

A Maturing AI Assurance Ecosystem: Sector Specific Applications

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About techUK

techUK is a membership organisation launched in 2013 to champion the technology sector and prepare and empower the UK for what comes next, delivering a better future for people, society, the economy and the planet. It is the UK's leading technology membership organisation, with around 1,000 members spread across the country. We are a network that enables our members to learn from each other and grow in a way which contributes to the country both socially and economically. By working collaboratively with the government and others, we provide expert guidance and insight for our members and stakeholders about how to prepare for the future, anticipate change and realise the positive potential of technology in a fast-moving world.

About techUK's Digital Ethics Programme

In an increasingly digital world, it's important that technology is used to improve and enhance the quality of people's everyday lives, in an equitable and fair way. Embedding ethical principles, such as transparency, accountability and explainability, into the creation of AI based digital products, tools and services is therefore essential for building public trust and confidence in technology. techUK, for these reasons, focuses on resolving some of the most difficult ethical challenges, to ensure that the development and implementation of digital technology is beneficial to all and that responsible innovation can flourish for individuals, societies and organisations.

Executive Summary

The UK has set an ambition to establish itself as a global leader in AI development and deployment, positioning the nation at the forefront of technological innovation while driving economic growth and competitiveness. Central to this vision is the UK's pioneering work in AI assurance, developing the ecosystem designed to support justified trust in systems through evidenced based risk mitigation. This comprehensive approach to risk mitigation supports responsible AI adoption, ensures regulatory compliance, and facilitates access to capital for innovative ventures.

AI assurance is the 'how' of responsible AI, the practical methods and processes that demonstrate the evaluation, measurement, and communication of AI system trustworthiness based on reliable evidence. It differs from regulation (the 'what'), though both work together to create effective AI governance.

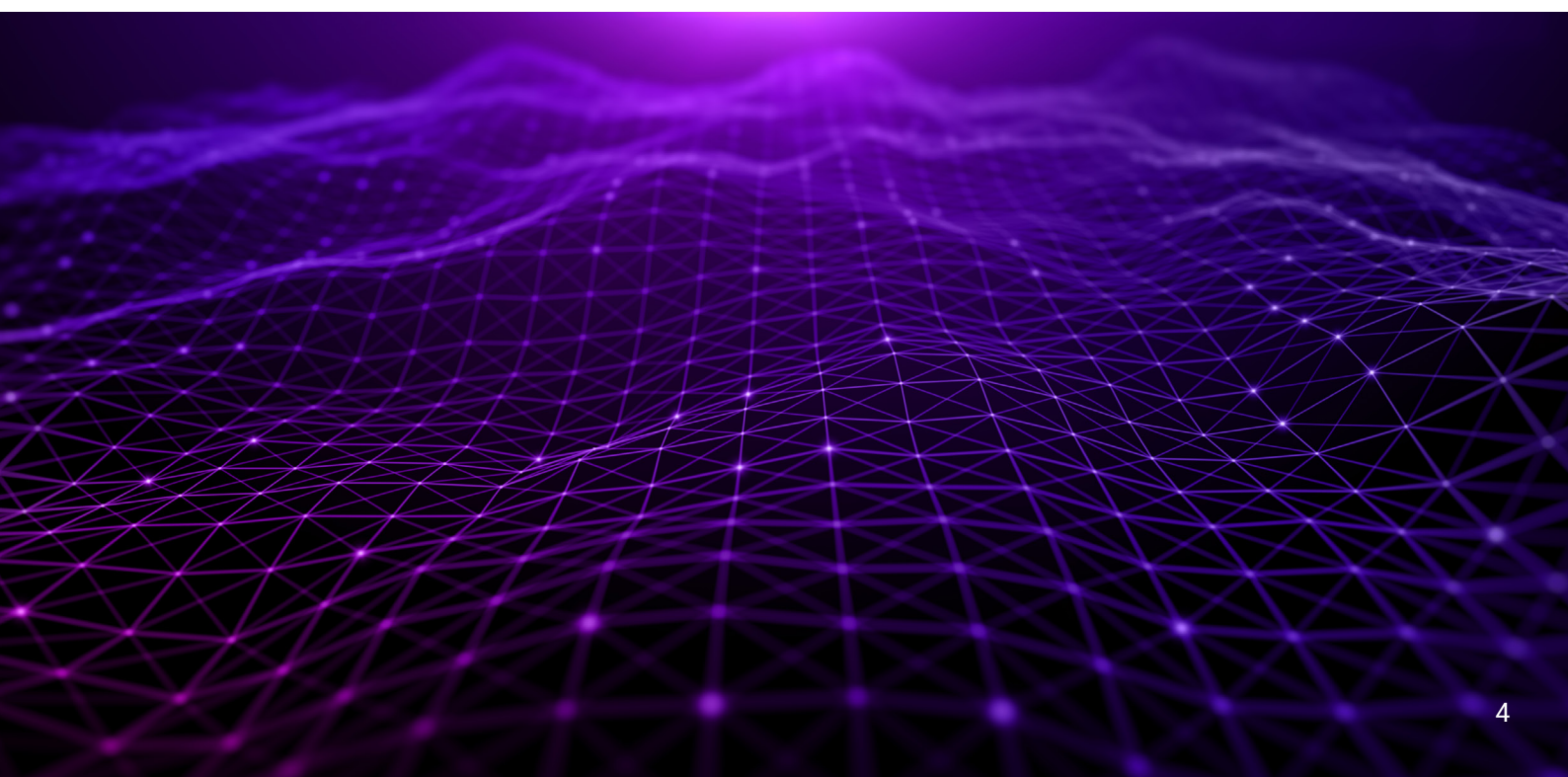
For organisations, AI assurance offers real tangible benefits: accelerating deployment, enabling innovation, supporting compliance, gaining competitive advantage, securing capital, reducing insurance costs, supporting accountability, and delivering economic value. This paper examines how AI assurance is currently being applied across five key sectors: Justice and Emergency Services, Financial Services, Education, Health and Social Care, and Defence. The paper showcases the tools that are being used by all, while showcasing sectoral differences and encouraging what they can learn from each other.

For public services examined in this paper, AI assurance provides real benefits for building and maintaining public trust. Unlike commercial applications with market feedback mechanisms, AI in the public sector directly shapes access to essential services, often for citizens with no alternative provider. As such, public trust in AI is critical. However, these sectors face unique bounds: strict duties of care, sensitive data, and accountability to the public. Also, with funding disparities that exist, this means that some services (health and defence) have more resources for AI pilots than others (education and justice). This paper therefore makes the case for finding ways to increase cross-sector knowledge sharing in AI assurance and offers suggestions of how this could be achieved. This paper also spotlights the current application of AI assurance in the financial services industry to include the specific tools and practices in use, which other sectors could learn from.

Based on qualitative research from techUK's June 2025 Sector Specific AI Assurance Event Series, this paper reveals that while substantial sector-agnostic AI assurance expertise exists within sectors, each domain's unique risk profile, regulatory environment, and operational constraints shape how ethical principles are prioritised and implemented. The paper identifies three areas requiring policy and market attention to strengthen the UK's AI assurance ecosystem:

- 1. Framework Consolidation:** Support organisations to reduce complexity by building on established assurance practices rather than creating new ones.
- 2. Sector-Specific Adaptation:** Develop applications of ethical principles and guidelines of use that respect existing foundations while aligning with sector obligations, duties of care and skill levels.
- 3. Cross-Sector Knowledge Transfer:** Establish formal mechanisms to share successful lessons learnt and joint pilots where appropriate creating opportunities for innovations in one domain that can be adapted successfully to others.

Building on techUK's Digital Ethics Working Group's previous work on [operationalising ethical principles](#) and [developing skills](#) for responsible AI practitioners, this paper aims to continue our support of developing the UK's AI assurance ecosystem. By fostering cross-sector collaboration alongside sector-specific expertise, the UK can build the mature assurance ecosystem needed to give innovators, investors, and regulators confidence in AI systems, ensuring technological capability translates into analogous levels of trust and adoption.





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