



Digital Transformation of Civil Justice and Its Impact on Fair Trial Guarantees: An Analytical, Descriptive, and Comparative Study

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Abstract

This study aims to analyze the reality of digital transformation in civil justice and its impact on fair trial guarantees, in the context of the accelerated adoption of technological tools (electronic filing, remote hearings, artificial intelligence) following the COVID-19 pandemic. It focuses on the extent to which these systems can enhance efficiency and access to justice without compromising the principles of publicity, equality of arms, effective defense rights, and privacy, as stipulated in international instruments (Article 6 of the European Convention on Human Rights, Article 14 of the International Covenant on Civil and Political Rights).

The research adopts an analytical, descriptive, and comparative methodology, drawing on prior studies and international experiences (Portugal with RAL+ and Magistratus platforms) and national ones (Algeria through Laws 15-03 and 20-04). It reveals that digital transformation achieves significant advantages in accelerating procedures and reducing costs, yet it raises challenges such as digital exclusion, lack of transparency, and privacy risks. The study concludes with the necessity of a comprehensive legislative framework, secure infrastructure, and periodic human rights impact assessments to achieve balanced digital justice.

Keywords: Digital justice, civil justice, fair trial guarantees, remote litigation, digital transformation.

Introduction

Judicial systems have undergone profound digital transformation in recent decades, accelerating unprecedentedly due to the COVID-19 pandemic, which necessitated the adoption of technological tools to ensure the continuity of judicial services. In the field of civil justice specifically, electronic litigation—from filing claims via digital platforms (e-filing), through remote video hearings, to electronic signing of judgments and their enforcement—has become a strategic option for achieving efficiency, reducing costs, and expanding access to justice without geographical or temporal constraints (Bouamra & Zerourou, 2024, pp. 492-494).

However, this transformation raises fundamental questions about its compatibility with fair trial guarantees, which constitute a cornerstone of the rule of law and human rights. Fair trial—as enshrined in Article 6 of the European Convention on Human Rights, Article 14 of the International Covenant on Civil and Political Rights, and Article 10 of the Universal Declaration of Human Rights—requires public hearings, equality between parties (equality of



arms), the right to effective defense and confrontation, judicial independence, and trial within a reasonable time. In the digital environment, these guarantees may be jeopardized due to the digital divide, privacy and data risks, algorithmic opacity, and difficulties in ensuring effective participation by vulnerable groups (elderly, persons with disabilities, and remote areas) (Fair Trials Europe, 2025).

The importance of the study lies in the fact that digital transformation is no longer an option but an inevitable necessity, particularly in developing contexts like Algeria, which has initiated legislative steps (Law 15-03 of 2015 and Order 20-04 of 2020), yet faces challenges in balancing technological efficiency with fundamental rights. International experiences—such as Portugal with RAL+ and Magistratus platforms—offer valuable lessons on achieving inclusive digital justice without exclusion (European Union Agency for Fundamental Rights [FRA], 2024, pp. 32-42, 68-70).

This leads to the central research problem: *To what extent can digital transformation in civil justice enhance access to justice and procedural efficiency without undermining the essence of fair trial guarantees, given differences in legal and technological preparedness across countries?*

The study seeks to analyze the impact of digital transformation on these guarantees in civil proceedings, proposing balanced enhancement mechanisms, through an analytical, descriptive, and comparative methodology based on Algerian and international experiences (France, Canada, Portugal). The article is structured into four main sections:

- Section One: The conceptual and theoretical framework of digital transformation and fair trial guarantees in civil matters.
- Section Two: Analysis of the impact on guarantees (access, publicity, defense, privacy).
- Section Three: Comparative experiences and the Algerian legal framework.
- Section Four: Enhancement mechanisms and recommendations, followed by a conclusion summarizing findings and future proposals.

1. Conceptual and Theoretical Framework

1.1 Concept of Digital Transformation and Digital Justice

Digital transformation in the justice sector is one of the most prominent manifestations of modernizing the judiciary in recent decades, especially after the COVID-19 pandemic, which imposed unprecedented acceleration in shifting from traditional paper procedures to electronic platforms. In the context of civil justice, this transformation includes digitizing all stages of proceedings—from electronic claim filing (e-filing), through remote video hearings, to electronic signing of judgments and enforcement (Bouamra & Zerourou, 2024, p. 494).

Legally, digital transformation is defined, based on the French experience adopted by Algerian law, as "providing access to justice services and judicial procedures through electronic means and modern technology, aimed at accelerating dispute resolution, achieving transparency, and administrative efficiency" (Dahia, 2025, p. 59). At the European level, Recommendation No. (R(2001)3) of the Committee of Ministers of the Council of Europe

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defines it as "the use of information and communication technologies to enhance the efficiency of judicial systems and improve citizens' access to justice, without prejudice to fundamental rights, particularly the right to a fair trial" (Dahia, 2025, p. 59).

Doctrinally, the definition exceeds rigid legal text to functional, rights-based, and critical dimensions. From a functional perspective, digital transformation is considered "a set of technical tools that facilitate the judicial process in its administrative, procedural, and enforcement stages through digitizing documents, conducting remote hearings, and delivering judgments electronically" (Dahia, 2025, p. 60). From a rights perspective, Jean-Baptiste Jeanjean Vilmer views it as "a profound transformation in judicial work aimed at reshaping the relationship between citizens and the judicial institution via digital means, in a way that preserves procedural rights and enhances social justice" (Dahia, 2025, p. 60). The critical perspective warns that digital justice is "a double-edged sword" that may lead to digital exclusion of vulnerable groups if not managed carefully (Dahia, 2025, p. 60).

Based on these definitions, a comprehensive definition of digital justice in civil matters can be formulated as follows: "An advanced judicial system that integrates technological tools into all stages of civil proceedings, aimed at facilitating access to justice and achieving efficiency, without prejudice to fair trial guarantees or defense rights, within an institutional legal framework that respects national and international human rights standards" (Dahia, 2025, p. 61; Bouamra & Zerourou, 2025, p. 535).

Applications of this system in civil justice include electronic notification, claim submission via digital portals, virtual hearings, remote listening to parties and witnesses, electronic signing of judgments, and creation of unified judicial databases (Dahia, 2025, p. 61). The COVID-19 pandemic accelerated the adoption of these applications, as seen in Portugal where the RAL+ platform (since May 2023) became an essential tool for submitting complaints, evidence, and mediation in family, labor, and civil disputes, with full electronic tracking (FRA, 2024, pp. 12-15).

1.2 Fair Trial Guarantees in Civil Matters

Fair trial is one of the most prominent universal principles ensuring the protection of individuals' rights before the judiciary, and it is non-derogable even in emergencies. In civil matters, these guarantees derive their basis from key international texts:

- Universal Declaration of Human Rights (1948), Article 10: "Everyone is entitled in full equality to a fair and public hearing by an independent and impartial tribunal."
- International Covenant on Civil and Political Rights (1966), Article 14: "All persons shall be equal before the courts and tribunals."
- European Convention on Human Rights (1950), Article 6: "In the determination of his civil rights and obligations... everyone is entitled to a fair and public hearing within a reasonable time by an independent and impartial tribunal" (Dahia, 2025, p. 61).

Fair trial guarantees in civil proceedings consist of essential elements: publicity of hearings, equality between adversaries (equality of arms), right to defense and confrontation, effective hearing, reasonable duration, and judicial independence and impartiality (Dahia, 2025,

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p. 62). Doctrine emphasizes that these guarantees are substantive rather than formal, and any digital transformation must preserve them without compromise (Bouamra & Zerourou, 2024, p. 493).

Doctrinally, the analytical approach based on guarantees prevails, where Louis Favoreu views fair trial as "that in which defense rights are respected, equality between parties is ensured, and the right to presence, appeal, and legal assistance when needed is guaranteed" (Dahia, 2025, p. 62). The international human rights perspective affirms that the concept of fair trial is "flexible, evolving with the international community, and must be interpreted in favor of protecting the individual against the state" (Dahia, 2025, p. 62).

In the digital context, comparative studies (such as the Portuguese experience) show that digital tools can enhance some guarantees (e.g., speed and access) while threatening others (e.g., privacy and equality) if not accompanied by strict legal controls (FRA, 2024, pp. 18-22; Fair Trials Europe, n.d.).

2. Impact of Digital Transformation on Fair Trial Guarantees in Civil Justice

Digital transformation in civil justice represents a qualitative leap toward efficiency and access, yet it poses fundamental challenges threatening the essence of fair trial guarantees. This section discusses these impacts through four main axes, drawing on analytical studies and comparative experiences.

2.1 Enhancing Access to Justice and Speed vs. Risks of Digital Exclusion

Digital transformation is a historic opportunity to expand access to civil justice by reducing geographical, temporal, and financial barriers. In Algeria, Order 20-04 amending the Code of Criminal Procedure (extended to civil matters) contributed to accelerating proceedings through remote hearings and electronic filing, achieving "speed in procedures and cost reduction" (Bouamra & Zerourou, 2024, p. 492). The Portuguese experience showed that the RAL+ platform (since May 2023) enabled electronic submission of complaints and evidence in family, labor, and small civil disputes, reducing costs to 50-70 euros and accelerating adjudication in thousands of cases (FRA, 2024, pp. 32, 34).

However, these advantages conflict with risks of digital exclusion. Dahia warns that parties lacking technological proficiency—especially the elderly, persons with disabilities, and rural groups—face access difficulties, undermining equality before the law (Dahia, 2025, p. 70). In Portugal, the study revealed that 80% of the population lacks a mobile digital key, and electronic forms in Portuguese only exclude migrants and those with low education levels (FRA, 2024, pp. 73, 105-108). Fair Trials emphasized that the digital divide threatens "effective participation," particularly for persons with special and neurological needs (Fair Trials Europe, 2025).

2.2 Principle of Publicity and Transparency

The principle of publicity is a fundamental pillar of fair civil trial, ensuring public trust and social oversight. CEPEJ guidelines affirm that digital systems must publish judgments publicly with automatic anonymization (Dahia, 2025, p. 70). In Portugal, digital platforms

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contributed to publishing anonymized judgments, enhancing transparency (FRA, 2024, pp. 32-33).

Nevertheless, virtual hearings and electronic recording raise real challenges. Dahia notes that remote litigation platforms lack transparency in filtering processes, creating "hidden effects" and weakening trust (Dahia, 2025, Subsection 2.1). Fair Trials warned that digital recordings may lead to "loss of non-verbal cues," which are part of effective publicity (Fair Trials Europe, 2025). In Portugal, Webex connection issues disrupted sessions, reducing public follow-up compared to in-person hearings (FRA, 2024, p. 23).

2.3 Right to Defense, Confrontation, and Equality of Arms

Digital transformation ensures faster document submission but threatens equality of arms if technical support is not available to all. In the Algerian context, remote litigation facilitated defense in civil cases, yet it may hinder "the judge's personal conviction" due to absence of physical presence (Bouamra & Zerourou, 2024, p. 493). In Portugal, the electronic legal aid platform allowed remote lawyer appointment but raised issues in evidence sharing and confidential communication with counsel (FRA, 2024, pp. 40, 114-115).

Fair Trials highlighted that video hearings impede "confidential communication with counsel" and evidence review, violating effective defense and confrontation rights (Fair Trials Europe, 2025). Dahia adds that digital evidence raises issues of authenticity verification and virtual confrontation, especially in family and property disputes (Dahia, 2025, Subsection 2.1).

2.4 Privacy, Data Protection, and Artificial Intelligence

Reliance on artificial intelligence and digital platforms poses greater privacy challenges. In Algeria, no specific law protects data in civil litigation, exposing personal information to risks (Bouamra & Zerourou, 2025, p. 536). In Europe, FRA confirmed that platforms like RAL+ and Magistratus face hacking and identification risks despite GDPR compliance, especially for sensitive file uploads (FRA, 2024, pp. 26, 41-42, 111-112).

Fair Trials warned that AI systems in civil litigation (e.g., automated file search) carry "serious risks of biased and discriminatory outcomes" and require independent testing before and after deployment (Fair Trials Europe, 2025). Bouamra and Zerourou argue that AI ethics in digital justice require a legal framework protecting digital identity and preventing the "black box" phenomenon (Bouamra & Zerourou, 2025, pp. 536-540).

3. Comparative Experiences and the Algerian Legal Framework

This section provides a comparative overview of international experiences in digital transformation of civil justice, focusing on Portugal as an advanced European model, then shifts to the Algerian legal framework to identify achievements and gaps.

3.1 International Experiences: Portugal as a Model

Portugal has undergone intensive digital transformation in civil justice since 2016 under the "Justiça + Próxima" plan, with major acceleration post-COVID-19. The system relies on integrated platforms such as:



- **RAL+** (since May 2023, with national expansion planned until 2025): A platform for alternative dispute resolution (ADR) in family, labor, and small civil disputes, enabling electronic submission of complaints and evidence, real-time tracking, and remote mediation. It contributed to cost reduction (50-70 euros) and faster adjudication (FRA, 2024, pp. 68-70, 120-121).
- **Magistratus** (since 2017, updated 2021-2025): Case management system for judges in civil proceedings, supporting electronic filing, automated search, and comments, with AI integration for file summarization (FRA, 2024, pp. 61-66).
- **Video Conferencing** (since 2001, wide expansion post-2020): Uses Webex for virtual hearings in civil cases, reducing travel and accelerating procedures (FRA, 2024, pp. 53-59).

Advantages include enhanced access (electronic filing without personal appearance), efficiency (reduced paper and delays), and transparency (publication of anonymized judgments via GitHub since 2024). Challenges include digital exclusion (80% lack mobile digital keys), privacy issues (hacking risks in RAL+ and Magistratus), and equality of arms (difficulties in evidence sharing or confidential lawyer communication remotely) (FRA, 2024, pp. 30-32, 73-75, 111-112).

Fair Trials Europe affirmed that virtual hearings hinder non-verbal cues and effective participation, threatening publicity and effective defense, and called for human rights impact assessments prior to implementation (Fair Trials Europe, 2025). CEPEJ recommends non-discriminatory digitization with guaranteed non-digital channels and privacy protection (Council of Europe CEPEJ, 2023, pp. 7-9).

3.2 Algerian Legal Framework: Achievements and Gaps

Algeria began digital transformation in justice with Law 15-03 of February 1, 2015 on justice modernization, which allowed remote video conferencing in judicial procedures, including civil ones (Bouamra & Zerourou, 2024, p. 494). Order 20-04 of August 30, 2020 amending the Code of Criminal Procedure extended its impact to civil proceedings, permitting remote litigation during and after the pandemic to ensure continuity and acceleration (Bouamra & Zerourou, 2024, pp. 492-493; Dahia, 2025, pp. 56-58).

Achievements include facilitating electronic submission of requests and documents, reducing costs and personal appearance, and enhancing efficiency in civil disputes (Bouamra & Zerourou, 2024, p. 492). It also contributed to overcoming the COVID-19 crisis by giving "practical spirit" to the justice service (Bouamra & Zerourou, 2024, p. 493).

Gaps are evident: absence of a specific law for civil digital justice regulating procedural guarantees (data protection, algorithmic transparency, equality of arms) (Dahia, 2025, pp. 61-62). Dahia warns that remote litigation may lead to "exceeding fair trial guarantees," especially due to lack of the judge's personal conviction and physical presence (Dahia, 2025, p. 70). The system also lacks strong infrastructure and training for judges and lawyers, deepening the digital divide (Bouamra & Zerourou, 2025, pp. 536-540).

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Compared to Portugal, the Algerian framework appears less advanced in technical integration (e.g., no unified platform like RAL+ or Magistratus) and more in need of independent human rights assessments, as recommended by CEPEJ and Fair Trials (CEPEJ, 2023, p. 9; Fair Trials Europe, 2025).

4. Enhancement Mechanisms for Balanced Digital Justice in Algeria

Digital transformation in Algerian civil justice represents a strategic opportunity to overcome judicial congestion, but it requires an integrated legal and institutional framework protecting fair trial guarantees. This section focuses on practical, implementable mechanisms in the Algerian context, benefiting from international experiences.

4.1 Developing Legislation and Integrated Legal Framework (National Priority)

The absence of a specific law on digital justice is among Algeria's most prominent gaps. It is recommended to enact a "Civil Digital Justice Law" regulating electronic litigation from filing to enforcement, clearly defining fair trial guarantees in the digital environment (virtual publicity, equality of arms, effective defense, privacy). This law should amend Law 15-03 (justice modernization) and Order 20-04 to mandate compulsory human rights impact assessments before deploying any platform or AI tool (Dahia, 2025, p. 70; Bouamra & Zerourou, 2024, p. 494).

It is also recommended to establish a "National Committee for Digital Justice" under the Ministry of Justice, comprising judges, lawyers, technical experts, and civil society representatives, to review algorithms and adopt "explainable AI" (XAI) standards to avoid the "black box" phenomenon (Study on the Principle of Publicity as a Constitutional Guarantee, 2025). Al-Arshani (2025) emphasizes the need to regulate AI use within a legal framework protecting judicial independence, directly applicable to Algeria to prevent the judge from becoming a mere "endorser" of automated recommendations.

4.2 Strengthening Digital Infrastructure and Cybersecurity

Algeria suffers from a clear digital divide due to its vast territory, particularly in rural and southern areas. It is recommended to launch a "National Strategy for Judicial Digital Infrastructure 2025-2030" including:

- A unified national platform (similar to Portugal's RAL+) for submitting civil claims and remote hearings.
- High-speed internet coverage in all courts + free tablets for vulnerable parties.
- Technical support centers within courts for the elderly and persons with disabilities (Bouamra & Zerourou, 2025, pp. 536-540).

Cybersecurity must be enhanced through a personal data protection law (inspired by GDPR) with mandatory encryption, automatic anonymization, and periodic penetration testing (FRA, 2024, pp. 41-42).

4.3 Building Capacities and Continuous Training

Lack of technical competencies among judges and lawyers is one of Algeria's greatest challenges. It is proposed to:



- Implement a compulsory annual training program (200 hours) for all judges and lawyers on digital platforms and AI.
- Include a "Digital Justice" course in programs of the Higher Institute of Magistracy and universities.
- Establish partnerships with CEPEJ and the European Union for knowledge transfer (Al-Arshani, 2025; Fair Trials Europe, 2025).

4.4 Adopting a "Multiple Geography of Justice" Hybrid Model

A hybrid model is recommended combining digital (80% of small and medium claims) and in-person (for sensitive cases: family, property, socially significant) proceedings, including:

- Option for personal attendance upon request in any hearing.
- Recording of virtual hearings with conditional public access.
- Continuous monitoring of impacts on vulnerable groups through annual reports (Dahia, 2025, Subsection 2; Study on the Principle of Publicity, 2025).

4.5 Oversight and Independent Evaluation Mechanisms

- Establish an independent oversight body for digital justice reporting to Parliament.
- Conduct human rights impact assessments every two years on all platforms (CEPEJ, 2023, p. 9).

By implementing these mechanisms, Algeria can transform the digital challenge into a leading Arab model in inclusive civil justice.

Conclusion

Digital transformation in civil justice represents a qualitative leap toward more efficient and accessible adjudication, contributing to cost reduction, procedure shortening, and overcoming geographical and temporal barriers, as evidenced by international experiences (such as Portugal with RAL+ and Magistratus platforms) and analytical studies (Dahia, 2025; FRA, 2024). Nevertheless, the greatest challenge remains preserving the essence of fair trial guarantees—publicity, equality of arms, effective defense and confrontation rights, privacy, and judicial independence—which form the cornerstone of the rule of law and human rights under international instruments (Article 6 of the European Convention, Article 14 of the Covenant). Digitization, despite its advantages, may exacerbate the digital divide, weaken algorithmic transparency, and threaten data privacy if not managed carefully within a strict legal framework (Bouamra & Zerourou, 2025; Fair Trials Europe, 2025).

In Algeria, digital transformation emerges as an urgent necessity to address judicial congestion and improve justice service performance, especially following the adoption of Law 15-03 (2015) and Order 20-04 (2020), which paved the way for remote litigation. However, the current framework suffers from fundamental gaps: absence of specialized legislation for civil digital justice, weak infrastructure in rural and southern areas, lack of technical training for judges and lawyers, and absence of independent oversight mechanisms for algorithms and cybersecurity. These gaps may lead to exclusion of broad groups (elderly, persons with disabilities, remote residents) and hinder genuine equality before the courts, as Dahia (2025)

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pointed to risks of "exceeding guarantees" due to lack of the judge's personal conviction and physical presence (Dahia, 2025, p. 70; Bouamra & Zerourou, 2024, pp. 492-494).

Therefore, a thoughtful transition to a "balanced digital justice" model is required, based on:

- Enacting comprehensive national legislation for digital justice mandating compulsory human rights impact assessments.
- Building secure infrastructure and a unified judicial platform with free technical support in courts.
- Intensive and compulsory training programs for judicial sector workers.
- Adopting a hybrid model (digital + in-person) for sensitive cases, with an independent oversight body monitoring AI and its ethics (Bouamra & Zerourou, 2025; Al-Arshani, 2025).

Ultimately, the supreme goal remains achieving genuine digital justice in Algeria that enhances efficiency without compromising the dignity of litigants and their fundamental rights. The success of this transformation depends on political will and cooperation among judicial, technical, and civil society entities, making the Algerian justice service an advanced Arab model combining innovation and human justice. Future field studies are recommended to measure actual impacts on litigants and develop national indicators for evaluating digital justice quality.

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