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**Electronic Administration and the Transformation of Public Service Theory:
Reconstructing the Classical Principles of Public Service in the Digital Age**

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Abstract :

Electronic administration is frequently presented as a technical modernisation of public service delivery. This article argues otherwise. The displacement of paper-based administrative activity by digital platforms, dematerialised procedures, and automated workflows constitutes a structural transformation of the public service, not merely an operational upgrade. That transformation puts direct pressure on the three classical principles formulated by Rolland, namely continuity, equality, and adaptability, which were designed for a territorially bound, human-administered service. Each principle survives in the digital state, but its operational meaning changes in ways that classical doctrine did not anticipate and cannot accommodate without reconstruction. Drawing on French public service theory as the doctrinal foundation, and on comparative materials from Algeria, the European Union, and the UAE, the article demonstrates that digital administration preserves the foundational objectives of public service while transforming the legal mechanisms through which those objectives are realised. It further argues that this transformation generates a set of new legal guarantees, namely digital accessibility, cybersecurity, data protection, and procedural transparency, that classical doctrine cannot derive from the three Rolland principles alone. The article concludes that a coherent legal theory of the digital public service requires recognising these guarantees as autonomous legal obligations, and that their absence constitutes not a governance deficiency but a doctrinal gap.

Keywords: electronic administration; public service theory; Rolland principles; digital public service.

Introduction

Public service has occupied a foundational position in French and francophone administrative law since the late nineteenth century. For Duguit, the concept was not merely descriptive but constitutive: the state derived its legitimacy not from sovereignty but from its obligation to organise and maintain services essential to social solidarity (Duguit, 1927, p. 61). Jeze refined this insight into a working legal category, defining the public service as an activity that the governing authorities of a given country have decided to meet through the procedure of public law (Jeze, 1925, p. 16). These formulations were products of their historical moment, an era of physical counters, paper files, and human officials, but they established a doctrinal tradition durable enough to survive the administrative transformations of the twentieth century.

Electronic administration now challenges that durability. Across Algeria, France, the European Union, and the UAE, governments have invested heavily in dematerialising administrative activity: online portals replace physical offices, digital signatures substitute for handwritten ones, and automated workflows process applications that previously required human review at each stage. The practical gains are real. But the legal implications have received less systematic attention than the technology warrants. The dominant tendency in scholarship, particularly in Arabic-language doctrine, has been to treat electronic administration as a modernisation of means, leaving the foundational theory of public service essentially intact.

This article challenges that tendency. The shift from physical to digital administration is not merely a change of channel. It alters the operational structure of the public service in ways that have direct doctrinal consequences: the nature of continuity changes when a service is accessible at all hours through a platform rather than available during office hours through a building; the content of equality changes when access depends on digital literacy and connectivity rather than physical proximity; the mechanism of adaptability changes when updating a service means reconfiguring a system rather than issuing a circular. These are not peripheral adjustments. They are transformations of the legal mechanisms through which the objectives of public service are realised, and they cannot be fully addressed through the three classical Rolland principles without doctrinal reconstruction.

The research problem this article addresses is the following: to what extent does electronic administration transform the classical legal theory of the public service, and does that transformation require the recognition of new legal guarantees that classical doctrine cannot accommodate? The methodology is doctrinal and comparative. The article draws on French public service theory as its doctrinal anchor, on Algerian administrative law as the primary positive-law context, and on EU and UAE materials as comparative reference points. It does not address algorithmic decision-making as such; that is a distinct field. Its concern is the structural question of what happens to the legal theory of the public service when the service becomes digital.

The article proceeds in two parts. The first examines the relationship between electronic administration and the structural transformation of the classical public service, beginning with the French doctrinal foundations and tracing how dematerialisation has changed both the nature of administrative activity and the relationship between the administration and the users it serves. The second reconstructs the classical principles in light of that transformation and identifies the new legal guarantees that digital administration generates but that classical doctrine cannot accommodate without development.

THE FIRST TOPIC

Electronic Administration and the Structural Transformation of the Classical Public Service

The concept of electronic administration encompasses a wide range of governmental practices, from simple digitisation of paper forms to fully integrated platforms that manage entire administrative relationships without direct human intervention at each stage. To assess its legal consequences for public service theory, it is necessary to begin with the doctrinal foundations of that theory before examining how electronic administration transforms them. The two requirements of this part address these matters in turn.

First Requirement: The Classical Theory of the Public Service

The classical theory of the public service emerged from French administrative law at the turn of the twentieth century and remains the most coherent doctrinal account of why the state provides certain services, under what legal regime those services operate, and what obligations they generate. Understanding that theory precisely is the necessary precondition for assessing

whether electronic administration merely modifies it or transforms it at a more fundamental level.

First Section: French Doctrinal Foundations

The school of Bordeaux, led by Duguit and developed by Jeze, produced the foundational account. Duguit's theory of social solidarity displaced the traditional sovereignty-based conception of the state and replaced it with a functional one: the state exists to fulfil the missions of public service that social solidarity demands (Duguit, 1927, p. 53). This was a deliberately anti-positivist move. Duguit argued that the state's legal authority derived from its performance of social functions, not from any inherent attribute of governmental power. The consequence for administrative law was significant: any activity falling within the category of public service attracted a specific legal regime, distinct from both private law and the ordinary rules of sovereignty (Vedel and Devolve, 1992, p. 703).

Jeze operationalised this insight by providing a working legal definition. For him, the decisive criterion was not the nature of the activity itself but the decision of the governing authorities to subject it to the procedures of public law (Jeze, 1925, p. 12). This voluntarist definition had the advantage of flexibility, as it could accommodate the expansion of the state into economic and social activities without requiring constant doctrinal revision. Subsequent doctrine, particularly the work of Rolland, sought to give the category more determinate content by identifying the legal principles that governed all public services regardless of their particular domain (Chapus, 2001, p. 567).

Louis Rolland's contribution was to systematise the operational requirements that any public service must satisfy. The three principles he identified, continuity, equality, and adaptability, became the foundation of what French administrative lawyers call *les lois de Rolland*. These are not statutory provisions but judicially and doctrinally derived principles with the status of general principles of law. They define what a public service must be, not merely what it must do, and they provide the legal framework within which specific rules governing particular services are evaluated.

Second Section: The Three Classical Principles and Their Operational Assumptions

The principle of continuity requires that the public service operate without interruption. In its classical formulation, this principle justified restrictions on the right to strike by public servants, the prohibition of administrative bodies

unilaterally abandoning their functions, and the obligation to maintain essential services even in cases of emergency (CE, Winkell, 1909). The operational assumption underlying continuity was physical: a service is continuous when its buildings remain open, its staff remain at their posts, and its functions are performed according to a regular schedule.

The principle of equality requires that all users of a public service be treated identically in identical situations. Derived from the broader constitutional principle of equality before the law, it prohibits arbitrary differentiation in access to services and in the conditions under which services are provided. In the classical context, equality was primarily concerned with geographic and social access: the service must be available on equal terms to all citizens regardless of their location or social status. The operational mechanism was human administration applying uniform rules to uniform categories of persons.

The principle of adaptability requires that the public service adapt to changing social needs and technological conditions. It gives the administration the right to modify the conditions under which the service is provided, even against the interests of concessionaires or agents who might prefer stability (CE, Compagnie generale francaise des tramways, 1910). Crucially, it also imposes a duty: the administration cannot refuse to modernise a service when social needs demand it. In the classical formulation, adaptability was a reactive principle in which the administration adapted in response to identified needs through deliberate regulatory or legislative decisions.

These three principles, and the operational assumptions embedded in them, were coherent for the era in which they were developed. They are not incoherent in the digital era, but their operational assumptions no longer hold. Electronic administration changes the mechanisms through which continuity, equality, and adaptability are realised, and that change has doctrinal consequences that cannot be addressed by simply applying the classical principles to a new context.

Second Requirement: The Transformation of Public Service through Electronic Administration

Electronic administration in its mature form involves more than placing existing services online. It restructures the administrative relationship itself: the user's interaction with the service, the form in which administrative decisions are generated and communicated, and the infrastructure on which the entire system depends. Two dimensions of this restructuring deserve particular doctrinal attention.

First Section: The Dematerialisation of Administrative Activity

Dematerialisation denotes the elimination of paper-based processes and physical points of service delivery in favour of digital equivalents. In Algeria, this process has been advanced through successive waves of e-government reform, including the development of online portals for civil registry, tax, and social insurance services, and the introduction of digital identity documents (e-Algerie Strategy, 2008). In France, the ordonnance of 8 December 2005 and subsequent legislation established the principle of online administrative procedures as a right for users and an obligation for the administration. The EU's digital single market framework and the eIDAS Regulation created cross-border legal infrastructure for digital administrative interaction. In the UAE, the ambitions are more sweeping: the UAE Digital Government Strategy 2025 envisions the full dematerialisation of governmental services as a national strategic objective (UAE Digital Government Strategy, 2021).

The legal significance of dematerialisation is not merely that procedures become faster or more convenient. It is that the relationship between the legal rule and the administrative act changes in character. In a paper-based system, the administrator reads the rule, exercises judgment, and produces a decision. The decision is a product of human interpretation and is traceable to a specific official who bears administrative and potentially legal responsibility for it. In a fully dematerialised system, the rule is encoded in a software architecture. The system processes inputs and generates outputs according to parameters set at the design stage. The decision retains its character as a legal act, it has legal effects and can be contested, but its production no longer involves human interpretation in the same direct sense. This change is structural, not merely procedural.

Algerian administrative law has begun to recognise this shift. The law on electronic signatures established legal equivalence between electronic and paper documents in certain administrative contexts (Loi n. 15-04, 2015), and the development of the e-Algerie digital strategy pressed forward the infrastructure of dematerialised administration. But doctrinal adaptation has lagged behind institutional practice. The question of whether and how the classical principles apply to a service whose primary operational form is digital has not been systematically addressed in Algerian administrative law scholarship.

Second Section: The Transformation of the Administrative Relationship with Users

The classical administrative relationship was dyadic and sequential: a citizen with a need approached an official with a competence, the official applied

a rule and issued a decision, and the citizen accepted or contested that decision through established channels. Electronic administration reorganises this relationship in two significant ways.

First, it renders the administrative relationship asynchronous and platform-mediated. The user interacts not with an official but with an interface. The interface presents options, collects inputs, processes data, and generates outputs, all without the continuous presence of a human administrator. This has advantages for speed and consistency. But it also means that the user's ability to obtain explanations, to present circumstances that do not fit the system's categories, and to receive a response that reflects the particularity of their situation is determined by the design of the interface rather than by the professional judgment of an official. The quality of the administrative relationship becomes, in significant part, a function of system design.

Second, electronic administration creates new forms of dependency that classical doctrine did not contemplate. Access to a digital public service requires connectivity, digital literacy, a compatible device, and sometimes a digital identity credential. Users who lack any of these elements are effectively excluded from the service, regardless of their formal legal entitlement to it. In Algeria, as in many developing economies, significant portions of the population face systematic barriers to digital access that translate directly into barriers to public services they are legally entitled to receive (OECD, 2018, p. 34). The classical principle of equality was designed to prevent intentional discrimination by officials; it was not designed to address structural exclusion generated by the infrastructure of the service itself.

THE SECOND TOPIC

Reconstructing Public Service Principles in the Digital Age

The structural transformation documented in the first part does not invalidate the classical theory of public service. Continuity, equality, and adaptability remain the foundational legal obligations of any service operating under public law. What the digital transformation does is alter the mechanisms through which those obligations are discharged and, more significantly, generate new legal obligations that the classical framework cannot derive from those three principles without doctrinal development. This part addresses both dimensions.

First Requirement: Reconstruction of the Classical Principles in the Digital Context

Each of the three Rolland principles requires reconstruction when applied to a digital public service. That reconstruction is not a departure from the classical theory but an application of its underlying logic to a new operational context. The objective of each principle remains unchanged; the legal mechanisms for achieving it must evolve.

First Section: Digital Continuity and the Equality of Access

In the digital context, continuity is no longer primarily a matter of keeping buildings open and staff at their posts. A digital public service that operates on a platform can in principle be available twenty-four hours a day, a form of continuity far exceeding anything classical doctrine envisaged. But that availability is entirely dependent on technical infrastructure: server capacity, network connectivity, cybersecurity, software maintenance, and the continued availability of third-party technical components. When any of these elements fails, the service is disrupted regardless of the legal obligations of the administering authority.

This changes the legal content of the continuity principle in a specific way: it creates an obligation of technical reliability that has no precise equivalent in classical doctrine. The administration is no longer simply required to keep its staff present and its procedures running; it is required to maintain the technical infrastructure of the service at a level of reliability sufficient to ensure genuine accessibility. A digital service that is frequently unavailable due to inadequate technical maintenance is not a continuous service in any meaningful sense, and the administration responsible for it is in breach of its public service obligations. French administrative jurisprudence has begun to develop this idea through cases involving the unavailability of online administrative portals and the consequences for users whose procedural deadlines are affected by system outages (CE, n. 418640, 2019).

The principle of equality in the digital context has a dual dimension. On one hand, it retains its classical content: the digital service must be designed and administered in a way that does not introduce arbitrary distinctions between users in identical legal situations. On the other hand, the digital context introduces a dimension of equality that the classical principle was not designed to address: equal access to a digital service is not guaranteed by formal availability alone. A service that is technically accessible but practically unusable for a significant portion of the population violates the spirit of equality even if it complies with its

letter. The EU addressed this dimension through its Web Accessibility Directive, which requires public sector bodies to make their digital services accessible to persons with disabilities (Directive 2016/2102). In Algeria, the legal framework for digital accessibility remains underdeveloped, and this constitutes a significant doctrinal gap.

Second Section: Technological Adaptability and Its New Demands

The principle of adaptability in the digital context takes on a more demanding character. Classical adaptability was reactive: the administration updated its services in response to identified needs through deliberate regulatory or administrative decisions with defined legal effects. Digital adaptability is continuous and operational: a digital service can be updated, reconfigured, or fundamentally altered through technical modifications that may not pass through any formal regulatory process. The administration's obligation to adapt becomes an obligation to manage that continuous change responsibly, to ensure that updates do not degrade service quality, that modifications to procedures are communicated to users in advance, and that changes with significant legal implications for users are subjected to appropriate legal scrutiny before implementation.

This reconstruction of adaptability has direct implications for Algerian administrative law. The legal framework for electronic procedures must incorporate requirements for change management, user notification, and impact assessment that have no equivalent in classical public service doctrine. The development of these requirements is not a matter of importing foreign legal concepts but of applying the underlying logic of adaptability to the new operational context that digital administration creates.

Second Requirement: New Legal Guarantees for the Digital Public Service

The reconstruction of the classical principles in the digital context, while necessary, is not sufficient. Electronic administration generates legal obligations that cannot be derived from continuity, equality, and adaptability alone. These obligations arise from the specific characteristics of digital service delivery and have no functional equivalent in the classical framework. Four such obligations warrant identification as autonomous legal guarantees of the digital public service.

First Section: Digital Accessibility, Data Protection, Cybersecurity, and Procedural Transparency

Digital accessibility, as distinct from the equality-based obligation discussed above, refers to the technical and design requirements that must be met

for a digital service to be genuinely usable by all intended users, including persons with disabilities and persons with limited digital literacy. It is an autonomous legal obligation in the sense that it is not simply an application of the equality principle but a set of specific technical and design requirements that the administration must satisfy as a condition of lawful operation of a digital service. In the EU context, the Web Accessibility Directive gives this obligation specific legal content (Directive 2016/2102). Equivalent provisions are needed in Algerian positive law.

Data protection is the most developed of the new legal guarantees, partly because it has received the most legislative attention. The provision of electronic public services requires the collection, processing, and storage of personal data on a scale that classical administrative law never contemplated. The legal framework governing these data flows is not merely a privacy law. It is a component of the legal regime of the digital public service, because the conditions under which the administration may collect and use data about users are part of the legal framework that defines what the service is and how it may lawfully be delivered. In Algeria, Law No. 18-07 of 2018 on the protection of personal data provides the foundational framework (Loi n. 18-07, 2018). In the EU, the General Data Protection Regulation establishes the broader principles (GDPR, 2016).

Cybersecurity is the third new guarantee. A digital public service that is not adequately protected against cyberattacks cannot discharge its continuity obligation. But cybersecurity is more than an extension of continuity; it is an independent legal obligation because cyberattacks against public services can compromise the integrity of administrative data, expose users to identity theft and fraud, and potentially affect the validity of administrative decisions made on the basis of corrupted or manipulated data. The administration's obligation to implement adequate cybersecurity measures is therefore an obligation owed to the users of the service, not merely an internal management responsibility.

Procedural transparency in the digital context means the user's ability to understand, at each stage of a digital administrative procedure, what is happening to their application, what data is being used, what decision has been made and on what basis, and how to challenge that decision. Classical administrative law guaranteed the right to reasons for adverse decisions and the right to be heard before such decisions were taken. These guarantees remain applicable in the digital context, but their implementation requires adaptation: digital procedures must be designed to generate intelligible notifications, to preserve accessible records of the procedural steps followed, and to provide the user with information sufficient to exercise their right of challenge effectively.

Second Section: Towards a Legal Framework for the Digital Public Service

The four guarantees identified above do not constitute a complete legal regime. But they indicate the direction in which the legal framework for electronic public services must develop if it is to provide users with protections equivalent to those available in the classical regime. The central doctrinal implication is this: the digital public service is not simply the classical public service delivered by electronic means. It is a qualitatively different operational form that requires a correspondingly developed legal framework.

In Algeria, the development of that framework is at an early stage. The e-government legal infrastructure addresses primarily the conditions of formal legal equivalence between digital and paper acts (Loi n. 15-04, 2015; Loi n. 18-05, 2018). It does not yet provide a coherent account of the specific legal obligations that arise from the provision of digital public services: the accessibility obligations, the data protection duties, the cybersecurity responsibilities, and the procedural transparency requirements that collectively define what it means for a digital service to be lawful.

The French and EU models offer instructive comparative reference points. The EU Digital Services Act and the Web Accessibility Directive, read alongside the GDPR, represent an attempt to build a layered legal framework in which the classical principles of good administration are supplemented by specific obligations generated by the digital context (DSA, 2022; GDPR, 2016; Directive 2016/2102). France has moved in a similar direction through the Code des relations entre le public et l'administration, which has been progressively updated to incorporate digital-specific provisions. The lesson for Algerian administrative law is not that these solutions are directly applicable, but that the doctrinal project of developing a legal theory of the digital public service is underway in comparable legal systems.

The UAE model is instructive for a different reason. The UAE has invested heavily in digital government infrastructure and has achieved some of the highest rates of digital service adoption in the world (UAE Digital Government Strategy, 2021). But the pace of digital transformation has in some respects outrun the development of the corresponding legal framework. The Federal Decree-Law on Personal Data Protection represents a significant step (UAE Federal Decree-Law No. 45, 2021), yet the obligations of digital accessibility, procedural transparency in digital workflows, and the legal framework for cybersecurity responsibility in the context of public services remain less fully articulated than the scale of the UAE's digital infrastructure might suggest. This is the governance sequencing

problem in its clearest form: digital capacity can advance faster than the legal framework that makes its exercise legitimate.

Conclusion

The argument advanced in this article can be stated concisely. Electronic administration is not merely a technical modernisation of public service delivery. It constitutes a structural transformation of the public service that alters the operational mechanisms through which the classical Rolland principles are discharged and generates new legal obligations that those principles cannot accommodate without doctrinal development. Continuity, equality, and adaptability survive the digital transition, but their legal content changes when the service is delivered through platforms rather than offices.

The four new legal guarantees identified in the second part, namely digital accessibility, data protection, cybersecurity, and procedural transparency, are the legal obligations that arise necessarily from the specific characteristics of digital service delivery when those characteristics are examined through the lens of public service doctrine. Their absence from a legal system's positive law does not make them aspirational; it makes them a doctrinal gap to be filled.

For Algerian administrative law, the practical implication is that the current legal framework for electronic administration requires systematic development to incorporate these guarantees as specific legal obligations. The development of a coherent legal theory of the digital public service in Algeria is not a luxury; it is a condition of the legitimacy of a rapidly expanding digital administrative apparatus.

The broader theoretical implication is that the theory of public service, developed in France and received into the legal traditions of francophone administrative law, retains its vitality and analytical power in the digital age, but only if it is prepared to evolve. The school of Bordeaux provided the conceptual architecture; the task of the current generation of administrative law scholars is to build the digital extension that architecture now requires.

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