UK AI Governance at a Crossroads: Charting the Path Ahead

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Abstract: Governance of Artificial Intelligence (AI) in the UK remains in its formative stages, guided by the policy objective of a "proportionate and pro-innovation regulatory framework" as set out in the White Paper (DSIT, 2023). Consistent with this framing, the UK has adopted a cross-sectoral, principles-based approach that seeks to balance regulatory flexibility with innovation while addressing AI-related risks. Rather than enacting comprehensive AI-specific legislation, the government relies on sectoral regulators to implement overarching principles - safety, transparency, fairness, accountability and contestability - through existing legal and institutional frameworks (DSIT, 2023).This trajectory is reflected in key initiatives such as the National AI Strategy (DSIT, 2022a), the establishment of the AI Safety Institute, and the AI Opportunities Action Plan (DSIT, 2025), collectively signalling a decentralised and innovation-friendly governance model. Nevertheless, whether this regulator-led approach should be maintained or replaced by a more uniform, horizontal legislative framework remains an increasingly contested question.To address this issue, this paper examines how AI is currently regulated in three sectors - healthcare, education and legal services - and evaluates the extent to which cross-sectoral principles are being operationalised consistently and effectively. It contrasts these practices with the EU's horizontal framework under the EU AI Act (European Parliament and Council, 2024). The analysis identifies persistent challenges, including regulatory fragmentation, inconsistent application of principles and uneven enforcement capacities. It concludes that the UK model's long-term effectiveness depends on stronger central coordination, proposing minimum statutory duties for regulators, a lead coordinating authority and clearer accountability pathways across sectors.

Keywords: Artificial Intelligence, governance, UK, EU.

1. INTRODUCTION

The governance of Artificial Intelligence (AI) in the United Kingdom (UK) remains in a formative and fluid stage. Guided by the ambition of creating a "proportionate and pro-innovation regulatory framework" (DSIT,2023), the UK government has embraced a cross-sectoral, principles-based approach that seeks to balance flexibility with the promotion of innovation while mitigating emerging risks such as bias, discrimination, opacity and threats to privacy, security, human wellbeing or autonomy. Rather than pursuing a comprehensive horizontal legislative regime, current UK policy endorses the sectoral enforcement of overarching principles (i.e., safety, transparency, fairness, accountability and contestability) by existing regulators. This commitment has been reinforced through recent policy initiatives, including the publication of the AI Opportunities Action Plan (DSIT,2025) and the White Paper (DSIT,2023), which together signal sustained support for a decentralised, tailorable and innovation-friendly governance model.

Yet the suitability of this regulator-led framework has become a subject of increasing debate. Recent comparative research notes that the UK's flexible, sector-specific model, while agile, can result in inconsistent coverage and fragmented enforcement across domains (Al-Maamari, 2025). Expert assessments from the Ada Lovelace Institute argue for clearer, better-coordinated rules and stronger accountability mechanisms beyond existing sector regulators (Ada Lovelace Institute, 2024, 2023 and 2021), and analyses of the National AI Strategy acknowledge challenges in coherence and coverage under the current approach (DSIT, 2022a).This paper contributes to this discussion by examining how AI oversight currently operates within three UK sectors - *healthcare, education* and *legal* services - each characterised by distinct institutional arrangements, risk profiles and regulatory capacities. It then contrasts these findings with the European Union (EU)'s unified, horizontal regulatory regime under the EU AI Act (2024), which embodies a markedly different regulatory philosophy oriented around centralised risk-based governance.

By comparing these two models, the paper highlights the distinctive tools, mechanisms and normative assumptions that shape each jurisdiction's approach to core principles of AI governance. While numerous principles are referenced in AI ethics, such as reliability, explainability and human autonomy (Palladino, 2023), the principles of *fairness, transparency* and *accountability* are among the most consistently operationalised across both the UK and

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EU frameworks. From this vantage point, the paper examines how these principles are interpreted and implemented across the selected UK sectors and assesses how the EU's horizontal regime addresses these same issues. In doing so, it advances the growing literature on AI governance (Al-Maamari, 2025; Haie *et al*., 2024; Batool, Zowghi, and Bano, 2024; Unver and Roddeck, 2024; Nannini, Balayn, and Smith, 2023) by providing a cross-sectoral, comparative analysis of two contrasting regulatory models, with the aim of developing policy proposals for the UK governance regime.

Structurally, the paper begins by evaluating the evolution of the UK's governance approach, outlining the key milestones and institutional developments underpinning its pro-innovation, sector-specific model. It then examines the healthcare, education and legal sectors in detail, identifying the regulatory mechanisms that currently shape AI oversight within each. The subsequent section turns to the EU AI Act (2024), which establishes a horizontal framework governing AI systems across sectors, domains and applications, and analyses the associated tools and safeguards. Drawing on these comparative insights, the paper evaluates gaps in the UK regime and explores which governance strategies or mechanisms may be necessary to support more consistent and effective operationalisation of fairness, transparency and accountability.

The analysis identifies several persistent structural challenges within the UK's current trajectory, including regulatory fragmentation, inconsistencies across sector-specific regimes and broader risks of legal uncertainty and complexity towards enforcement. It remains doubtful that the UK government can avoid enforcement gaps, given its diluted *central support functions* (i.e., monitoring regulatory effectiveness, anticipating AI-related risks, supporting sandboxes and testbeds, education and public awareness, and international interoperability) (DSIT, 2023). While a radical overhaul of the UK regime is neither necessary nor desirable, the paper argues that meaningful improvements are required. Enhanced coordination, clearer cross-sectoral expectations and greater regulatory alignment will be essential to ensure that the UK's approach remains effective, coherent and sustainable as wide-ranging risks and threats are posed by AI across sectors.

The paper contends that the long-term effectiveness of the UK's model ultimately hinges on the capacity of the proposed central support functions to foster coherent, coordinated and enforceable implementation of core principles across diverse regulatory domains. To this end, it advocates the introduction of minimum statutory duties for sectoral regulators, the creation of a coordinating lead authority or dedicated governmental unit and the development of clearer accountability pathways capable of aligning sector-specific regimes within a unified governance framework.

2. UK'S VISION AND APPROACH TO AI GOVERNANCE

2.1. General overview

The UK's approach to AI governance is characterised by a deliberate and strategic effort to foster innovation and economic growth while simultaneously addressing the complex ethical and safety considerations which AI presents. The Government has noted the various challenges and risks involved with AI, including bias and discrimination, copyright violations, inaccurate information, among others (DSIT, 2023). More broadly, the risks have been categorised into three: societal harms, misuse risks and autonomy risks (DSIT, 2023). The White Paper indicates that the UK's AI regulatory framework will rely on a context-specific assessment rather than classifying AI systems by predefined risk categories. Different from more prescriptive regulatory models, such as that of the EU AI Act (European Parliament and Council, 2024), the strategy is designed to be applied by existing regulators, based on the five key principles: safety, security and robustness; transparency and explainability; fairness; accountability and governance; contestability and redress (DSIT, 2023). Outlined below are the key milestones and initiatives taken by the government to promote AI innovation and development, consistent with its flexible governance model.

2.2. Strategical and Institutional Steps

The UK government recognises the potential for an AI-enabled economy and its implications for the workforce. A core objective within its broader AI strategy is to ensure that the UK population is equipped with the necessary skills and opportunities to thrive in an AI-driven future, fostering a workforce that can adapt to and benefit from technological advancements (DSIT, 2022a). To underpin this strategy, the government has launched a series of initiatives and established new institutions, including the AI Safety Institute (AISI), whose core vision is to be "an AI and

science superpower over the coming decade" (DSIT, 2022b). The strategy demonstrates an ambitious ten-year plan to establish the UK as a global leader in AI, structured around three interconnected pillars: (i) investing in the long-term needs of the AI ecosystem, (ii) ensuring AI benefits all sectors and regions, and (iii) governing AI effectively (DSIT, 2022b). The core functions of the AISI are defined as the evaluation of AI systems, conducting foundational safety research and facilitating information exchange (DSIT and AISI, 2024). In February 2025, the AISI was rebranded as the AI Security Institute to emphasise its focus on serious threats, including AI applications in chemical weapons, cyberattacks, and fraud (DSIT, Press Release, 2025).

In January 2025, the UK government released the AI Opportunities Action Plan (DSIT, 2025), aiming to position the country as a global leader in AI (Obayiuwana, 2025). The plan details 50 recommendations to shape the AI revolution in the UK and is structured around three core objectives: investing in AI foundations, driving AI adoption across sectors, and positioning the UK as an AI innovator (DSIT, 2025). One key initiative is the creation of AI Growth Zones to attract private investment and develop essential data centre infrastructure. By May 2025, more than 200 expressions of interest for these zones had reportedly been received, with the first site established in Culham, Oxfordshire (Donnelly, 2025). The Action Plan underscores the government's commitment to harnessing AI for economic growth and improved public services, in line with the National AI Strategy; however, it also recognises the complexities arising from the rapid and unpredictable pace of technological change (DSIT, 2022b).

2.3. Trajectory and Prospect

The UK's approach to AI governance is distinguished by a principles-based, non-statutory regulatory model, prioritising innovation, flexibility and sector-specific discretion. The government has consistently argued that premature or overly prescriptive statutory regulation could constrain a rapidly evolving technological ecosystem, potentially locking the UK into outdated legislative structures. Instead, it maintains that "a context-based proportionate approach to regulation will help strengthen public trust and increase AI adoption" (DSIT, 2023), delegating primary responsibility to existing regulators to interpret and operationalise five cross-sectoral principles: safety, transparency, fairness, accountability, and contestability.

Following the Government's request for regulators to publish updates by 30 April 2024 (DSIT, 2024a), several regulators, including the Office for Nuclear Regulation (ONR), the Medicines and Healthcare products Regulatory Agency (MHRA), and the Information Commissioner's Office (ICO), issued guidance outlining how their established regulatory regimes would assimilate the government's principles. These outputs represent meaningful steps toward a distributed governance framework. Nevertheless, the resulting landscape remains highly fragmented: regulatory approaches vary significantly in maturity and scope, leading to inconsistent expectations for organisations developing or deploying AI systems. Consequently, both individuals and firms face a complex and difficult-to-navigate regulatory environment, with notable gaps in coherence. This fragmentation, as acknowledged by the government, elevates compliance burdens and systemic risk, disincentivising responsible AI adoption while increasing the likelihood of misuse, malfunction or socially and economically harmful outcomes (DSIT, 2024a).

In response to these concerns, the AI (Regulation) Bill was introduced by Lord Holmes of Richmond in November 2023 and again in March 2025 (UK Parliament, 2025). The Bill envisages a new AI Authority with powers to oversee compliance and evaluate risks, while imposing statutory obligations on companies to adhere to the five key principles of safety, transparency, fairness, accountability and redress (UK Parliament, 2025). It also requires the appointment of an "AI Officer" within organisations to oversee responsible AI use and mandates public engagement by the Authority (UK Parliament, 2025). While the Bill reflects elements of the EU AI Act's risk-based structure, its prospects remain uncertain, as the government has signalled scepticism toward statutory intervention and reaffirmed its preference for a pro-innovation, light-touch model. The Bill's implementation has reportedly been postponed for at least one year to allow development of a more comprehensive legislative proposal and possible alignment with US policy directions (Chakraborty, 2025; Courea, 2025).

Notwithstanding this legislative ambiguity, the government has indicated its intention to develop central, cross-cutting support functions within the Whitehall to promote a more coherent regulatory landscape (DSIT, 2024a). These functions are expected to assist regulators in applying the principles by strengthening foresight, improving coordination, and enhancing analytical and operational capacity. Current

proposals suggest these *central support functions* would include monitoring and evaluating regulatory effectiveness, assessing AI-related risks, conducting horizon-scanning and gap analysis, supporting testbeds and sandbox initiatives, providing education and public awareness, and promoting interoperability with international regulatory frameworks (DSIT, 2023).

The government has clarified that these central functions would not constitute a new regulator and would lack statutory enforcement powers (DSIT, 2024a). Their mandate is advisory, facilitative, and strategic rather than supervisory or coercive. This raises fundamental questions about the future trajectory of the UK's governance model. Without statutory duties, central enforcement capacity or clear mechanisms to ensure consistent interpretation of principles across sectors, the long-term effectiveness of the UK framework remains uncertain. The decentralised model continues to rely on regulators' willingness, capacity and resources to act in a coordinated manner.

2.4. Analysis of the UK Cross-Sectoral Approach

2.4.1. Healthcare Sector

In the UK healthcare sector, AI governance focuses on safeguarding patient safety alongside the principles of fairness, transparency and accountability in the development and deployment of algorithmic and data-driven systems. In high-stakes clinical settings, such as diagnosis, treatment planning and patient monitoring, the risk of algorithmic error, bias or discriminatory outcomes carries direct implications for both individual patients and the broader integrity of healthcare institutions. Equally important is the protection of sensitive health and personal data given the increasing reliance of the National Health Service (NHS) on large datasets, analytics and generative AI systems (Dayal, 2025).

In response to these challenges, the sector relies on a hybrid governance structure combining statutory regulation with soft-law instruments. On the statutory side, AI systems that fall within the definition of a medical device are regulated under the Medical Devices Regulations 2002 (MDR) and overseen by the MHRA. Complementing this, the NHS employs several non-statutory tools, including the guidance on AI and machine learning (NHS England, 2025a) and the mandatory Digital Technology Assessment Criteria (DTAC) (NHS England, 2025b), to ensure that AI tools are clinically safe, effective and ethically aligned prior to adoption.

The *MHRA* regulates AI-enabled medical devices and diagnostics under the MDR, ensuring that products meet stringent safety, quality and performance benchmarks before receiving market approval. Many digital health technologies fall under the categories of Software as a Medical Device (SaMD) or AI as a Medical Device (AIaMD) (MHRA, 2025a). Oversight is supported by the MHRA Software and AI Group, which conducts pre-market and post-market evaluations, technical reviews and clinical assessments, and ensures that the regulatory regime remains fit for purpose as AI capabilities evolve (MHRA, 2023). In 2024, the MHRA launched the AI Airlock - a regulatory sandbox that enables developers to test and validate AI systems in controlled, real-world settings while preserving patient safety (MHRA, 2024a). The agency's AI Strategy to 2030 further commits to adaptive regulation, greater transparency and lifecycle-wide post-market monitoring to ensure that AI systems remain safe and effective (MHRA, 2024b).

National Institute for Health and Care Excellence (NICE) provides evidence-based evaluations on the clinical and cost-effectiveness of AI technologies used in health and social care. Its 2024 position statement on AI in evidence generation emphasises transparency, validation and reproducibility, establishing expectations for trustworthy algorithmic outputs across care pathways (NICE, 2024).

C*are Quality Commission (CQC)* monitors whether health and social care providers use AI safely and lawfully, focusing on governance, accountability structures and patient protection (CQC, 2025). According to this guidance, general practices must ensure that AI products meet standards such as DTAC and MHRA guidance, supported by documented risk assessments and the involvement of trained Clinical Safety Officers (CQC, 2025). The CQC stresses the importance of meaningful human oversight, requiring providers to demonstrate that AI augments rather than replaces professional clinical judgment and that mechanisms exist to monitor outcomes and report incidents, including through the MHRA Yellow Card system (CQC, 2025). It also reviews compliance with the UK GDPR, cybersecurity requirements and equality duties, obliging providers to mitigate algorithmic bias and address digital exclusion.

National Health Service (NHS) has issued detailed guidance to support staff in evaluating, procuring and deploying AI responsibly (NHS England, 2025a). Successful integration of AI in general practice depends on patient-centred design and rigorous oversight. Under the NHS framework, practices must ensure equity by verifying that AI systems operate fairly across demographic groups, including through tools such as Equality and Health Impact Assessments (EHIAs) and model cards documenting design assumptions, limitations and performance characteristics (NHS England, 2022).

2.4.2. Education Sector

AI governance within the UK education sector centres on safeguarding the principles of fairness, transparency and accountability in the deployment of algorithmic and data-driven systems (Department for Education (DfE), 2025). Particular emphasis is placed on mitigating bias in high-stakes settings such as assessment, admissions and learner evaluation, where the risk of algorithmic error or discrimination carries serious implications for both individual learners and institutional legitimacy. Equally critical is the protection of learners' data privacy, given the sector's increasing adoption of analytics tools and generative AI systems capable of processing sensitive personal information (DfE, 2025). The UK's approach in this domain remains predominantly grounded in soft law, comprising non-binding guidance, ethical frameworks and professional standards, rather than statutory regulation (DSIT, 2023).

Sectoral regulators play an essential role in translating the UK Government's overarching AI principles into practical, enforceable expectations tailored to the education context. Key regulatory authority is exercised by the Department for Education (DfE), Office of Qualifications and Examinations Regulation (Ofqual), the Joint Council for Qualifications (JCQ) and Office for Standards in Education, Children's Services and Skills (Ofsted). In the absence of a dedicated statutory regulator for professional practice, schools and universities rely on self-regulatory policies as well as guidance of the regulatory authorities.

Following the government's direction that regulators develop sector-specific governance mechanisms aligned with national AI principles, the DfE has issued targeted guidance encouraging educational institutions to adopt responsible, transparent and risk-sensitive uses of AI (DfE, 2025). The guidance emphasises the need for robust risk assessment, strict compliance with data protection law and the maintenance of meaningful human oversight in any automated decision-making process (DfE, 2023).

Ofqual has introduced rules, consultations and position statements aimed at preserving the integrity and fairness of assessments in an era of increasing AI adoption. For example, Ofqual has clarified that the use of generative AI tools by students in completing assessed work constitutes malpractice and has required awarding organisations to provide evidence demonstrating that any AI used in marking, moderation or standardisation is valid, reliable and free from discriminatory effects (Ofqual, 2024).

The JCQ has supplemented this with detailed guidance for centres on identifying and managing risks associated with generative AI (JCQ, 2025). Its 2023-25 guidance explicitly states that AI-generated content in non-examined assessments (NEAs), coursework or internal assessments may constitute malpractice and requires centres to implement authentication procedures ensuring the originality of candidates' work (JCQ, 2025).

Ofsted has recently taken a more active regulatory posture following the publication of its 2025 guidance on the responsible use of AI in inspection and internal operations (Ofsted, 2024). The framework, aligned with the Government's AI Playbook (Government Digital Service, 2025), sets out principles including enhanced human oversight, lifecycle management of AI systems, mandatory data protection impact assessments (DPIAs) and transparency through the maintenance of a public register of AI systems used by Ofsted (Ofsted, 2024).

Collectively, these initiatives illustrate a decentralised yet increasingly coordinated model of AI governance in the education sector, in which the DfE sets strategic expectations while regulators and professional bodies operationalise them through advisory frameworks, technical standards and monitoring activities.

2.4.3. Legal Sector

The adoption of AI is reshaping the UK's legal sector, transforming it from a traditionally manual practice into one increasingly augmented by technology for operational efficiency and strategic insight. AI now underpins a range of core legal workflows, including large-scale legal research, automated drafting of contracts and templates, and predictive analysis used to guide case strategy (White, 2024).

AI governance within the legal profession is anchored in long-standing duties of professional conduct, most notably competence, confidentiality, supervision, and acting in the best interests of clients, rather than in new statute-based rules (Solicitors Regulation Authority (SRA), 2024)[1]. The sector's cautious integration of AI tools, including legal-research platforms (such as Lexis+ AI, Westlaw AI-Assisted Research and vLex Vincent AI) and contract-automation or document-review systems (such as Luminance, Kira Systems and ThoughtRiver), is therefore managed primarily through rigorous interpretation of existing professional standards (SRA, 2023; SRA 2021). This model constitutes a robust form of soft law enforced by the SRA, the Bar Council, and the Courts and Judiciary, each of which has issued guidance outlining permissible uses of AI alongside associated risks and mitigation expectations (SRA, 2024; Bar Council, 2025; Courts and Tribunal Judiciary, 2025; see also EIN, 2025).

The urgency of addressing the misuse of generative AI was underscored by the High Court judgment in *Ayinde v London Borough of Hackney and Hamad Al-Haroun v Qatar National Bank* (May 2025), where the President of the King's Bench Division warned of the serious dangers posed by AI-generated inaccuracies, including fabricated case citations.

Regulatory and professional bodies therefore play a central role in operationalising AI governance by embedding ethical principles, risk-management practices and accountability requirements into sectoral standards. Key actors include the SRA, Bar Council, Bar Standards Board (BSB), Law Society of England and Wales, Legal Services Board (LSB) and the Courts and Judiciary.

The SRA, as the primary regulator of solicitors and law firms in England and Wales, continues to apply a principles-based approach to AI. Although it has not introduced AI-specific regulations, it has published a series of reviews and policy statements as part of its Innovation and Technology programme (Sako and Parnham, 2021). The SRA advises firms to adopt a risk-based governance model in integrating AI, requiring them to ensure that core professional duties, particularly duty to competence and confidentiality, are upheld at all times (SRA, 2022). Firms are expected to conduct rigorous due diligence on new technologies, ensure senior-level oversight (with the Compliance Officer for Legal Practice bearing regulatory responsibility), carry out continuous risk and impact assessments, train staff and implement policies addressing risks such as bias, hallucinations and system failure (SRA, 2022). Crucially, firms must maintain transparency with clients about the use of AI and ensure that non-AI alternatives remain available, preserving professional autonomy and client trust (SRA, 2022).

The Bar Council has similarly issued guidance concluding that while generative AI (large language models) can appropriately augment legal work, barristers must use such tools responsibly and with full understanding (Bar Council, 2025; see also The General Council of the Bar, 2024). The guidance highlights significant risks, including hallucinations, bias and the risk of information disorder, and therefore requires barristers to verify all AI-generated content independently, preserving professional judgment and avoiding 'black-box' over-reliance (Bar Council, 2025).

As a non-regulatory but highly influential professional body, the Law Society of England and Wales contributes to governance through thought-leadership reports, practical advisory materials and policy interventions. Its guidance on generative AI emphasises that technology should augment, not replace, professional legal judgment and stresses that ultimate accountability for advice or representation rests with the human practitioner (The Law Society, 2023; Law Society, 2018). To safeguard this, the Law Society promotes extensive auditing, documentation and traceability standards for any AI-assisted legal service (The Law Society, 2025).

The Legal Services Board (LSB), acting as the oversight regulator for all approved legal regulators in England and Wales, provides strategic coherence across the sector. Its *Reshaping Legal Services* strategy advocates for innovation-friendly but risk-aware regulation, with particular emphasis on consumer protection, transparency and data ethics in relation to emerging technologies, including AI (LSB, 2021).

[1]These conduct duties aim to ensure that lawyers have the necessary legal knowledge, skills, and experience to represent their clients (duty of competence), keep their clients' information confidential (duty of confidentiality), act in the best interests of their clients, avoid conflicts of interest that could impair their ability to represent their clients (duty of care & fairness), charge reasonable fees and be upfront with clients about their costs, not introduce false evidence at trial and not communicate with the opposing party outside the presence of their lawyer (duty of fairness). These generally take the form of codes of conduct established by a bar association, law society or court, which set out these rules and principles, including ethical responsibilities (Unver and Roddeck, 2024).

Table 1: Implementation of the key principles in the UK

Principle	Healthcare	Education	Legal
Fairness	• NHS DTAC requires bias mitigation, demographic representativeness, and testing for unequal performance across protected groups. • Equality & Health Impact Assessments (EHIAs) promote systematic evaluation of discriminatory risks. • CQC emphasises equitable access and prevention of digital exclusion. • NICE requires representative datasets and population-level validation.	• No AI-specific statutory fairness duty. • Ofqual requires maintaining validity of qualifications, along with evaluating evidence about how awarding organisations handle AI related malpractice • JCQ rules on AI-related student malpractice help ensure fairness in assessment integrity. • DfE guidance encourages bias mitigation and equitable access to AI tools.	• No AI-specific statutory fairness duty. • Fairness enforced through SRA/BSB professional conduct duties (duties to competence, confidentiality, acting in clients' best interests). • Bar Council guidance stresses the risks of algorithmic bias and why barristers must independently verify any AI-generated legal authority or argument. • Courts highlight the danger of hallucination leading to false case citations, which could disproportionately harm vulnerable parties.
Transparency	• MHRA requires technical/clinical documentation for SaMD/AIaMD. • NHS AI Assurance guidance promotes model cards and transparent reporting. • NICE requires reproducibility, explainability and publicly accessible evidence. • CQC requires documentation of oversight, risk logs and audits.	• No statutory transparency duty specific to AI. • Transparency expected in how AI influences marking or decision-making (Ofqual). • Institutions advised to disclose AI use to students and staff (DfE). • Ofsted encourages public reporting on AI use.	• Duties of candour and client communication require disclosure when AI materially affects the service. • SRA expects transparency around use of AI technologies. • Logs and audit trails encouraged but not mandatory. • Verification of AI outputs required as part of competence duties for barristers. • Due diligence expected when using AI tools; firms must mitigate discriminatory or unreliable outputs.
Accountability	• MHRA oversees classification, approvals, AI Airlock sandbox and post-market surveillance for AIaMD. • CQC mandates clinical safety officers, governance structures and incident reporting (e.g., Yellow Card). • NICE evidence standards determine accountability for safe adoption. • NHS guidance emphasises human oversight and responsibility allocation.	• No AI-specific statutory accountability regime. • Accountability lies mainly with awarding organisations and institutions. • DPIAs required under UK GDPR for AI involving personal data. • JCQ rules place responsibility on institutions for detecting and responding to AI-related malpractice.	• No statutory accountability regime specific to AI. • Accountability derives from SRA/BSB professional conduct rules. • Compliance officers (COLP/COFA) responsible for governance failures involving AI. • Legal professionals retain full responsibility for decisions – AI cannot substitute legal judgment.

The judiciary has also strengthened its position on responsible AI use. Updated guidance for judicial office holders elaborates on risks such as biased datasets and generative hallucinations, emphasising the need for caution in using AI for research or decision support (Courts and Tribunal Judiciary, 2025). The guidance reiterates strict confidentiality obligations, instructing office holders not to input sensitive or private information into publicly accessible AI systems and setting out clear reporting pathways for accidental disclosure or data-related incidents (Courts and Tribunal Judiciary, 2025).

2.5. Evaluation of the UK AI Governance Approach

In the UK regulatory landscape, sectoral regulators assume a wide range of responsibilities, increasingly integrating elements of AI governance into their supervisory mandates. Within this framework, AI-related oversight remains emergent and unsettled, with most interventions taking the form of non-binding, non-statutory guidance. While a number of statutory instruments touch upon the aspects of AI development and deployment, these provisions generally fall short of establishing formal processes for validation, verification or certification of AI systems.

There are, however, notable exceptions arising from existing regulatory structures. Many digital health technologies incorporating AI are classified as SaMD or AI as a Medical Device AIaMD, which subjects them to mandatory conformity assessment, clinical evaluation, post-market surveillance and registration with the MHRA (MHRA, 2025a). Accordingly, healthcare remains the sector in which binding, AI-specific obligations are most clearly operationalised, in contrast

with the education and legal sectors where governance continues to rely primarily on soft law instruments. These non-binding documents nevertheless provide important professional guardrails designed to ensure that adopted technologies are safe, ethically deployed and aligned with established standards of practice.

In the legal sector, for example, the SRA has published an outlook report addressing the opportunities and risks associated with AI, barriers to adoption and methods for mitigating harms (SRA, 2023). Emphasising responsible deployment, the SRA's guidance aligns with existing conduct rules and promotes a self-regulatory posture grounded in professional ethics. It highlights practical safeguards, including due diligence, data-quality checks and oversight of third-party AI tools, to ensure that the use of AI remains reliable, ethical and consistent with lawyers' fiduciary duties to act in clients' best interests (SRA, 2023).

In healthcare, the MHRA continues to develop detailed guidance on Software and AI as a Medical Device, with the aim of clarifying regulatory requirements for software-based and AI-driven medical technologies while ensuring robust protection for patients (MHRA, 2023). This work includes best-practice materials for developers and adopters of AI-enabled medical technologies, providing instructions on how existing legal obligations concerning risk management, clinical safety and post-market monitoring should be implemented in relation to complex, adaptive AI systems. Together, the classification criteria and stakeholder obligations underscore that AI in healthcare is subject to comparatively stringent regulatory intervention. In the education sector, the Department for Education (DfE) has issued guidance, which sets out expectations for how schools and colleges should approach the use of generative AI applications (DfE, 2025). Ofqual has published formal principles governing AI use in examinations and assessments (Ofqual, 2024), while the Joint Council for Qualifications (JCQ) has issued specific guidance for identifying and preventing AI-related malpractice (JCQ, 2025).

Taken collectively, these emerging soft law frameworks illustrate how UK regulators are beginning to translate established ethical standards into sector-specific AI governance, even in the absence of bespoke statutory duties. While the UK's overarching approach remains predominantly reliant on non-binding instruments, regulators are increasingly embedding the principles of fairness, transparency and accountability into the evolving governance landscape. These principles function as the normative foundation upon which future sector-specific rules may be constructed, and they continue to guide the responsible and ethical use of AI across the UK. In this landscape, the implementation of the principles of fairness, transparency and accountability can be summarised as follows:

3. ANALYSIS OF THE EU GOVERNANCE APPROACH

3.1. Overview of the EU AI Act

The EU AI Act (Regulation (EU) 2024/1689) is the first comprehensive hard law instrument for AI governance, entering into force on 1 August 2024. Designed to deliver maximum harmonisation across the internal market (Smuha, 2025; Veale and Borgesius, 2021), the Regulation establishes a lifecycle-oriented regulatory architecture that governs the design, development, deployment and oversight of AI systems. The Act aims "to improve the functioning of the internal market and promote the uptake of human-centric and trustworthy artificial intelligence (AI), while ensuring a high level of protection of health, safety, fundamental rights enshrined in the Charter [of Fundamental Rights of the EU]" (European Parliament and of the Council, 2024).

At the heart of the Act lies a risk-based taxonomy that tailors the regulatory obligations according to the risk category (unacceptable; high; limited; minimal/no risk), banning applications that pose unacceptable risk and imposing strict pre- and post-market obligations on high-risk systems. The Commission may update the list of high-risk systems via delegated acts, allowing adaptive regulation as technology and harms evolve (European Parliament and of the Council, arts. 6(6)(7) and 7).

In relation to high-risk AI systems, the EU AI Act establishes an extensive set of obligations across the entire lifecycle of such systems. These include requirements on market access and registration (Arts 49, 71), data governance and data quality (Art 10), risk- and quality-management systems (Arts 9, 17), technical documentation (Art 11), transparency duties (Art 13), human oversight (Art 14), accuracy, robustness and cybersecurity (Art 15), conformity assessment procedures (Art 43), and post-market monitoring and reporting (Arts 72–73). In this context,

the obligations under Articles 16-27, together with the requirements under Articles 8-15, extend to all the providers and deployers of high-risk AI systems, regardless of the sector in which they are designed, developed or deployed.

Overall, the Act also introduces a set of requirements and obligations that apply horizontally. These provisions underscore the EU's comprehensive and technically detailed approach to AI governance, which is grounded in the principles of AI ethics, most notably *fairness*, *transparency* and *accountability* (Sousa e Silva, 2025). These principles function as the normative foundation upon which the Act's various regulatory tools, safeguards and compliance mechanisms are constructed. The following analysis therefore examines how the EU AI Act operationalises these principles across its substantive and procedural requirements.

Fairness: The Act operationalises fairness primarily through robust data-governance and risk-management obligations. Article 10 requires providers to ensure that training, validation and test datasets are relevant, representative and of sufficient quality to mitigate discriminatory outcomes. Article 9 mandates systematic risk-assessment and mitigation procedures that explicitly consider impacts on groups at risk of discrimination. Article 17 requires organisational quality-management systems that embed fairness considerations into internal procedures, including documentation, data-handling protocols, monitoring processes and corrective mechanisms, ensuring that discriminatory risks are systematically identified and addressed across the AI system's lifecycle. Moreover, Annex IV reinforces these duties by obliging providers to document data-handling practices, model design choices and known limitations, thereby enabling scrutiny of whether fairness considerations were integrated throughout the system's lifecycle. The Act also links fairness to transparency obligations, such as those in Articles 13 and 52, which ensure that users receive sufficient information to detect and challenge potentially biased outputs. These measures translate fairness from an abstract principle into concrete obligations that target the data and processes that generate biased outcomes.

Transparency: The Act operationalises transparency by imposing comprehensive disclosure and documentation obligations on AI providers and deployers. Articles 13 and 14 require AI systems to be technically and functionally transparent, mandating that users receive clear instructions for use, system capabilities and limitations, and the expected level of human oversight. While Article 11 obliges providers to maintain detailed technical documentation that enables supervisory authorities to assess compliance, Article 13 outlines specific disclosure requirements for high-risk systems (e.g., user information that they are interacting with an AI, known limitations and intended purpose). Article 12 mandates the creation of automatically generated logs to ensure traceability of (a high-risk AI) system behaviour throughout its operation. For AI systems interacting directly with humans or generating content, Article 50 introduces specific transparency duties, such as labelling AI-generated or manipulated content, to ensure that individuals are not misled or manipulated. Together, these provisions translate transparency from an ethical principle into a series of legally enforceable duties that promote explainability, auditability and accountability across the AI lifecycle.

Accountability: The Act operationalises accountability by allocating clearly defined responsibilities across the AI value chain and establishing mechanisms for oversight, enforcement and redress. Articles 16-29 impose graduated obligations on providers, importers, distributors and deployers, ensuring that each actor is accountable for its role in the lifecycle of AI systems. In this regard, providers must carry out conformity assessments (Article 43), issue declarations of conformity (Article 47) and maintain post-market monitoring systems (Article 72), including mandatory incident reporting (Article 73). Importers and distributors are required to verify that AI systems placed on the market comply with these obligations and to take corrective measures if non-compliance is identified (Articles 19-21). Deployers, in turn, must implement risk management and human oversight measures appropriate to the system's intended purpose, monitor performance in real-world conditions and report serious incidents or malfunctions to authorities (Articles 29, 68, 70). Collectively, these provisions create a network of shared responsibility, ensuring that accountability is embedded throughout the AI lifecycle with enforcement mechanisms extending to all actors in the chain.

The EU AI Act overall translates the ethical principles into enforceable legal duties across the AI lifecycle, embedding fairness, transparency and accountability and addressing the key actors such as providers, deployers, importers and distributors. Unlike the UK's decentralised and largely sectoral approach, the EU AI Act provides a single and unified cross-

Table 2: Key Principles under the EU AI Act (2024)

Principle	Healthcare	Education	Legal
Fairness	Mandatory obligations for high-risk systems, including quality management and controls; prevention and mitigation of biased or discriminatory outcomes (data governance); risk management, incorporating data-handling practices, model design choicesand known limitations.		
Transparency	Mandatory obligations for high-risk systems, including technical documentation; logging, traceability, and auditability; transparency to users in the case of direct interaction with AI or content generation; further requirements regarding general-purpose AI systems, post-market transparency reporting.		
Accountability	Explicit assignment of responsibilities for providers, deployers, importers, distributors; entailing full lifecycle accountability, concerning documentation, conformity assessment, post-market monitoring, incorporating incident reporting; risk assessment and human oversight measures; administrative fines; enforcement by national AI regulators and market surveillance authorities.		

sectoral baseline, through which obligations are layered across the risk level of AI systems, according to whether being unacceptable, high, limited or minimal.

The EU AI Act establishes a single, uniform framework across all Member States, explicitly aiming to prevent fragmentation of the internal market. While the Act sets broad essential requirements, technical standards, conformity assessment and CE marking provide detailed operational rules that ensure seamless cross-border compliance and market access. In other words, the EU leverages the existing regulatory framework for harmonisation and technical standardisation for cross-sector AI governance. For example, Article 40(1) of the AI Act lays down the normative foundation for harmonised standards and the *presumption of conformity* regarding high-risk AI systems (Kilian, Jäck and Ebel, 2025).

The EU AI Act operates alongside existing regulatory instruments, including the General Data Protection Regulation (GDPR) (Regulation (EU) 2016/679) as well as sector-specific rules. For instance, in healthcare, AI systems classified as SaMD or AIaMD must also comply with the conformity assessments under the Medical Device Regulation (MDR) (Regulation (EU) 2017/745). In practice, this involves oversight by designated notified bodies and market surveillance authorities, which monitor the safety, performance, and compliance of medical devices, including those incorporating AI. Notwithstanding, the MDR does not explicitly refer to "AI" nor does it include AI-specific requirements or obligations, leaving a potential gap that the AIA aims to address in conjunction with these authorities.

In sectors such as education and professional legal services, regulatory guidance typically takes the form of soft law instruments, including guidelines, codes of conduct, or recommendations. For example, the Council of Bars and Law Societies of Europe (CCBE) has issued guidance aligned with the AIA's principles, emphasizing risk assessment, documentation and auditability (CCBE, 2025). Unlike these non-binding instruments, the EU AI Act establishes binding obligations intended to achieve 'maximum harmonisation' across the internal market, covering all sectors, domains, and applications where regulated AI systems are deployed. Researchers suggest that the substantial market size of the EU may lead the AI Act to serve as a de facto global standard, which caused multinational companies to match their practices to EU regulations (Al-Maamari, 2025).

In the EU context, the application of the principles of fairness, transparency and accountability can be outlined as follows across the sectors.

4. COMPARATIVE OBSERVATIONS AND INSIGHTS FOR THE UK AI GOVERNANCE

In the UK, the governance of AI demonstrates a sector-specific and principle-driven approach, reflecting both statutory and soft law mechanisms to embed fairness, transparency and accountability. Across healthcare, education and the legal sectors, these principles are operationalised differently, reflecting the distinct regulatory frameworks, institutional responsibilities and professional norms of each sector. While AI-specific obligations are not generally preferred, the healthcare and legal sectors illustrate statutory requirements adopted for AI, with some elements of traditional regulatory ('control and command') approach particularly in the former. By contrast, governance of AI systems is yet to be established for the education sector, where the current focus is on analysis of new and changing use cases and threats posed by AI, following a self-regulatory approach, broadly speaking. Reflecting on these, key

aspects of cross-sector governance of AI systems in the UK is illustrated in the Figure **1**.

One can recognise a coordinated approach within the sectors, although disaggregated from each other. However, when it comes to cross-sector governance, the same cannot be said, as illustrated in Figure **1**. Although the healthcare sector benefits from a comparatively advanced and AI-specific regulatory architecture, centred on the MHRA and medical device rules (MHRA, 2025a; MHRA, 2023),sectors such as education and legal services continue to rely predominantly on self-regulatory mechanisms. AI governance in the UK education sector is characterised by a decentralised, institution-led approach that remains largely self-governed, subject only to limited external constraints from general quality-assurance frameworks (DfE, 2025; Ofqual, 2024; JCQ, 2025). In the legal sector, AI governance is not purely self-regulatory but rests on statutory professional oversight: regulators impose mandatory duties whereas law firms retain substantial discretion in shaping internal AI governance arrangements (SRA, 2023; Bar Council, 2025; Law Society, 2025).

While the distinctiveness of each sector is arguably a strength of the UK model, the disaggregated structure creates potential gaps in the operationalisation of the White Paper's core values, in particular fairness, transparency and accountability (DSIT, 2023). Coordination and coherence across sectors are therefore essential if those principles are to be applied consistently and effectively. The government has signalled its intention to establish central support functions to assist regulators in developing a common understanding of AI risks, horizon-scan emerging trends, improve inter-regulatory coordination and strengthen overall regulatory capacity (DSIT, 2023; DSIT, 2024a).

Notably, the envisaged central functions do not carry enforcement powers. The UK Government has created a small central support function within DSIT to monitor AI risks and promote regulatory coherence, but it lacks independent statutory enforcement or rule-making authority and operates as a non-regulatory body focused on research, horizon-scanning, risk-mapping and informal coordination (DSIT, 2024a). The Government's emphasis remains on enhancing the capacity of sectoral regulators to enforce their own regimes rather than introducing central statutory intervention.

This approach rests on two implicit assumptions: first, that sectoral regulators already possess sufficient internal capacity to identify AI-specific risks; and second, that they can address those risks effectively using the existing mix of statutory and non-statutory instruments, aided by voluntary coordination when necessary. The trade-off between *centralised enforcement* (which could include AI-specific statutory powers) and *disaggregated sectoral enforcement* implies a move away from rules-based, uniform enforcement toward case-by-case monitoring, interpretive discretion and adaptive intervention. Yet the assumptions underlying this preference are contestable.

UK regulators often lack the legal authority to compel remedial action when AI systems malfunction (Ada Lovelace Institute, 2024; Ada Lovelace Institute, 2023), and this enforcement deficit is explicitly acknowledged by the government itself (DSIT, 2024a). Initially, the government noted persistent capability gaps, including insufficient technical expertise and

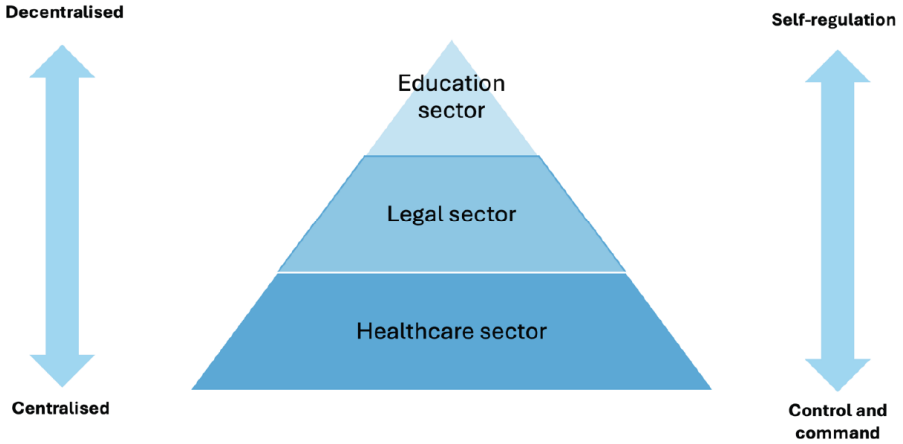

Figure 1: Main aspects of the cross-sector AI governance in the UK.

uneven institutional readiness across key regulatory bodies in the White Paper (DSIT, 2023), which unveils that the abovementioned presumption of strong internal capacities is, at best, optimistic. Furthermore, the House of Lords report warns that without enhanced statutory powers and dedicated funding, regulators will remain structurally constrained in their ability to deliver consistent, cross-sector oversight of rapidly evolving AI systems (House of Lords, 2024).

Scholars have warned that highly decentralised governance risks regulatory fragmentation, inconsistent enforcement and uneven protection across domains (Edwards, 2025; Yeung and Rengers, 2023). In AI's cross-cutting context, leaving accountability largely to organisational self-governance may create blind spots in sectors with weaker technical expertise or institutional capacity (Elliott and MacCarthaigh, 2025). Empirical research into algorithmic auditing suggests that voluntary or semi-voluntary models frequently fail to detect systemic bias, opacity or reliability failures without robust external oversight (Raji *et al*., 2020). There is, also, a body of literature advocating *hybrid* or *meta* regulatory approaches, where a central body supplies coherence, standards, horizon-scanning and risk coordination, while sectoral regulators retain contextual expertise (Gilad, 2010). The UK Government's proposal for cross-cutting central functions echoes this position, but its success will depend on whether those functions are endowed with clear mandates, sufficient resourcing and sustained political backing.

Absent effective coordination and alignment of mandates, governance failures could impose substantial institutional, social and economic costs. The ICO's experience over the past decade - characterised by shifting priorities, capacity constraints and leadership changes - illustrates the vulnerabilities of a decentralised model that lacks sustained central support and enforcement coherence. Prof. Erdos, the Director of CIPIL (Cambridge, UK) reports that, despite 28,582 complaints in 2024, the ICO issued no GDPR fines or enforcement notices and formally downgraded its use of penalties for public sector breaches, amounting to a clear failure of institutional accountability (Erdos, 2025). From this perspective, there is a persuasive case for identifying clearer institutional roles, a lead governmental unit and for introducing new statutory powers and resources to underpin regulators' capacity to oversee AI.

By contrast, the EU model adopts a more centralised enforcement stance. The EU AI Act's architecture, horizontal obligations, ex ante requirements, conformity assessments and structured remedies, reduces the reliance on cross-sector coordination. While organisations must still implement internal accountability structures for the design, development and deployment of AI systems, their discretion becomes more bounded, given the Act's lifecycle-oriented statutory rules, harmonised standards and detailed oversight mechanisms. While this approach may limit institutional autonomy, it offers clarity, predictability and a coordinated accountability framework that could be instructive for the UK if adapted with attention to subsidiarity and sectoral expertise.

Ultimately, although the UK's principles-based, decentralised model seeks to promote flexibility and innovation, it raises significant questions about enforcement consistency and the robustness of organisational accountability. These raise a range of issues and questions that are particularly salient when comparing the highly regulated healthcare sector with the relatively under-regulated education sector and the co-regulated legal sector. In particular, the tendency toward self-regulation in these sectors, even when accompanied by guidance from the regulators, combined with rapid adoption of AI tools, creates ethical and operational tensions that may require stronger statutory interventions to avoid ethical and professional deadlocks.

5. CONCLUSION

This paper reconsiders the evolving landscape of UK AI governance with particular attention to three key sectors - healthcare, education and legal services - where sectoral regulatory responses have begun to take shape, especially following the UK Government's 2023 White Paper (DSIT, 2023). The analysis examines how sectoral regulators confront AI-related risks through the core normative principles of fairness, transparency and accountability, and it evaluates the EU AI Act (European Parliament and Council, 2024) in order to draw comparative lessons that may inform the future trajectory of the UK model.

A comparative reading of UK and EU approaches reveals two divergent regulatory philosophies. The UK approach remains largely disaggregated and sector-specific: fairness, transparency and accountability are predominantly operationalised through softlaw guidance, professional standards and extant statutory duties rather than by a single, cross-cutting statute.

Healthcare is the clearest exception: the MHRA has developed an AI-specific regulatory architecture for software and AI as medical devices (SaMD/AIaMD), including a regulatory sandbox (AI Airlock) and a change programme to strengthen classification, conformity assessment and lifecycle surveillance (MHRA, 2025a; MHRA, 2023). By contrast, education and legal services continue to rely mainly on decentralised, institution-led governance: the Department for Education (DfE), Ofqual, JCQ and Ofsted issue guidance and position statements that set expectations but do not create a uniform, binding set of AI obligations for the sector (DfE, 2024; Ofqual, 2024; Ofsted, 2025). The legal sector similarly depends on professional regulation and duty-based oversight from the SRA, Bar Council and other bodies, with firms retaining substantial discretion over internal governance (SRA, 2023; Bar Council, 2025; The Law Society, 2023).

The UK's sectoral pluralism offers benefits, such as contextual sensitivity, responsiveness to domain-specific needs, and space for innovation, but it also generates regulatory fragmentation and uneven protection. The White Paper's principles are translated differently across regulators, producing variable standards of implementation and enforcement (DSIT, 2023; House of Lords, 2024). Notwithstanding, the government's chosen model presumes that existing regulators have the legal powers, resources and technical expertise necessary to identify and remedy systemic AI harms. Several reviews, however, have identified capability gaps and limited in-house AI expertise across parts of the regulatory estate (Edwards, 2025; Ada Lovelace Institute 2024; Ada Lovelace Institute 2023). This gap is particularly pronounced outside healthcare, where binding conformity and post-market surveillance mechanisms apply.

The trade-off is therefore clear: centralised, statutory enforcement (which could deliver harmonised standards and ex-ante conformity checks) would limit sectoral autonomy but improve predictability and enforceability. On the other hand, the UK's present reliance on soft law and regulator discretion preserves flexibility but risks leaving cross-cutting harms unaddressed. Empirical work on internal algorithmic auditing and compliance indicates that voluntary or semi-voluntary approaches frequently fail to identify systemic bias, opacity or reliability failures without robust external oversight and harmonised audit standards (Ada Lovelace Institute, 2024; Raji *et al*., 2020). Overall, it is essential that a competent lead authority is equipped with adequate powers and resources to ensure that actors who engage in harmful or unlawful conduct are effectively held to account (see also Yeung and Rengers, 2023).

The UK Government has signalled a softened and less predictable approach by proposing central support functions (e.g., risk monitoring, horizon-scanning, sandbox support and coordination) and by establishing a small central capability within DSIT, but crucially this body lacks independent statutory enforcement or rulemaking powers and remains advisory and facilitative in remit (DSIT, 2023; DSIT, 2024a). As a matter of fact, the prospect of the UK AI governance depends heavily on whether central functions are given clear mandates, sustained resources and mechanisms to ensure interoperable standards across regulators. Without sufficient central authority, statutory funding and dedicated human resources, effective coordination among sectoral regulators is unlikely to materialise, leaving the overall governance framework uncertain and fragile.

Absent such coordination, the costs of fragmentation can be substantial: institutional inefficiencies, greater compliance burdens for industry, legal uncertainty and, critically, differential protection for citizens depending on which sector governs the deployment of a given AI system. The recent record of the ICO, including shifting priorities and resourcing pressures, serves as a cautionary example about the limits of decentralised enforcement without consistent central support (Erdos, 2025; Edwards, 2025). From this perspective, it is considered that the UK Government should take further steps by strengthening cross-sector mandates, clarifying a lead authority and introducing minimum statutory duties for sectoral regulators, to ensure that the principles of fairness, transparency and accountability are coherently and consistently operationalised across sectors.

Comparatively, the EU AI Act presents an alternative template: a lifecycle-oriented, risk-based statutory framework with horizontal obligations, conformity assessments and clear enforcement pathways that constrain organisational discretion while providing legal certainty and harmonised protections. The UK need not adopt the EU model wholesale, but aspects of the Act, such as harmonised conformity assessment procedures, incident-reporting requirements, harmonised standards and baseline obligations for high-risk systems, offer instructive mechanisms to improve predictability and accountability in the UK context.

In conclusion, while the UK's principles-based, decentralised model seeks to preserve regulatory flexibility and facilitate innovation, its long-term effectiveness will depend on the enforcement capacities to produce coherent and enforceable operationalisation of the core principles. While the role of *central support functions* is acknowledged, addressing enforcement gaps would require a central authority with clearly defined powers to monitor regulatory practice and, where appropriate, to intervene in support of consistent AI governance. This paper proposes, targeted reforms should include the introduction of minimum statutory duties for regulators, the creation of a lead coordinating authority and clearer cross-sector accountability pathways, with a view to preserving sectoral expertise while addressing the current fragmentation in AI governance.

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