (medical diagnosis) and a given user (the physician). It therefore differs from the interpretability of a model, which is primarily intended for expert users of data — such as data scientists.

²⁰ Gilles Audemard, Steve Bellart, Louenas Bounia, Frédéric Koriche, Jean-Marie Lagniez, and Pierre Marquis, On the Explanatory Power of Boolean Decision Trees, *Data & Knowledge Engineering*, Vol. 142, p. 102088, 2022. DOI: 10.1016/j.datak.2022.102088. HAL ID: hal-03939107.

Gilles Audemard, Jean-Marie Lagniez, Pierre Marquis, and Nicolas Szczepanski, *PyXAI: An XAI Library for Tree-Based Models*, in *Proceedings of the 33rd International Joint Conference on Artificial Intelligence (IJCAI)*, pp. 8601–8605, 2024.

understand the outcome.²¹ To this end, two main tools are generally used to implement XAI:

- **LIME** (*Local Interpretable Model-Agnostic Explanations*) : an algorithm adapted to black-box learning models;
- **SHAP** (*Shapley Additive explanations*) : an interpretability method based on game theory to explain decisions.²²

Ultimately, the more sensitive the sector of activity, the more essential Explainable Artificial Intelligence (XAI) becomes.

2.2- Strengthening the Principles of Public Procurement through Generative Artificial Intelligence (GenIA)

Traditionally characterized by complex procedures, public procurement contracts now stand at a decisive crossroads in the era of Artificial Intelligence. This technological advancement offers numerous substantial benefits for improving operational efficiency and upholding the fundamental principles that ensure the effectiveness of public procurement and the sound use of public funds — notably, the principle of transparency.²³

²¹ <https://www.nexa.fr/post/ia-explicable-xai-definition>, Article published on 18 July 2025, accessed on 6 September 2025 at 05:00.

²² <https://www.nexa.fr/post/ia-explicable-xai-definition>, Article published on 18 July 2025, accessed on 6 September 2025 at 05:00.

²³ Article 5 of Law No. 23-12 establishing the general rules governing public procurement provides that: “In order to ensure the efficiency of public procurement and the proper use of public funds, the award of public contracts shall be governed by the following principles:

– Freedom of access to public procurement;

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So, the question that arises is the following : how does Artificial Intelligence strengthen the principle of transparency?

AI is now present in several legal domains and provides significant time savings for lawyers, notaries, corporate legal advisers, and public administrations. It enhances efficiency in legal research and analysis, while automated drafting has become a valuable tool for daily professional assistance.

The rapid emergence of Generative Artificial Intelligence (GenAI) — such as ChatGPT, IBM Watson, and the OpenAI API (which includes models like ChatGPT) — offers public buyers an innovative approach to managing the complexity of procurement processes.

However, the use of GenAI must be strictly regulated to comply with personal data protection obligations and the requirements of justice.

In the field of public procurement, Generative AI (GenAI) offers the possibility of automating time-consuming tasks, standardizing analyses, and reinforcing transparency in the evaluation of bids.

As a result, the intervention of AI appears as a promising solution based on Machine Learning (ML) algorithms, replacing many labor-intensive manual actions such as the processing of tenders. This significantly reduces the time required to conclude public procurement contracts.

Furthermore, through Natural Language Processing (NLP), data from contracts can be intelligently processed and analyzed, allowing public buyers to

-
- Equal treatment of bidders;
 - Transparency of procedures.”

anticipate market trends, assess potential risks related to public procurement, and identify weaknesses in the market.

To this end, Generative Artificial Intelligence (GenAI) enables public buyers (contracting authorities) to analyze and synthesize large volumes of documents, and to draft administrative and technical documents without relying on standard templates — such as general administrative specifications (CCAG), common technical specifications (CPTC), or special specifications (CPS), which set out the clauses specific to each contract²⁴. It can also assist in drafting contract annexes.

Thus, we rely on the fact that GenAI ultimately redefines the way public tenders are conceived and structured.

The principle of transparency is now embedded within the public procurement process through the ability to provide real-time monitoring of each stage. Bidders can benefit from instant visibility into the progress of procedures.

AI offers public buyers better supplier management by identifying those who have previously participated in similar tenders. In terms of bid comparison, Generative AI (GenAI) analyzes selection criteria to facilitate the choice of the most economically advantageous offer.

Furthermore, in contract review, GenAI can generate segmentations and tables of contents, thereby improving the understanding and analysis of contractual documents. This qualifies AI as a genuine decision-support tool for contracting authorities.

One of the most illustrative uses of AI in public procurement is the assessment of supplier risk profiles through Deep Learning (DL) models.

²⁴ Article 17 of Law No. 23-12 establishing the general rules governing public procurement, cited above.

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For economic operators, search engines (LLM)—deep artificial neural networks—allow upstream research in the Official Bulletin of Public Procurement (BOMOP) to identify national and international calls for tenders. This reflects the principle of free access to public procurement.

For candidate companies, particularly SMEs and micro-enterprises, AI now provides support for preparing bids, optimizing analysis, and improving their tendering processes. Thanks to Generative AI (GenAI), companies can quickly and easily understand a tender's specifications by extracting key information, thus producing clearer and better-structured technical proposals. Finally, transparency in the age of Artificial Intelligence is also ensured through the emphasis placed on the quality assurance and reliability of AI software systems.

Despite the risks inherent in this technology, AI regulation remains insufficient. In light of this, international standards such as those developed by ISO/IEC JTC 1/SC 42 on artificial intelligence have a major role to play. They help to fill regulatory gaps by providing decision-makers with the tools to establish consistent and verifiable data and processes. They also enhance credibility among stakeholders by ensuring that the benefits of artificial intelligence outweigh the associated risks, in line with existing regulations and governance tools. Among the ISO standards produced to enrich the international legal framework in this area are the following:

- ISO/IEC 42001: in 2023 field: Artificial intelligence – Management system
- ISO/IEC 23894: in 2023, field: Artificial intelligence – Recommendations for risk management
- ISO/IEC 23053: in 2022 Framework for AI systems that use machine learning.

3. Risks generated by the introduction of Artificial Intelligence into the public procurement process

Given that public procurement involves the processing of sensitive data, public buyers face major concerns due to this technological transformation. Despite its advantages in terms of operational efficiency and the reinforcement of public procurement principles (transparency, free access to public contracts, and equal treatment of candidates), AI also has disadvantages.

In the following lines, we present under this heading, Artificial Intelligence (AI) as a tool for discrimination against candidates and the risk of discriminatory algorithms (3.1), followed by the ethical and legal issues related to AI in public procurement, which will illustrate the following heading (3.2).

3.1 Artificial intelligence (AI) as a tool for discrimination against candidates

If Artificial Intelligence has now become an essential tool for public entities and is used by public buyers from the procurement stage for the acquisition of goods, services, and works, the use of such algorithmic techniques is expected to ensure efficiency while upholding high standards of integrity, guaranteeing service quality, and safeguarding the public interest.

Given that public procurement represents a significant portion of taxpayers' money, the selection of the future co-contractor must in no way be compromised or distorted.

At this stage of analysis, the question that can be asked is: can AI be considered a discriminatory bias in the selection of bids?

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By referring to AI techniques and algorithms (CNN, RNN, RBFN, LSTM, etc.) as presented in the first part of this research paper, and taking into account current practical applications as well as the existing legal framework, the following observations can be made:

Although Explainable Artificial Intelligence (XAI) makes it possible to assess the criteria considered in selecting a candidate's offer among several others, the XAI-based reasons or reports on which the public buyer relies to make such a decision may nonetheless violate the principles of access to public procurement. This risk arises from potential breaches of the principles of equal access, transparency, and free competition in public procurement, which may result from the existence of "discriminatory algorithms."

This risk stems primarily from algorithmic design, which itself may embed discriminatory logic. Such a situation can legally lead to the nullity of the procurement or contractual award procedure—either partial or absolute nullity.

In other words, the presence of algorithmic discrimination distorts the outcome of an algorithm, making it biased, non-neutral, and potentially harmful. Consequently, AI systems may reinforce inequalities rooted in social or economic vulnerability, or even create new forms of discrimination.

As a result, this situation places the public buyer in a position of breach of the public interest.

Moreover, Generative AI (GenAI) is often perceived as a "black box" due to its lack of transparency. Unlike traditional computer systems, it functions through self-learning based on massive datasets.²⁵

²⁵ <https://www.portail-je.fr/univers/blockchain-data-et-ia/2018/intelligence-artificielle-et-intelligence-economique-un-avenir-conjoint> accessed on 09/11/2025 at 3:20 p.m.

In practice, generative adversarial networks (GANs) are a class of unsupervised learning algorithms (DCGAN, WGAN, CycleGAN StyleGAN) can be adapted to specific needs. However, it can also present a risk of instability during training: it is not uncommon for learning to fail or stagnate, and for the results obtained to be repetitive and/or absurd. This consequently creates the risk of insufficient or biased data in the systems.

Since 2018, the General Data Protection Regulation (GDPR)²⁶ has required transparency in the use of users' personal data across Europe. In 2024, the European Parliament also adopted the AI Act, a regulatory framework designed to govern the use of Artificial Intelligence. Its main objective is to build trustworthy AI and to prevent potential forms of discrimination hidden within algorithms.²⁷ According to the level of risk, the AI Act establishes four categories of protection:

1. Unacceptable Risk:

This includes AI systems used for subconscious manipulation, exploitation of vulnerabilities, social scoring, and biometric categorization (such as ethnicity, religion, etc.).

2. High Risk:

This category covers AI systems already regulated by existing EU legislation—such as the Medical Devices Regulation, the Machinery Directive, or the Toy Safety Directive—as well as new AI applications in areas like access to essential public services (healthcare, emergency calls, justice, etc.).

²⁶ Art. 22 of the General Data Protection Regulation (GDPR).

²⁷ Regulation (EU) 2024/1689 of the European Parliament and of the Council of June 13, 2024, laying down harmonized rules on artificial intelligence and amending Regulations (EC) No. 300/2008, (EU) No. 167/2013, (EU) No. 168/2013, (EU) 2018/858, (EU) 2018/1139, and (EU) 2019/2144, and Directives 2014/90/EU, (EU) 2016/797, and (EU) 2020/1828 (Regulation on Artificial Intelligence).

3. Specific Risk:

This category refers to AI systems that interact with natural persons, generate content, or detect emotions. In these cases, users must be clearly informed that they are interacting with an AI system.

4. General-Purpose AI Risk:

This refers to systemic risks linked to general-purpose AI systems. In addition to transparency obligations, these systems must undergo adversarial testing, risk mitigation, reporting of serious incidents, cybersecurity verification, and energy consumption analysis.

Ultimately, the logical conclusion that can be drawn from this framework is the growing concern over the lack of algorithmic transparency in AI systems.

3.2- Ethics and legal liability of artificial intelligence

Discussing AI liability necessarily involves addressing the question of ethics. Several key issues arise in this regard: What ethical and regulatory challenges should be anticipated? How far can automation go without compromising quality or legal responsibility?

According to UNESCO, which ensures that science and technology develop under strong ethical safeguards, AI risks reproducing real-world biases and discrimination, exacerbating divisions, and threatening human rights and fundamental freedoms if ethical safeguards are not in place.²⁸

²⁸ <https://www.unesco.org/fr/artificial-intelligence/recommendation-ethics>.

In 2021, UNESCO adopted the Recommendation on the Ethics of Artificial Intelligence, which applies to all its Member States both as AI actors and as authorities responsible for developing legal and regulatory frameworks throughout the AI systems' life cycle, as well as for promoting corporate accountability. The UNESCO Recommendation seeks to provide a globally accepted normative instrument that focuses not only on defining values and principles but also on ensuring their practical implementation.²⁹

Among the principles approved by UNESCO concerning Artificial Intelligence are the following: – The principle of transparency and explainability of AI systems;³⁰ The principle of safety and security of AI systems; The principle of fairness and non-discrimination in AI systems;³¹ and the principle of equity and respect for privacy.

In the same vein, it is important to recall that Legal Intelligence (LI) views law as an instrument of economic warfare — subject to direct or indirect instrumentalization — and as a potential source of subtle disregard for legal norms aimed at destabilizing or capturing markets. Such practices may themselves be considered discriminatory.

It should be noted that the requirement of confidentiality in the field of Artificial Intelligence differs from one country to another. In Europe, data confidentiality falls under privacy protection, conceived as a universal human right; however, in China, the notion of privacy protection is often regarded with suspicion.

²⁹ https://unesdoc.unesco.org/ark:/48223/pf0000381137_fre.

³⁰ Recommendation on the Ethics of Artificial Intelligence, UNESCO, adopted on November 23, 2021, published in 2022, p. 22.

³¹ Recommendation on the ethics of artificial intelligence, IDEM, p. 2

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Seeking to protect one's data in China can be perceived as a form of selfishness, as it suggests a refusal to contribute to collective efforts for the common good.³²

Continuing our analysis, and in order to determine the forms of responsibility derived from the ethics of Artificial Intelligence, we must first understand what is meant by "AI ethics" and then define the scope of this concept.

In general terms, ethics refers to an evaluative enterprise that often encompasses three dimensions: defining a meaning that illuminates action, choosing values regarded as good, and formulating guiding principles and rules.³³

AI ethics can be understood as a form of applied ethics concerned with the evaluation of scientific, technical, and social systems that are shaped by algorithms.³⁴ Indeed, the concept of Artificial Intelligence includes not only the writing of computer code

³² Boris Barraud, *The Intelligence of Artificial Intelligence*, in *Artificial Intelligence – In All Its Dimensions*, L'Harmattan, coll. Europe & Asia, 2019, p. 24.

In Algeria, data protection is governed by Law No. 18-07 32 on the protection of individuals with regard to the processing of personal data. Algeria also saw the creation of the National Authority for the Protection of Personal Data (ANPDP) by Article 22 of the same law.

³³ Thierry Ménissier, *Les quatre éthiques de l'intelligence artificielle (The Four Ethics of Artificial Intelligence)*, *Revue d'anthropologies des connaissances (Journal of Anthropology of Knowledge): (New vectors of scientific credibility at the interface between social worlds)*, No. 17-2 | 2023, § 3.

Multidisciplinary Institute for Artificial Intelligence MIAI@Grenoble Alpes. Available at: <https://journals.openedition.org/rac/29961>.

³⁴ According to Thierry Ménissier, the form of reasoning leading to such an assessment may differ between consequentialist arguments (emphasizing the examination of the relationship between the causes and consequences of the action), deontological arguments (emphasizing compliance with certain rules), axiological or aretaic arguments (depending on whether they favor justification based on values or the pursuit of virtues) (Ogien & Tappolet, 2008).

and the design of algorithms, but also their implementation and interconnection through digital infrastructures such as networks and platforms.

Therefore, the expression “ethics of AI” must be broadly understood as encompassing the «ethics of AI, robotics, digital technologies, and data».³⁵

According to the anthropology of knowledge hypothesis, there are four main forms of AI ethics:

- ***Computer Ethics***, which focuses on ethical concepts and values governing computer programming — essentially, ethics in the code and of the code.
- ***Robot Ethics*** (or Artificial Ethics), also known as Algorithmic Ethics, which concerns the programming of intelligent artifacts designed to interact both with one another and within society.
- ***Digital Ethics***, which seeks to regulate the digital sphere, whether in the design or in the use of networks, platforms, and the interactions they enable.
- ***Ethics of AI Use*** (which we propose to term UX AI Ethics) — aimed at evaluating the implementation and deployment experiences of AI systems across the diverse social sectors where this trend is emerging.³⁶

These four frameworks currently give substance to what is commonly referred to as the “ethics of Artificial Intelligence” in the anthropological sense.

Returning to the legal domain, the key question that arises is: What types of responsibilities can be imposed on Artificial Intelligence technologies?

In this respect, it is not AI as such that interests us, but rather the relationship that Artificial Intelligence should maintain with the law.

³⁵Thierry Ménissier, *The Four Ethics of Artificial Intelligence*, op. cit. § 3

³⁶Thierry Ménissier, *Les quatre éthiques de l'intelligence artificielle*, op. cit. § 7.

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In the face of constant technological evolution, identifying a legal category to which Artificial Intelligence (AI) could belong has become an urgent necessity. Such categorization would make it possible to formulate the right questions concerning its legal liability and to address the shortcomings of current liability systems.

Although immaterial, AI can be qualified as a “thing” within the meaning of the Algerian Civil Code and Article 1242 of the French Civil Code. It may also be considered a “product” within the meaning of Article 3 of Law No. 09-03³⁷ on consumer protection and the suppression of fraud, which defines a product as “any good or service capable of being transferred for consideration or free of charge.”

Consequently, the issue of AI’s legal liability arises: upon whom does this liability fall ?³⁸ Such liability—whether civil or criminal, contractual or tortious—is defined as the legal sanction for a harmful act caused by AI. This immediately raises further legal questions: Is Artificial Intelligence capable of discernment ? What liability does a public buyer incur if a bidder believes they have been unfairly treated by an AI system ?

³⁷ Law No. 09-03 of 29 Safar 1430, corresponding to February 25, 2009, on consumer protection and fraud prevention. JO n-15, p. 10

³⁸ It seems that human tools extend the body and express the mind. As the anthropologist **André Leroi-Gourhan** teaches, every instrument externalizes a specific function.

A. Leroi-Gourhan, *Le geste et la parole*, Albin Michel, 1964. Quoted in: Boris Barraud, *L’intelligence de l’intelligence artificielle*, in *L’intelligence artificielle – Dans toutes ses dimensions*, L’Harmattan, “Europe & Asie” Collection, 2019, p. 2.

From a strictly legal standpoint, determining AI's liability first requires distinguishing between multiple legal scenarios: when machines act autonomously (self-learning AI software capable of evolving independently) and when machines act under human supervision. It is also necessary to differentiate between the liability of the AI user and that of the AI creator.

Moreover, one must take into account the specific nature of AI contractual liability, namely : AI as the object of the contract, and AI as a party to the contract.³⁹

These and other issues now stand at the forefront of public and legal debate.

4.Conclusion:

We wish to conclude by briefly refocusing our reflection on Artificial Intelligence (AI) in public procurement contracts.

This article was structured in two main parts: the first introduced the fundamental concepts of AI and illustrated how AI techniques can serve public buyers; the second developed the legal and ethical framework governing the use of AI.

These two sections complement each other, highlighting the impact of Artificial Intelligence on the public procurement process. In other words, they reveal the new legal questions arising from the integration of AI into public procurement contracts.

As observed, Artificial Intelligence is transforming the public procurement process by facilitating the work of contracting authorities and simplifying market

³⁹ It is important to recognize that Artificial Intelligence has **two dimensions**.

The **moral dimension** is represented by Artificial Intelligence in the strict technical sense — that is, the collection of software programs and algorithms capable of making decisions autonomously. The **material dimension**, on the other hand, is embodied in the external structure that carries these programs and algorithms. The relationship between the two is therefore one of interdependence and complementarity.

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access for companies (potential co-contractors). It enables time savings, improves the quality of case management, and broadens access to opportunities — all while promoting transparency.

Public authorities should also invest in capacity-building programs, training initiatives, and knowledge-sharing platforms to support the adoption of AI in public procurement. Furthermore, they should consider integrating specific contractual clauses to regulate the use of AI within procurement contracts.

Accordingly, the art of prompting must be mastered so that AI assistants generate results consistent with the legal obligations imposed on public buyers. However, to fully benefit from these developments, both public and private actors must be adequately equipped and trained in Artificial Intelligence.

Developing a public certification or ethical label for legal software providers committed to best practices and ethical compliance would also be a commendable initiative.

The challenge to be met lies in maintaining a balance between automation and human oversight, ensuring compliance with regulations and preventing potential abuses of AI — a matter that may soon become critical for national security and digital sovereignty.⁴⁰

According to futurologists and technology experts, Artificial Intelligence will profoundly — and often radically — reshape many practices. Yet, it remains uncertain where the next turning point will lead us in 20, 50, or 100 years. The future

⁴⁰ Amid the widespread digitalization, the rise of the digital economy, and the adoption of an ambitious national strategy in Artificial Intelligence, Algeria aims to strengthen its technological sovereignty and position itself as an African leader in innovation. El Moudjahid Online, News section, August 29, 2025. Available at: <https://www.elmoudjahid.com/fr/actualite/numerisation-et-intelligence-artificielle-l-algerie-trace-sa-voie-239509>.

remains unknown. Nonetheless, one question persists: What will be the next dominant technological, technical, and legal paradigm ? This may well constitute a promising direction for future research.

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