

# Algorithmic Administrative Justice: Procedural Safeguards and Techno-Legal Standards in Crisis-Driven Digital Government

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## ABSTRACT

### Purpose

The rapid deployment of automated decision systems in public administration has fundamentally altered the institutional foundations of administrative law. This article examines how traditional procedural safeguards, reason-giving, notice, fair hearing, and judicial review operate within algorithmic governance systems, particularly in crisis contexts such as the COVID-19 pandemic.

### Design/methodology/approach

The study adopts a doctrinal and comparative legal methodology, combining analysis of administrative law with algorithmic governance studies. It examines three illustrative case studies involving automated administrative decision systems in different jurisdictions and evaluates their implications for procedural justice.

### Findings

The analysis demonstrates that algorithmic decision systems frequently undermine core procedural guarantees due to opacity, reliance on statistical reasoning, and constraints on institutional capacity. Traditional procedural frameworks are therefore insufficient to govern algorithmic administration. The article proposes a framework of algorithmic administrative justice that translates legal principles into techno-legal standards embedded in system structures, including human-in-the-loop decision-making triggers, counterfactual explanations, algorithmic auditing, and enhanced data transparency.

### Practical implications

The study provides policy guidance for governments deploying automated decision systems, recommending institutional reforms such as mandatory Algorithmic Impact Assessments, specialized administrative tribunals, and the integration of techno-legal expertise within public agencies.

### Originality/value

The article contributes to emerging scholarship on digital administrative law by demonstrating that procedural safeguards must evolve from “procedure as process” toward “procedure as architecture,” ensuring that algorithmic governance remains compatible with principles of administrative justice.

**Keywords:** Algorithmic governance; Administrative law; Automated decision systems; Procedural justice; Algorithmic accountability

## INTRODUCTION

The COVID-19 pandemic accelerated crisis-driven digital transformation in public administration, wherein emergencies compress implementation timelines and reduce oversight mechanisms while fundamentally altering institutional workflows and citizen-state interactions (Burlea-Schiopoiu et al., 2023; Carter et al., 2024; Crăciun et al., 2025; Eom & Lee, 2022; Lobonț et al., 2026). Governments deployed algorithmic systems to process unprecedented welfare volumes, replacing traditional bureaucratic decision-making with data-driven operations (Amankwah-Amoah, 2020; De' et al., 2020). However, these systems generated significant administrative failures: Australia's "Robodebt" system issued unlawful debt notices to hundreds of thousands of citizens (Ball & Hannah, 2025; C. Terry, 2023); California's Employment Development Department (EDD) suspended millions of claims through flawed fraud-detection algorithms (EDD, 2021; A. O'Leary, 2025); and French social security agencies deployed opaque risk-scoring systems (OECD, 2023; Piccioli, 2024). These failures reveal a critical dimension of crisis-driven transformation: citizens encounter state power through opaque technological interfaces that create information asymmetry, procedural opacity, and diminished opportunities for voice and redress, generating financial distress and institutional distrust among vulnerable populations (Bovens & Zouridis, 2002; Meijer et al., 2021; C. Terry, 2023).

These developments illustrate a broader transformation in public administration: the emergence of algorithmic governance, in which administrative decisions are increasingly generated by computational models rather than official individuals. Scholars across law, political science, and computer science have documented both the potential benefits and risks of this transformation, including concerns about algorithmic bias, opacity, and large-scale error propagation (Binns, 2017; Diakopoulos, 2016; Engstrom & Ho, 2020; Yeung, 2018). At the same time, administrative law scholars have begun to explore the implications of automated decision-making for legal accountability and procedural fairness (Rizk & Lindgren, 2025; Roehl, 2023; Roehl & Hansen, 2024).

Despite this growing body of literature, an important research gap remains. Relatively limited attention has been given to the specific doctrinal tools of administrative law, such as reason-giving requirements, procedural notice obligations, and standards of judicial review. From an IS perspective, this gap is particularly significant. Digital government scholarship has documented how public sector technologies co-evolve with organizational practices and citizen expectations (Carter et al., 2024; Lobonț et al., 2026; Meijer & Bekkers, 2015), yet the specific dynamics of crisis-driven algorithmic governance remain under-theorized. Existing IS frameworks for understanding administrative technology, whether emphasizing efficiency, transparency, or citizen participation, were developed primarily for human-mediated systems operating under normal conditions (Meijer et al., 2021). The shift toward algorithmic decision-making during crises introduces novel challenges that strain these frameworks: decisions emerge from computational models rather than identifiable officials, procedural safeguards must be embedded in technical architectures rather than organizational protocols, and citizen experiences are shaped by opaque data profiles rather than interpersonal interactions (Bovens & Zouridis, 2002; Contini, 2020). Understanding how administrative law principles can be operationalized within algorithmic infrastructures thus contributes to IS research on the governance of socio-technical systems in periods of institutional stress.

The rapid deployment of algorithmic decision-making during crisis governance, therefore, exposes significant tensions between technological innovation and the foundational principles of administrative law. In particular, three doctrinal questions require closer examination.

First, how should reason-giving requirements apply to algorithmic decisions generated by opaque machine-learning systems? Traditional administrative law requires agencies to provide clear explanations for their decisions to enable accountability and facilitate judicial review (Thapa, 2020). However, when decisions are produced by complex algorithms, identifying legally sufficient reasons can be difficult.

Second, what constitutes adequate procedural notice when administrative decisions are based on data-driven models rather than clearly articulated rules? Individuals affected by automated decisions may not be informed about the data sources, predictive indicators, or algorithmic models that influence the outcome of their cases (Breibach, 2024).

Third, how should courts review algorithmic discretion under established standards such as the “arbitrary and capricious” test? Judicial review frameworks developed for human decision-makers may not easily translate to algorithmic systems that rely on statistical correlations and probabilistic models.

These doctrinal questions intersect with key areas of IS research on technology design, user experience, and governance. The IS literature on digital government emphasizes that successful public-sector technologies must align technical capabilities with institutional logics and citizens' needs (Carter et al., 2024; Lobonț et al., 2026). Algorithmic administrative systems, however, disrupt this alignment by relocating discretion from street-level bureaucrats to system-level infrastructures (Bovens & Zouridis, 2002), creating what IS researchers term “system-level bureaucracy,” in which encoded rules replace situated judgment. Crisis governance amplifies this transformation, compressed implementation timelines limit opportunities for participatory design, while the urgency of emergency response may override considerations of procedural fairness and accessibility (Eom & Lee, 2022). Examining how administrative law principles can be translated into technological standards thus addresses a critical gap in understanding how crisis-driven digital transformation affects the institutional foundations of public administration.

Addressing these questions is particularly urgent in emergency governance contexts, where administrative systems often operate under heightened pressure and reduced procedural safeguards. Crisis conditions can amplify the risks associated with algorithmic decision-making, including systemic bias, cascading errors, and diminished transparency (Binns, 2017; Breidbach, 2024; Hung & Yen, 2023; Yeung, 2018).

This article argues that existing administrative law frameworks must evolve to address these challenges. It introduces the concept of algorithmic administrative justice, a normative framework designed to ensure that automated decision-making systems remain consistent with fundamental principles of administrative legality and procedural fairness, as shown in Figure 1 below.



Figure 1: Algorithmic Administrative Justice Framework

Source: Primary Analysis, 2026

This article makes two principal contributions. First, it provides a doctrinal analysis of how core administrative law principles, including reason-giving obligations, procedural notice requirements, and judicial review standards, apply to algorithmic decision-making systems used in crisis governance, thereby contributing to IS research by demonstrating that legal frameworks must evolve to accommodate socio-technical transformation in the public sector (Crăciun et al., 2025; Lobonț et al., 2026; Meijer et al., 2021). Second, it proposes developing “techno-legal standards” that translate abstract legal norms into concrete system design requirements. These standards represent a form of “law by design” (Yeung, 2018) that embeds governance mechanisms within technical infrastructures, offering IS researchers a framework for understanding how accountability can be operationalized in algorithmic systems deployed under crisis conditions. By bridging administrative law and IS perspectives, this article advances understanding of how crisis-driven digital transformation affects the interface between citizens, technology, and the state.

## Theoretical Framework

### Administrative Law Foundations

Administrative law provides the central legal architecture for controlling and legitimizing the exercise of public power. At its core, the discipline seeks to ensure that governmental decisions affecting individuals are made in accordance with principles of legality, procedural fairness, and rational justification. These principles have historically evolved in response to the growing complexity of public administration, moving from traditional “street-level bureaucracy” toward increasingly automated systems of governance (Borgesano et al., 2025; Contini, 2020; Gans-Combe, 2022; Murodova, 2025).

The rise of algorithmic decision-making systems in public administration raises questions about the adequacy of these traditional safeguards. While automated systems promise greater efficiency and consistency, they may also undermine established procedural guarantees if administrative decisions become opaque, data-driven, and difficult to contest (Murodova, 2025). Consequently, any legal framework for algorithmic administrative justice must be grounded in the foundational doctrines of administrative law. Three doctrinal pillars are particularly relevant: procedural due process, reason-giving obligations, and standards of judicial review.

#### i. Procedural Due Process

Procedural due process requires that individuals affected by governmental action receive notice, an opportunity to be heard, and impartial adjudication (Averill & Averill, 2024; Cameron, 2025). In the United States, *Mathews v. Eldridge* 424 U.S. 319 (1976) established a balancing test weighing: (1) the private interest affected, (2) the risk of erroneous deprivation, and (3) the government's administrative burdens. Algorithmic systems may increase the risk of erroneous deprivation when relying on incomplete datasets or opaque predictive models, potentially requiring additional safeguards, such as transparency or human review, to satisfy due process obligations. Comparable principles exist in common law jurisdictions (*Ridge v. Baldwin* [1964] AC 40, which extends natural justice to administrative decisions) and at the supranational level (Article 47 of the EU Charter of Fundamental Rights, which guarantees effective remedies and fair hearings). These frameworks establish that administrative decisions, whether human or algorithmic, must comply with procedural safeguards against arbitrary state action.

#### ii. Reason-Giving Requirements

Closely linked to procedural fairness is the principle that administrative authorities must provide reasons for their decisions. Reason-giving serves multiple functions within administrative law. It promotes transparency, enables affected individuals to understand the basis of administrative action, and facilitates meaningful judicial review.

In German administrative law, this obligation requires public authorities to articulate the factual and legal grounds for their decisions (Flaminia, 2025; Schmidt-Assmann, 1993; Schmitz, 2013; Singh, 1985). This principle is codified in the German Administrative Procedure Act and reflects the broader constitutional commitment to rational administrative governance.

Similarly, European Union administrative law recognizes a general duty to give reasons for decisions adopted by public authorities (Flaminia, 2025). This requirement is codified in Article 298 of the Treaty on the Functioning of the European Union and has been consistently emphasized in the jurisprudence of the Court of Justice of the European Union (EU, 2015). The duty to provide reasons ensures that administrative decisions are not merely authoritative commands but reasoned exercises of public power.

Algorithmic decision-making presents a significant challenge to this doctrine. Many machine-learning systems operate as complex statistical models that generate outputs without easily interpretable reasoning processes. As scholars have noted, these so-called “black box” systems may produce accurate predictions while remaining difficult to explain in traditional legal terms (Kroll et al., 2017; Pasquale, 2015).

The tension between algorithmic opacity and legal reason-giving obligations raises an important doctrinal question: can automated systems satisfy the administrative law requirement that public authorities provide intelligible reasons for their decisions? Addressing this question requires translating legal reasoning obligations into technical system requirements, such as explainable AI mechanisms, decision logs, or algorithmic auditing processes.

### iii. Standards of Judicial Review

Judicial review ensures administrative compliance with statutory authority, procedural fairness, and rationality. UK courts apply *the Wednesbury* unreasonableness test ([1948] 1 KB 223), invalidating decisions that no reasonable authority could make standard applicable to irrational algorithmic outputs. European law increasingly employs proportionality review, assessing whether measures are necessary and proportionate to legitimate objectives. US courts apply the “hard look” doctrine under the Administrative Procedure Act, examining whether agencies adequately considered relevant factors and provided reasoned explanations.

### iv. Implications for Algorithmic Administrative Justice

Taken together, the doctrines of procedural due process, reason-giving, and judicial review form the normative foundation for administrative accountability. However, these principles were developed in an institutional environment where human officials exercised discretionary authority.

Algorithmic decision-making transforms this institutional context by embedding administrative discretion within computational systems. As a result, the challenge facing contemporary administrative law is not merely to regulate technology but to ensure that foundational legal principles remain operational in a digital governance environment.

The concept of algorithmic administrative justice, therefore, seeks to translate these legal doctrines into techno-legal standards that can guide the design and oversight of automated administrative systems. By embedding procedural fairness, transparency, and reviewability into algorithmic infrastructures, administrative law can continue to function as a central mechanism of accountability in an increasingly automated state.

## Algorithmic Governance Literature

The emergence of algorithmic decision-making within public administration has generated a growing body of interdisciplinary scholarship examining the governance challenges posed by automated systems. This literature provides essential conceptual tools for understanding how algorithmic decision-making interacts with administrative law institutions.

Three strands of scholarship are particularly relevant: accountable algorithms, system-level bureaucracy, and explainable artificial intelligence (XAI).

### i. Accountable Algorithms

One of the most influential contributions to the governance of algorithmic decision-making is the framework of accountable algorithms proposed by Joshua A. Kroll and colleagues. Their seminal article, *Accountable*

Algorithms, argues that algorithmic systems that exercise socially significant decision-making functions must be designed to enable meaningful public oversight (Kroll et al., 2017).

The central insight of the accountable algorithms framework is that traditional regulatory approaches, such as disclosure obligations or transparency requirements, may be insufficient to ensure accountability in complex computational systems (Binns, 2017; Breidbach, 2024; Diakopoulos, 2016). Instead, algorithmic governance must incorporate technical accountability mechanisms that enable regulators, auditors, and courts to verify whether algorithmic outputs comply with legal standards.

Kroll and his co-authors identify several technical mechanisms that can support algorithmic accountability (Kroll et al., 2017), including: algorithmic auditing; secure logging of decision-making processes; verifiable computational models; and independent oversight mechanisms.

These mechanisms allow decision systems to remain technically complex while still enabling external scrutiny. For administrative law, this framework suggests that accountability may need to be embedded within the technical architecture of automated systems, rather than imposed solely through external legal oversight.

## **ii. System-Level Bureaucracy**

Another influential concept in the literature is the transformation of public administration from street-level bureaucracy to system-level bureaucracy. This concept was developed by Mark Bovens and Stijn Zouridis to describe how information technologies restructure administrative decision-making (Bovens & Zouridis, 2002).

Traditional bureaucratic systems rely on human officials exercising discretion at the point of service delivery. By contrast, digital administrative systems embed decision rules within technological infrastructures, effectively relocating discretion from individual officials to system designers and software architectures (Borgesano et al., 2025; Bovens & Zouridis, 2002; Gans-Combe, 2022).

Under system-level bureaucracy, the following are germane: i) rules are encoded into software systems, ii) decisions are executed automatically, and iii) frontline bureaucrats have limited ability to override system outputs.

This transformation has significant implications for administrative law. When discretion becomes embedded in technological systems, traditional accountability mechanisms, such as internal review or supervisory oversight, may become less effective. Individuals affected by administrative decisions may encounter opaque technological processes rather than identifiable decision-makers.

Algorithmic governance, therefore, requires legal frameworks capable of regulating both administrative institutions and technological infrastructures.

## **iii. Explainable Artificial Intelligence (XAI)**

A third strand of research focuses on XAI, which develops technical methods (feature-importance models, local explanation techniques, interpretable architectures, traceability tools) to explain machine-learning outputs (Pasquale, 2015). However, legal scholars argue that these technical explanations, often statistical approximations rather than normative justifications, may not satisfy administrative law's requirement that decisions be grounded in legally relevant factors (Cordella & Gualdi, 2025; Koshiyama et al., 2024; Widlak, 2025). Consequently, algorithmic governance requires integrating legal accountability mechanisms directly into system design rather than relying solely on post-hoc technical explainability.

## **Crisis as Catalyst for Administrative Digitalization**

The COVID-19 pandemic exemplifies how crises accelerate digital transformation in public administration, creating unique conditions for technological adoption that differ from routine innovation processes (Burlea-Schiopoiu et al., 2023; Eom & Lee, 2022). Compressed timelines, heightened service demands, and exceptional legal authorities lower institutional barriers, enabling rapid deployment of systems that might

otherwise face prolonged procurement cycles (Carter et al., 2024; Crăciun et al., 2025; Lobonț et al., 2026). While automated systems had gradually penetrated administrative processes prior to 2020, the pandemic precipitated large-scale adoption across welfare distribution, fraud detection, and regulatory enforcement (Amankwah-Amoah, 2020; De' et al., 2020).

However, technologies deployed under crisis conditions often become "locked in" to administrative infrastructures, creating path dependencies that constrain reform (Eom & Lee, 2022). The cases examined herein, Australia's Robodebt, California's EDD, and France's *Caisse Primaire d'Assurance Maladie* (CPAM), illustrate this pattern: each justified by emergency imperatives yet generating enduring transformations in how administrative decisions are made and contested. Traditional administrative law accommodates temporary procedural modifications through "crisis exceptionalism" (Monteiro & Iunes Monteiro, 2025), yet when crises catalyze permanent shifts from human to algorithmic decision-making, exceptional measures risk normalization without adequate consideration of procedural fairness. The techno-legal standards proposed in this article embed procedural safeguards within technical architectures from the outset, reconciling crisis efficiency with administrative justice.

### Techno-Legal Standards Analysis

The preceding analysis highlights a fundamental tension between algorithmic governance and traditional administrative law frameworks. While administrative law relies on procedural safeguards and reasoned decision-making, algorithmic systems often operate through complex statistical models that do not easily map onto legal doctrines.

To address this challenge, this article proposes the concept of techno-legal standards. They include the following:

#### i. Legal Norms Encoded in Technical Architecture

Techno-legal standards refer to the translation of legal norms into technical system requirements (Widłak, 2025). Rather than relying solely on external regulation, this approach embeds legal safeguards directly within the design and operation of algorithmic systems.

In this framework, administrative law principles are operationalized through system architecture, data governance, and algorithmic design constraints. An example is provided in Table 1 below.

| Legal Principle     | Technical Implementation                        |
|---------------------|-------------------------------------------------|
| Data minimization   | System limits data collection fields            |
| Purpose limitation  | Restricted data reuse across systems            |
| Reason-giving       | Automated decision logs and explanation modules |
| Procedural fairness | Human review triggers for adverse decisions     |

Source: Primary Analysis, 2026

This approach reflects broad regulatory principles embedded within technological infrastructure and developments in technology governance, particularly the concept of "law in code," in which regulatory principles are embedded within technological infrastructure.

#### ii. Data Minimization as Technical Constraint

One illustration of techno-legal standards is the principle of data minimization, widely recognized in data protection law (Cordella & Gualdi, 2025; Widłak, 2025). Under this principle, public authorities should collect only the data necessary to achieve legitimate administrative purposes.

When translated into system design, data minimization becomes a technical constraint on database structure, limiting the types of data fields that algorithmic systems may access or process.

Such constraints reduce the risk of algorithmic bias and unauthorized data use while reinforcing the legal principle that administrative authority must remain proportionate.

### iii. Purpose Limitation as System Design

Another key principle is purpose limitation, which requires that data collected for one administrative purpose not be repurposed for unrelated objectives.

In algorithmic governance systems, purpose limitation may be operationalized through data-access controls, restricted training datasets, and governance protocols that prevent cross-system data sharing without legal authorization (Gritsenko et al., 2022; Janssen & Kuk, 2016).

Embedding these safeguards within technical systems ensures that legal requirements are enforced automatically rather than relying solely on institutional compliance.

### iv. Crisis Governance and Procedural Shortcuts

The importance of techno-legal safeguards becomes particularly evident in crisis contexts.

Emergency situations often require governments to act rapidly, leading to procedural shortcuts such as expedited decision-making processes or reduced administrative oversight. During the COVID-19 pandemic, many governments deployed algorithmic systems to process large numbers of welfare claims and detect fraud.

While these systems improved administrative efficiency, they also generated widespread errors and procedural failures. Crisis governance, therefore, reveals the risks of relying on automated decision-making without adequate accountability mechanisms.

Embedding techno-legal standards within algorithmic systems can mitigate these risks by ensuring that procedural safeguards remain operational even under emergency conditions.

## RESEARCH DESIGN AND METHODOLOGY

This study adopts a doctrinal and comparative legal methodology. It combines normative legal analysis with a structured cross-jurisdictional comparison of algorithmic administrative failures. Doctrinal legal research is appropriate where the objective is to identify, interpret, and systematize legal principles governing an emerging field of public decision-making, particularly where existing doctrine remains incomplete and requires structured reconstruction (Hutchinson, 2016; H. Terry & Nigel, 2012). As Terry & Nigel (2012) observed, doctrinal methodology remains the "core of practice" in legal research that involves, critical analysis of legal rules, statutes, and judicial decisions to resolve ambiguities and outline the current state of the law. However, to address socio-technical phenomena, legal analysis alone cannot suffice. Hence, this study incorporates interdisciplinary insights from algorithmic governance studies, information systems research, and human rights frameworks to strengthen its reform recommendations (Hutchinson, 2016).

The comparative perspective employs a structure focused comparison of three illustrative case studies. 1) Australia's Robodebt system; 2) California's EDD algorithms; and 3) France's CPAM fraud-detection systems. Case selection was guided by three criteria. First, jurisdictional diversity: the cases span common law (Australia), US federal-state administrative law (California), and EU civil law (France), enabling examination of how different legal traditions respond to functionally similar algorithmic challenges. Second, functional equivalence: all three cases involve welfare-state algorithmic systems deployed or intensified during crisis conditions (pandemic or austerity governance), producing documented procedural failures affecting vulnerable populations. Third, data availability: each case is supported by official inquiries, judicial proceedings, and administrative reports that provide empirically grounded material for doctrinal analysis (DPcuria, 2023; Howle, 2021; Media Statement, 2023).

The analytical framework examines each case through uniform doctrinal dimensions derived from administrative law theory: procedural due process (notice and hearing), reason-giving obligations, standards of judicial review, and citizen experiential outcomes. This method ensures systematic comparability while respecting contextual differences in legal culture and institutional design (Cotterrell, 2019). While this study does not claim to provide an exhaustive empirical evaluation of all global algorithmic administrative systems, the selected cases function as "critical cases" (Flyvbjerg, 2006) that most clearly expose the structural tensions between algorithmic governance and administrative justice.

### **Intersecting Governance Challenges: Bias, Privacy, Cybersecurity, and Accountability**

Although procedural safeguards form the normative core of this article, algorithmic administrative justice cannot be fully theorized without addressing four intersecting governance challenges that affect the effectiveness of procedural protections. They are:

#### **i. Algorithmic Bias and Discrimination**

Automated decision systems may replicate, reinforce, or amplify existing social biases through biased training data, discriminatory feature selection, or proxy discrimination (Barocas et al., 2016; Selbst et al., 2019). In public administration, disparate impact discrimination is of particular concern because facially neutral algorithms may produce disproportionately adverse effects on protected groups without clear discriminatory intent. For example, facial recognition systems used in welfare verification have demonstrated higher error rates for women and individuals with darker skin tones (Gebru, 2018; Sham et al., 2023). Raising concerns under both administrative law and anti-discrimination principles. Procedural fairness mechanisms must therefore be designed to deter and remedy these distributive harms, rather than treating them as individual errors.

#### **ii. Data Protection and Privacy**

The deployment of algorithmic systems in public administration involves large-scale processing of personal data. This often includes sensitive categories such as biometric information, health records, and financial data. The GDPR establishes a framework for data subject rights that intersects with procedural administrative law. Such as the right to meaningful information about automated decision logic (Articles 13–15), the right not to be subject to solely automated decisions with legal effects (Article 22), and the obligation to conduct Data Protection Impact Assessments (Veale & Edwards, 2018). Beyond data protection, the European Court of Human Rights (ECtHR) has addressed issues around algorithmic governance through Article 8 (right to respect for private life) and Article 14 (prohibition of discrimination). This is evident in cases concerning automated facial recognition and passenger data processing (Council of Europe, 2026). These human rights obligations provide a supranational layer of procedural protection that complements domestic administrative law.

#### **iii. Cybersecurity and System Integrity**

Public sector AI systems aggregate vast datasets and create significant cybersecurity risks, including adversarial attacks, data breaches, and system manipulation (Wirtz & Müller, 2019). Operational risks such as technical failures, hallucinations, and overreliance on automated outputs may weaken the integrity of administrative decision-making and erode public trust (Bignami, 2022; Williams, 2022).. Procedural safeguards must therefore account for the security and reliability of the technical infrastructure on which administrative decisions depend, not merely the legal formality of decision-making processes.

#### **iv. Institutional Accountability**

Algorithmic governance frequently involves complex arrangements between public agencies and private technology developers, creating "hybrid" governance structures that fragment accountability (Wirtz & Müller, 2019). When discretion shifts from street-level bureaucrats to system-level infrastructures, traditional chains of responsibility become obscured (Bovens & Zouridis, 2002). Institutional responses to this accountability gap include transparency mandates, human-in-the-loop requirements, participatory design approaches, and

algorithmic impact assessments (Nwambuko et al., 2025). Therefore, effective procedural justice requires not only individual rights of appeal but also institutional mechanisms that assign clear responsibility for system design, deployment, and monitoring.

## Case Studies On Algorithmic Administrative Failures

### Case Selection and Comparative Methodology

The three case studies examined in this section were selected using a structured focused comparison method designed to maximize analytical control while ensuring empirical grounding. The selection criteria maintained the jurisdictional and legal-tradition diversity; functional equivalence and crises governance analysis and lastly empirical documentation.

For instance, Australia represents a Westminster common law system with a strong ombudsman tradition and recent Royal Commission scrutiny of algorithmic welfare administration. California represents a US federal-state administrative system operating under the APA and *Mathews v. Eldridge* due process jurisprudence. While, France represents an EU civil law system subject to the GDPR, the *Code de justice administrative*, and the jurisprudence of the CJEU and ECtHR. This diversity enables examination of whether procedural failures are endemic to algorithmic governance across legal systems or contingent on specific institutional arrangements.

Additionally, all three cases involve high-volume welfare or social insurance administration where algorithmic systems were deployed to process claims, detect fraud, or verify identity under conditions of institutional stress. The Robodebt system processed ordinary welfare compliance through income averaging but intensified during crisis periods. The California's EDD deployed facial recognition during the COVID-19 unemployment surge. Lastly, France's CPAM expanded algorithmic fraud detection during healthcare system strain. This functional equivalence ensures that comparisons are analytically productive rather than merely descriptive.

Conclusively, each case is supported by extensive official documentation. The Australian Royal Commission into the Robodebt Scheme provided comprehensive findings on legal and administrative failures. The California State Auditor's Report 2020-628.2 (2021) documented EDD system deficiencies. The CJEU's *SCHUFA* judgment on the other hand, established binding EU-level precedent on automated scoring in *OQ v. Land Hessen (Case C-634/21, 2023)*. This documentation enables doctrinal analysis to remain grounded in verified and not speculative administrative practice.

## Case Studies

To illustrate the practical implications of algorithmic governance, this section examines three case studies involving automated decision systems in public administration.

### Case Study 1: Robodebt Welfare Algorithm

One of the most prominent examples of algorithmic administrative failure occurred in Australia through the welfare compliance program commonly known as Robodebt.

The Robodebt system relied on an automated income-averaging algorithm to identify alleged overpayments of social welfare benefits. The system compared annual income data from tax authorities with fortnightly welfare payment records and assumed that discrepancies indicated potential overpayments (Ball & Hannah, 2025; C. Terry, 2023).

However, the algorithm relied on statistical averaging rather than on actual income records, resulting in a large number of incorrect debt notices. The system also reversed the traditional burden of proof, requiring individuals to demonstrate that the alleged debt was incorrect rather than requiring the government to establish the claim's validity.

These procedural flaws led to significant administrative injustice, particularly for vulnerable welfare recipients who lacked access to the documentation needed to challenge automated debt notices. Following extensive public controversy and litigation, the program was ultimately abandoned and the government agreed to repay approximately \$1.8 billion in unlawful debts (C. Terry, 2023).

From an administrative law perspective, the Robodebt system failed to satisfy core procedural requirements, including: adequate reason-giving, as individuals received debt notices without clear explanations of how debts were calculated; and procedural fairness, due to the absence of meaningful human review mechanisms.

### Case Study 2: California EDD Pandemic Algorithms

During the COVID-19 pandemic, the EDD deployed automated identity verification tools to process the unprecedented volume of unemployment claims.

One of the most controversial aspects of this system was the use of facial recognition technology from the identity verification platform ID.me (EDD, 2021). The system required applicants to verify their identity through biometric facial recognition before accessing unemployment benefits. While intended to prevent fraud, the technology generated significant problems (A. O'Leary, 2025; Spadafora, 2023).

Research has shown that facial recognition systems often perform less accurately for women, older adults, and people with darker skin tones, raising concerns about algorithmic bias. In addition, many applicants were unable to complete the verification process due to technological barriers, effectively preventing them from accessing essential economic assistance. From an administrative law perspective, the EDD system raises questions regarding procedural due process, particularly when evaluated through the balancing framework established in *Mathews v. Eldridge*.

Applying the Mathews test suggests that: the private interest at stake (access to unemployment benefits) was extremely significant; the risk of erroneous deprivation due to biometric errors was substantial; and alternative procedural safeguards, such as manual verification processes, could have reduced these risks.

### Case Study 3: French CPAM Healthcare Algorithms

In France, healthcare administration agencies such as the CPAM have adopted AI systems designed to detect potential fraud in prescription practices. These systems analyze large datasets of medical prescriptions to identify patterns that may indicate irregularities (Piccioli, 2024). While algorithmic detection tools can enhance regulatory efficiency, they also raise important legal concerns.

Under the General Data Protection Regulation, individuals have specific protections against decisions based solely on automated processing. Article 22 of the GDPR restricts fully automated decisions that produce legal or similarly significant effects on individuals.

Recent jurisprudence of the Court of Justice of the European Union, particularly the case of *SCHUFA Holding AG v. Data Protection Authority*.<sup>1</sup> In that case, the Court of Justice of the European Union ruled on automated individual decision-making under Article 22(1) of the General Data Protection Regulation (GDPR) (Zammit, 2023). The case, brought before the Verwaltungsgericht Wiesbaden, concerned the establishment of a probability value (scoring) by a credit information agency, SCHUFA Holding, regarding a person's ability to meet future payment commitments, and its use by third parties in contractual relationships, ultimately leading to the court's interpretation of what constitutes automated individual decision-making under the GDPR. The main issue is whether the automated establishment of a probability value (scoring) by a credit information agency falls under the definition of 'automated individual decision-making' in the GDPR. The scoring relates to a person's ability to meet future payment commitments. The Court's judgment specifies that if a third party relies heavily on this probability value to establish, implement, or terminate a contractual relationship, it constitutes automated individual decision-making. Clarifying the scope and application of Article 22(1) of the GDPR in the context of credit scoring and its impact on contractual relationships (DPcuria, 2023). The case

<sup>1</sup> OJ C, C/2024/913, 29.1.2024, ELI: <http://data.europa.eu/eli/C/2024/913/oj>

reinforces the principle that algorithmic assessments influencing administrative decisions must be subject to meaningful oversight and explanation.

In the context of healthcare fraud detection systems, this jurisprudence suggests that public authorities must ensure that algorithmic risk scores do not serve as *de facto* automated decisions without adequate human review.

### **Citizen Lived Experiences and Patterns of Algorithmic Interaction**

Beyond doctrinal failures, the case studies reveal distinctive patterns in how citizens experience algorithmic administration during crises. Information Systems research on digital government has increasingly emphasized that technology use is embedded in social practices, citizens do not merely receive administrative decisions but actively navigate, interpret, and resist technological systems (Carter et al., 2024; Lobonț et al., 2026; Meijer & Bekkers, 2015). Crisis conditions fundamentally alter these navigation patterns.

**Information Asymmetry and Cognitive Burden.** In all three jurisdictions, affected individuals reported profound difficulty understanding why adverse decisions were made. Robodebt recipients received debt notices referencing "income averaging" without explanation of how annual tax data was statistically disaggregated into fortnightly estimates (Ball & Hannah, 2025; C. Terry, 2023). California EDD applicants encountered facial-recognition "failures" without clarity on whether the errors stemmed from technical malfunctions, data-quality issues, or identity-fraud flags (A. O'Leary, 2025). French healthcare providers flagged by CPAM algorithms lacked meaningful information about which prescription patterns triggered suspicion (Piccioli, 2024). This opacity creates what we term "algorithmic cognitive burden": the mental and emotional labor required to contest decisions when decision logic remains inaccessible (Breibach, 2024; Yeung, 2018).

**Technological Exclusion and Digital Divides.** Crisis algorithmic systems assumed citizen capabilities, digital literacy, biometric accessibility, and documentation availability, which were unevenly distributed. California's ID.me facial recognition particularly disadvantages older adults, individuals with darker skin tones (due to documented algorithmic bias in facial recognition systems), and those lacking smartphones or reliable internet (Spadafora, 2023)(Spadafora, 2023). This exclusion occurred precisely when economic vulnerability was highest, thereby compounding disadvantage through technologically mediated administrative exclusion (Burlea-Schiopoiu et al., 2023).

**Temporal Compression and Procedural Stress.** Crisis governance compressed administrative timelines, thereby amplifying citizen distress. Robodebt demanded rapid response to debt notices with limited evidentiary resources. California EDD verification backlogs left applicants without income for weeks during pandemic lockdowns. These temporal pressures transformed administrative processes from deliberative interactions into high-stakes survival navigation, where procedural failures had immediate material consequences (Eom & Lee, 2022).

**Trust Erosion and Institutional Legitimacy.** Perhaps most significantly, algorithmic failures during crises generated durable institutional distrust. Australian welfare recipients described Robodebt as betrayal by a "digital debt machine" that treated them as statistical probabilities rather than citizens (C. Terry, 2023). This experience illustrates how crisis-deployed algorithmic systems can damage the relational foundation of administrative legitimacy, the belief that state power is exercised fairly and accountably (Adams & Greene, 2023; Meijer et al., 2021).

### **Analysis On Procedural Law In The Algorithmic State**

The increasing use of algorithmic decision-making systems in public administration raises fundamental challenges for procedural administrative law. Traditional administrative procedures were designed for decision-making processes involving identifiable human officials applying statutory criteria to specific factual circumstances. Algorithmic governance, however, introduces a different epistemological structure in which

decisions emerge from computational models trained on large datasets rather than explicit rule-based reasoning.

This transformation raises profound questions about how core procedural safeguards, such as reason-giving, notice, and judicial review, can operate in environments where decision-making logic is embedded in complex statistical systems. The following analysis examines these challenges and explores potential legal adaptations that may preserve administrative accountability in the algorithmic state.

### **The Reason-Giving Problem**

One of the most fundamental principles of administrative law is the duty of public authorities to provide reasons for their decisions. Reason-giving serves several critical functions: it enables affected individuals to understand the basis of decisions, facilitates meaningful appeals, and allows courts to review administrative reasoning (Borgesano et al., 2025; Gans-Combe, 2022; Mashaw, 1983).

In traditional administrative decision-making, reasons are typically traceable to statutory criteria or regulatory standards. For example, a welfare authority may deny benefits because an applicant's income exceeds a statutory threshold or because eligibility requirements are not satisfied.

Algorithmic systems, however, frequently rely on pattern recognition rather than rule-based reasoning (Sharma & Arumugam, 2024). Machine-learning models identify statistical correlations between input variables and predicted outcomes without necessarily generating human-interpretable rationales. As a result, algorithmic outputs may not easily translate into the type of explanations required by administrative law.

This phenomenon has been described by scholars such as Frank Pasquale as the emergence of "black box" decision-making, where the internal logic of computational systems remains opaque to both decision-makers and affected individuals (Pasquale, 2015).

The challenge is therefore not merely technological but normative: what constitutes a legally adequate explanation for an algorithmic decision? One potential solution is the use of counterfactual explanations, which describe how changes in input variables would have altered the outcome of a decision. Rather than explaining the full internal structure of a machine-learning model, counterfactual explanations provide actionable information to affected individuals. For example, instead of stating that an algorithm denied a loan due to complex statistical correlations, a counterfactual explanation might state that the decision would have been different if the applicant's income had been \$5,000 higher or if their debt ratio had been lower.

Research by Sandra Wachter, Brent Mittelstadt, and Chris Russell suggests that counterfactual explanations may satisfy certain transparency requirements while preserving the technical integrity of machine-learning models (Wachter, Mittelstadt, & Russell, 2017).

However, whether such explanations meet the legal standard of reason-giving remains contested. Administrative law traditionally requires not only descriptive explanations but also normative justification grounded in statutory authority.

Accordingly, courts may ultimately require hybrid models that combine technical explanations with legally interpretable reasoning frameworks.

### **The Problem of Notice**

Procedural fairness also requires that individuals receive adequate notice of adverse administrative decisions (Osadchy, 2023). Notice allows individuals to understand the allegations against them and prepare meaningful responses or appeals.

In conventional administrative processes, notice typically includes: the specific legal rule or policy applied, the factual findings supporting the decision, and the evidence relied upon by the authority.

Algorithmic decision-making complicates this requirement because many systems operate through complex data profiles and predictive models (Ashen et al., 2019; Hung & Yen, 2023). Individuals may be informed only that they have been flagged by a fraud detection algorithm or risk assessment system without receiving detailed explanations of the underlying criteria.

This creates a form of informational asymmetry in which administrative authorities possess detailed algorithmic insights while affected individuals receive only generalized statements that they “fit a pattern” associated with risk or non-compliance.

Such opacity undermines individuals' ability to challenge decisions effectively (Murodova, 2025). Without understanding the data inputs or decision logic underlying algorithmic outputs, individuals cannot meaningfully contest erroneous determinations.

European data protection law provides one potential framework for addressing this problem. The GDPR requires data controllers to provide “meaningful information about the logic involved” in automated decision-making processes under Articles 13 and 14.

Although the precise meaning of “meaningful information” remains debated, many scholars interpret the provision as requiring disclosures regarding: the categories of data used in automated decisions, the purpose of algorithmic processing, and the potential consequences for individuals. These transparency requirements may serve as an emerging standard for algorithmic notice obligations in administrative governance.

### **The Problem of Review**

One fundamental principle of administrative law is the duty to provide reasons for decisions, enabling affected individuals to understand outcomes, appeal effectively, and facilitating judicial review (Borgesano et al., 2025; Gans-Combe, 2022; Mashaw, 1983). In traditional decision-making, reasons trace to statutory criteria or regulatory standards. Algorithmic systems, however, rely on pattern recognition rather than rule-based reasoning, generating statistical correlations without human-interpretable rationales (Pasquale, 2015; Sharma & Arumugam, 2024). This “black box” phenomenon creates a normative challenge: what constitutes a legally adequate explanation? Counterfactual explanations, which describe how changes to the input would alter outcomes, offer one potential solution, providing actionable information without exposing the full model's complexity (Wachter, Mittelstadt, & Russell, 2017). For example, stating that a decision would differ if income were \$5,000 higher. However, whether counterfactuals satisfy legal reason-giving standards remains contested, as administrative law requires normative justification grounded in statutory authority rather than merely descriptive explanations. Courts may ultimately require hybrid models combining technical explanations with legally interpretable reasoning frameworks.

### **Crisis Exceptionalism**

Procedural challenges intensify during crises, when governments invoke emergency powers to justify administrative shortcuts. Courts have historically deferred to emergency actions, exemplified by *Jacobson v. Massachusetts*, 197 U.S. 11 (1905), which upheld compulsory vaccination as a legitimate exercise of police power while affirming that governmental authority remains subject to constitutional limits even during public health emergencies. This foundational precedent established that emergency measures require judicial balancing of collective welfare against individual rights.

Contemporary crisis governance increasingly relies on algorithmic infrastructures capable of processing large volumes of claims and detecting fraud in real time. During COVID-19, governments deployed automated systems for unemployment benefits, healthcare eligibility, and financial assistance, dramatically accelerating administrative throughput (Amankwah-Amoah et al., 2021; Burlea-Schiopoiu et al., 2023). However, these systems often prioritized speed and efficiency over accuracy and procedural fairness, particularly when deployed rapidly without adequate testing or oversight.

While emergencies may justify temporary procedural flexibility, they do not eliminate the need for administrative accountability. The concept of crisis exceptionalism requires careful reconsideration in the algorithmic era: exceptional measures risk becoming normalized without adequate consideration of their compatibility with foundational principles of procedural fairness. Emergency administrative powers must remain subject to robust post-hoc oversight, including retrospective algorithmic audits, judicial review of contested decisions, and mandatory public reporting on system performance metrics (Monteiro & Iunes Monteiro, 2025; Raji et al., 2020; Widłak, 2025). These safeguards ensure that crisis governance does not permanently erode procedural protections within administrative law.

### **The Everyday Crises Interface: When Emergency Systems Become Routine**

A distinctive feature of crisis-driven digital transformation is the muddying of emergency and routine administration. The COVID-19 pandemic accelerated the deployment of algorithmic systems initially justified as temporary emergency measures, yet these infrastructures have proven remarkably persistent (Burlea-Schiopoiu et al., 2023; Eom & Lee, 2022). This persistence creates novel governance challenges at the intersection of crisis technologies and everyday public services.

The cases examined illustrate this "everyday crisis" dynamic. Australia's Robodebt operated from 2016-2020, processing ordinary welfare compliance through algorithmic income-averaging long before pandemic conditions, yet its expansion and controversies intensified during crisis periods when welfare rolls grew dramatically. California's EDD facial verification, deployed for the pandemic unemployment surge, established a biometric infrastructure now available for ongoing benefit administration. France's CPAM fraud detection similarly transitioned from emergency response to permanent regulatory architecture.

This trajectory reveals a critical insight for Information Systems research: crisis digitalization creates "ratchet effects" whereby emergency technological capacities become embedded in standard administrative procedures. The exceptional procedural shortcuts justified by urgency, reduced human oversight, automated decision finality, limited transparency, and risk normalization as default operating procedures. For citizens, this means that crisis-era patterns of algorithmic interaction (opacity, limited recourse, technological mediation) increasingly define routine encounters with the state.

From an administrative justice perspective, this "everyday crisis" condition demands a reconceptualization of procedural safeguards. Traditional frameworks distinguish sharply between emergency and ordinary governance, permitting procedural flexibility during crises with the expectation of post-emergency restoration (Monteiro & Iunes Monteiro, 2025). However, when algorithmic systems deployed under emergency authority become permanent, temporary exceptionalism risks permanent procedural erosion. The techno-legal standards proposed in this article, human-in-the-loop triggers, counterfactual explanations, and algorithmic auditing, are designed precisely to prevent this erosion by embedding procedural protections within technical architectures from the initial deployment, ensuring that the efficiency gains of crisis digitalization do not come at a permanent cost to administrative legitimacy.

### **Empirical Patterns in Algorithmic Administration**

Outside the doctrinal analysis of individual cases, emerging empirical research reveals systematic patterns on how algorithmic administrative systems perform in practice. Cross-jurisdictional evidence indicates that automated welfare systems frequently exhibit error rates significantly higher than human-administered processes, particularly where systems rely on probabilistic matching or biometric verification.

In Australia, for example, the Royal Commission into the Robodebt Scheme (2023) documented that 433,000 individuals received algorithmically generated debt notices, with total debts written off reaching AUD 1.751 billion. Clarke, Michael and Abbas (2024) characterize this as a socio-technical systems failure in which error rates were grossly flawed from the outset. Yet sustained by institutional resistance to transparency and a culture that treated welfare recipients as statistical probabilities rather than rights-bearing citizens.

Similarly, the California State Auditor (Howle, 2021) found that the EDD could not automatically process half of all pandemic claims, with less than 1% of workers reaching a human agent during the surge. The EDD (2022), later confirmed approximately \$20 billion in likely fraudulent payments alongside \$8.9 billion in benefits paid to claimants who had not verified eligibility. This, demonstrates that fraud-detection algorithms generated both false negatives and false positives at a massive scale, compounding financial distress during a public health emergency.

Empirical studies of public sector decision-maker behavior further illuminate the reasons for such errors. A systematic review of 13 experimental and observational studies on automated decision support systems in public sector contexts found that public officials exhibit reduced skepticism toward automated outputs compared to human-prepared materials (Danelid, 2024). In one experimental study, auditors spent significantly less time reviewing automated counts ( $M = 497.46$  seconds) than human counts ( $M = 705.72$  seconds), resulting in higher failure rates in detecting embedded errors (44.4% vs. 21.9%). The review concluded that even low levels of automation bias, when combined with high algorithmic error rates, produce significant detrimental effects on citizens who cannot opt out of the service.

Comparable patterns emerge in the United Kingdom. Murray, Andrew (2024) revealed how the Department for Work and Pensions (DWP) algorithmically flagged welfare claims for suspension before investigation. This generated sustained pressure from civil society organizations after Freedom of Information requests revealed high risks of discriminatory outcomes. The DWP subsequently modified its policy to investigate flagged cases without automatic suspension. Sustaining an admission that the original algorithmic procedure produced systematic error and distributive harm.

Taken together, these empirical findings reinforce the article's central argument that, procedural safeguards must be embedded in technical frameworks because post-hoc remedies are systematically inadequate in algorithmic governance. Error rates in automated welfare systems are not merely theoretical risks but documented realities, and the cognitive and institutional biases of public officials toward automation further amplify citizen vulnerability. Wang, Xukang et al., (2024) emphasize that detecting such harms requires systematic data analysis and impact assessment. An unintentional algorithmic discrimination often operates without explicit discriminatory intent yet produces disproportionately adverse effects on protected groups. Hence, this article proposed a techno-legal standard precisely to deter and at the same time, remedy these empirical patterns before they produce large-scale administrative injustice.

### Proposal For Algorithmic Administrative Justice

The analysis in the preceding sections demonstrates that the increasing use of automated decision systems in public administration creates significant tensions with established principles of administrative law. Procedural safeguards such as fair hearing, reason-giving, notice, and judicial review were designed for human decision-makers applying explicit legal rules. Algorithmic governance, by contrast, often relies on complex computational models that operate through statistical inference rather than transparent legal reasoning.

The objective is not merely to regulate algorithmic decision-making externally, but to ensure that legal safeguards are incorporated directly into system architecture, data governance, and institutional oversight mechanisms, as shown in Figure 2 below.

### Techno-Legal Standards for Procedural Safeguards

Algorithmic administrative justice requires a structured approach to translating procedural law into operational design requirements. Table 2 illustrates how key administrative law principles may be operationalized through techno-legal standards.

Table 2. Framework for Algorithmic Administrative Justice

| Legal | Techno-Legal | Implementation | Citizen Experience Outcome |
|-------|--------------|----------------|----------------------------|
|-------|--------------|----------------|----------------------------|

| Principle     | Standard                                   |                                                         |                                                                                                                                     |
|---------------|--------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Fair hearing  | Human-in-the-loop for adverse decisions    | System architecture requiring a human review trigger    | Restoration of voice: Citizens can present their circumstances to an identifiable official rather than confronting an opaque system |
| Reason-giving | Counterfactual explanations                | XAI techniques generating legally interpretable reasons | Actionable understanding: Citizen receives information about what factors could change the decision outcome                         |
| Notice        | Data disclosure and profiling transparency | User-facing dashboards showing decision factors         | Informational agency: Citizens can view and potentially correct data influencing decisions                                          |
| Review        | Algorithmic auditing and error detection   | Continuous monitoring systems for AAEs                  | Procedural security: Systematic identification and correction of errors affecting citizen rights                                    |

Source: Primary Analysis, 2026

This framework reflects the broader regulatory shift toward “law by design”, where legal requirements are embedded within technological infrastructures rather than applied solely through external enforcement mechanisms (Yeung, 2018).

#### i. Fair Hearing: Human-in-the-Loop Architecture

The right to a fair hearing is a foundational principle of administrative justice. Traditionally, this principle ensures that individuals affected by administrative decisions have the opportunity to present their case and challenge adverse determinations.

Algorithmic decision systems complicate this principle because decisions may be generated automatically without meaningful human intervention. Fully automated decisions risk creating what scholars describe as “administrative automation bias,” where officials rely uncritically on algorithmic outputs.

To address this challenge, algorithmic governance systems should incorporate human-in-the-loop mechanisms for decisions that produce significant legal or economic consequences (Ghosh et al., 2025; Hung & Yen, 2023). Under such systems, automated tools may assist decision-making but cannot finalize adverse outcomes without human review.

This approach aligns with safeguards contained in the GDPR, which restricts decisions based solely on automated processing when such decisions produce legal effects on individuals (Goodman & Flaxman, 2017).

In practice, human-in-the-loop architecture may be implemented through system triggers that automatically route high-risk decisions to trained administrative officials for verification before enforcement.

#### ii. Reason-Giving: Counterfactual Explanations

As discussed in this paper above, algorithmic systems often struggle to produce explanations that satisfy legal standards of reason-giving. Machine-learning models may rely on statistical correlations that are difficult to translate into normative legal reasoning.

One potential solution lies in the use of counterfactual explanations, which provide information about how changes in relevant variables would alter decision outcomes. Research by Sandra Wachter and colleagues suggests that counterfactual explanations can provide individuals with actionable insights while preserving the proprietary or technical complexity of algorithmic models (Wachter, Mittelstadt, & Russell, 2017). They examined the EU GDPR’s “right to explanation” for automated decisions and argue that fully opening the

algorithmic “black box” is both legally and technically difficult, while some explanations may not meaningfully help affected individuals. It proposes that explanations need not reveal how a complex system works internally; instead, they should be tailored to the specific actions individuals need to take. They identified three aims for explanations under the GDPR. These help individuals understand why a decision was reached, provide grounds to contest an undesired outcome, and show what changes would be needed to achieve a more desirable result in the future. To support these aims without disclosing internal logic, they recommended unconditional counterfactual explanations that describe the smallest change to outcomes/world conditions needed to obtain a desired result, grounded in the decision model (Wachter, Mittelstadt, & Russell, 2017).

For administrative law purposes, counterfactual explanations could serve as operationalized tools for reason-giving, helping individuals understand the decisive factors influencing algorithmic outcomes.

However, such explanations must be carefully structured to reflect legally relevant criteria rather than purely statistical correlations. Administrative agencies should therefore develop explanation frameworks that translate algorithmic outputs into legally intelligible decision rationales.

### **iii. Notice: Profiling Transparency and Data Disclosure**

Effective procedural notice requires that individuals understand the information used in administrative decision-making processes. Algorithmic systems frequently rely on large datasets and predictive profiling techniques that remain largely invisible to affected individuals (Butler, 2025; Ji, 2016).

To address this information asymmetry, administrative authorities should adopt profiling transparency mechanisms, including user-facing dashboards that display key factors influencing algorithmic decisions.

Such systems could provide individuals with information regarding: categories of data used in decision-making, risk indicators associated with administrative profiling, and historical decision outcomes affecting similar cases.

These disclosure mechanisms would operationalize the GDPR's transparency requirements (J Zuiderveen Borgesius et al., 2017), particularly the requirement to provide meaningful information about the logic underlying automated decision-making as contained in Article 12 (GDPR, n.d.).

By enabling individuals to view the data profiles affecting administrative decisions, profiling transparency may restore elements of procedural fairness that are often lost in automated governance systems.

### **iv. Review: Algorithmic Auditing and Error Detection**

Judicial review and administrative oversight remain essential safeguards against arbitrary decision-making. However, conventional review mechanisms may struggle to evaluate complex algorithmic systems.

To address this limitation, scholars increasingly advocate the use of algorithmic auditing, which involves systematic evaluation of algorithmic systems to assess accuracy, fairness, and compliance with legal standards (Cornacchia et al., 2023; Koshiyama et al., 2024; C. O’Leary & Stewart, 2007; Raji et al., 2020).

The concept of accountable algorithmic auditing has been extensively developed (Koshiyama et al., 2024; Raji et al., 2020). Algorithmic auditing is the methodical evaluation of AI/ML algorithms used in real-world systems, with the goals of increasing transparency (by reducing “black box” uncertainty), detecting bias that can lead to unfair or discriminatory outcomes, and strengthening accountability for the results of automated decision-making. These systems should incorporate verifiable accountability mechanisms that enable external evaluation.

Algorithmic auditing may include: evaluation of training datasets for bias, testing system outputs for discriminatory effects, monitoring error rates and false positives, and maintaining audit logs to document

algorithmic decisions. In administrative governance, these mechanisms can function as continuous monitoring tools for AAEs.

Courts reviewing algorithmic decisions may also rely on independent algorithmic audit reports as evidentiary material in judicial review proceedings, thereby bridging the gap between technical systems and legal accountability.

### **Institutional Recommendations**

Although techno-legal standards provide operational safeguards within algorithmic systems, broader institutional reforms are also necessary to ensure effective governance of automated decision-making in public administration.

Three institutional mechanisms are particularly important. They are:

#### **i. Specialized Administrative Tribunals**

One potential reform is the creation of specialized administrative tribunals for algorithmic disputes. Traditional courts may lack the technical expertise required to evaluate complex machine-learning systems used in administrative decision-making.

Specialized tribunals could combine legal expertise with technical competence, enabling more effective adjudication of algorithmic accountability disputes (Widlak, 2025). Such tribunals could review algorithmic administrative errors, assess compliance with transparency requirements, and evaluate the fairness of automated decision systems.

This approach parallels developments in other regulatory fields where specialized adjudicatory bodies address complex technical issues.

#### **ii. Mandatory Algorithmic Impact Assessments**

A second reform involves the introduction of mandatory Algorithmic Impact Assessments (AIAs) prior to deploying automated decision systems in public administration.

AIAs function as governance tools designed to evaluate the potential social and legal consequences of algorithmic systems before they are implemented (Metcalf et al., 2021; Monteiro & Iunes Monteiro, 2025). Such assessments typically analyze issues including: potential risks of algorithmic bias, data protection implications, impacts on vulnerable populations, and procedural fairness concerns.

Algorithmic impact assessments have already been adopted in certain jurisdictions, including Canada's federal government, which requires AIAs for automated decision systems used in public administration.

In crisis contexts, such as pandemic welfare distribution, AIAs could provide essential safeguards by ensuring that algorithmic tools are evaluated before large-scale deployment under emergency conditions.



Figure 2: Model for Implementing Algorithmic Administrative Justice

Source: Primary Analysis, 2026

## Procedural Justice in Interdisciplinary Context

Procedural justice is of wide application. It can be applied to data protection, anti-discriminatory bias, explainable AI, and even human rights impact assessment.

### i. Procedural Justice and Data Protection

The GDPR's procedural requirements especially, the right to meaningful information about automated decision logic (Articles 13–15) and the right to human intervention (Article 22), function as operationalized procedural safeguards. However, as Wachter, Mittelstadt, and Floridi (2017) demonstrate that the GDPR does not create a broad "right to explanation" of specific decisions. Rather, it mandates a forward-looking "right to be informed" about system logic. Kaminski (2019) clarifies that while the GDPR establishes a broader algorithmic accountability regime than its predecessor, its provisions remain focused on data-subject autonomy rather than systemic administrative fairness. Data protection law alone is therefore insufficient because its focus is on individual data subjects rather than systemic administrative patterns. Also, its risk-based logic may not capture the full scope of procedural unfairness in welfare administration (Mantelero, 2022). The techno-legal standards proposed in this article particularly profiling transparency and algorithmic auditing can translate data protection principles into administrative law framework.

### ii. Procedural Justice and Anti-Discrimination

Procedural fairness requires not merely that decisions be explained, but that they be free from discriminatory bias. Bök (2025) demonstrates that Article 14 of the ECHR applies when algorithmic administrative decisions fall within the ambit of a substantive Convention right. The European Labour Authority (ELA, 2023) handbook documents how EU non-discrimination law captures both direct and indirect algorithmic discrimination. This includes proxy discrimination and feedback loops in public sector risk assessment. The Council of Europe (2026) added that states must exercise caution in identifying, assessing, and mitigating risks of discrimination arising from automated systems in public administration. Counterfactual explanations and

algorithmic auditing, as proposed in Section 5.1, serve dual functions. They enhance procedural transparency while simultaneously enabling detection of disparate impact discrimination.

### iii. Procedural Justice and Explainable AI

Although XAI techniques such as SHAP, LIME, and counterfactual explanations provide technical transparency, administrative law requires legally interpretable reasoning grounded in statutory criteria rather than merely statistical correlations (Karl, 2024; Mohamed et al., 2025; Wachter et al., 2018). Wachter, Mittelstadt, and Russell (2018) propose counterfactual explanations as a mechanism that satisfies GDPR transparency requirements without exposing internal-proprietary model. However, as this article argues, such technical explanations must be carefully structured to reflect legally relevant criteria. For example, statutory income thresholds or eligibility conditions, instead of purely statistical correlations. Courts may ultimately require hybrid models that combine technical explanations with legally interpretable reasoning frameworks.

### iv. Procedural Justice and Human Rights Impact Assessment

Mantelero (2022) proposes a Human Rights, Ethical and Social Impact Assessment (HRESIA) model that extends beyond data protection to encompass the full range of rights and freedoms affected by AI systems. Integrating HRESIA principles into AIAs would ensure that procedural justice is evaluated not only at the individual decision level but at the systemic design stage. This will in turn address questions of distributive justice, social exclusion, and institutional legitimacy from the outset.

## CONCLUSION

The growing reliance on algorithmic decision-making systems in public administration represents one of the most significant transformations in the history of administrative governance. Automated decision systems are increasingly used to determine eligibility for welfare benefits, detect fraud, allocate public resources, and regulate complex social systems. While these technologies promise greater efficiency and administrative capacity, they also introduce profound risks to procedural fairness and institutional legitimacy.

This article has argued that the central challenge of algorithmic governance lies in the tension between statistical decision-making models and the normative structure of administrative law. Traditional procedural safeguards, such as reason-giving, adequate notice, fair hearing, and judicial review, were developed for administrative systems in which identifiable officials exercised discretionary authority within clearly articulated legal frameworks. Algorithmic systems, by contrast, frequently operate through opaque data-driven processes that resist conventional forms of legal scrutiny.

The case studies examined in this article demonstrate how automated decision systems may undermine procedural protections when deployed without appropriate safeguards. Errors in algorithmic welfare systems, biometric verification technologies, and healthcare fraud detection platforms illustrate how technological opacity, statistical reasoning, and limited oversight can produce AAEs that significantly affect individual rights.

In response to these challenges, this article proposed a framework of algorithmic administrative justice grounded in techno-legal standards. Rather than relying solely on traditional procedural rules applied after decisions are made, this framework emphasizes integrating legal safeguards directly into technological infrastructure. Through mechanisms such as human-in-the-loop decision architecture, counterfactual explanation tools, profiling transparency mechanisms, and algorithmic auditing systems, administrative law principles can be operationalized within algorithmic governance systems.

The broader implication of this analysis is that administrative law must evolve from a conception of “procedure as process” to one of “procedure as architecture.” In the digital administrative state, procedural safeguards cannot be limited to formal hearings or written justifications. Instead, procedural justice must be embedded within the design and operation of algorithmic systems themselves.

This article contributes to emerging IS scholarship on crisis-driven digital transformation in three respects. First, it demonstrates that procedural justice must be theorized as a socio-technical achievement, not merely a legal ideal, but a design requirement for legitimate algorithmic systems. Second, it reveals how crisis conditions reshape citizen-state interfaces in durable ways, creating patterns of technological mediation, information asymmetry, and exclusion that persist beyond immediate emergencies. Third, it proposes technological standards as a governance mechanism for reconciling administrative efficiency with procedural fairness in digital government contexts. By embedding legal accountability within technical infrastructure, these standards offer a pathway for ensuring that crisis-accelerated algorithmic transformation remains compatible with democratic administrative values.

This transformation has important implications for the legitimacy of digital government. Public trust in automated administrative systems depends not only on their technical efficiency but also on their ability to uphold fundamental principles of fairness, transparency, and accountability. Without such safeguards, algorithmic governance risks eroding the normative foundations of administrative legitimacy.

Finally, this study highlights several directions for future research. First, empirical investigations are needed to examine how individuals challenge algorithmic administrative decisions in practice, including the effectiveness of appeal mechanisms and judicial review procedures. Second, comparative research should examine emerging AIA regimes across jurisdictions to identify best practices for governing automated decision-making systems in public administration.

As governments continue to integrate artificial intelligence and data-driven technologies into administrative processes, the challenge for administrative law will be to ensure that technological innovation remains consistent with the enduring principles of procedural justice.

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