



CAPABILITY STATEMENT

Operational AI Assurance & Governance Infrastructure

Evidence-driven evaluation of deployment readiness, subgroup reliability, threshold-sensitive behaviour, governance conditions and operational AI risk.

UK PATENT PENDING

Ducaltus technologies are supported by two pending UK patent applications covering AI deployment assurance and AI governance processing technologies.

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DUCALTUS AT A GLANCE

Operational assurance for real-world AI deployment

Ducaltus is an AI assurance and governance company developing operational infrastructure for evaluating whether AI systems are ready for deployment, remain reliable across relevant subgroups and operating conditions, and continue to satisfy governance-sensitive assurance requirements.

The Ducaltus Enterprise platform turns technical and governance evidence into structured assurance workflows that support deployment evaluation, reassessment, remediation progression and traceable decision-making for high-stakes AI systems.

DEPLOYMENT READINESS

Assess evidence and operational conditions before and during deployment.

SUBGROUP RELIABILITY

Identify disparities and reliability differences hidden by aggregate performance.

THRESHOLD INTELLIGENCE

Examine threshold-sensitive behaviour, error trade-offs and instability.

GOVERNANCE ASSURANCE

Maintain traceable assurance states, reassessment and remediation workflows.

Why operational AI assurance matters

Aggregate accuracy can conceal material differences in how an AI system behaves across populations, thresholds and deployment conditions. In high-impact environments, those differences can affect reliability, oversight and the defensibility of deployment decisions.

- Hidden subgroup performance disparities and intersectional variation
- Unequal false-positive and false-negative impacts
- Conflicting conclusions across fairness metrics
- Threshold-sensitive changes in operational behaviour
- Deterioration, uncertainty or remediation requirements after an initial assessment

THE DUCALTUS APPROACH

Move beyond a one-time model score. Evaluate evidence in the context of deployment conditions, surface material reliability and governance signals, and preserve an auditable assurance trail.

PLATFORM & CAPABILITIES

A structured assurance layer around AI deployment

Ducaltus Enterprise provides a controlled workflow for bringing together evaluation evidence, assurance analysis and governance-aware deployment reasoning. The platform is designed to support repeatable assessment rather than a single static compliance output.

Operational Assurance Infrastructure

Structured evaluation of deployment readiness, governance-sensitive risk, assurance evidence and operational conditions.

Subgroup & Intersectional Reliability

Analysis beyond aggregate performance to identify material disparities across demographic or operationally relevant groups.

Threshold & Error Trade-off Assessment

Evaluation of threshold-sensitive behaviour and false-positive/false-negative trade-offs under changing decision conditions.

Deployment-State Evaluation

Evidence-informed representation of deployment conditions and the assurance state associated with a system or assessment.

Remediation & Reassessment

Support for recording corrective action, reassessing evidence and tracing progression or regression across assurance cycles.

Governance-Aware Decision Support

Structured outputs that support human oversight, escalation and accountable deployment decisions without replacing human authority.

Assurance workflow



RESEARCH & PROTECTED INNOVATION

Research-led assurance, translated into operational infrastructure

Ducaltus draws on research in fairness, reliability, threshold behaviour, deployment assurance and governance-aware evaluation. The objective is not simply to produce metrics, but to make assurance evidence usable within operational deployment decisions and reassessment workflows.

Fairness Metric Disagreement & FDI

The Fairness Disagreement Index (FDI) examines disagreement between fairness metrics and the stability of fairness conclusions.

Operational AI Deployment Assurance

Research on governance-aware deployment-state evaluation, reassessment, remediation progression and operational assurance workflows.

Intersectional Fairness Evaluation

Evaluation of subgroup reliability and deployment-relevant instability across intersecting demographic and contextual conditions.

Reliability in High-Stakes AI

Work examining failure modes, decision risk and reliability in systems operating in sensitive or high-impact environments.

PROTECTED INNOVATION

Ducaltus has two UK patent applications pending: GB2622876.7, relating to AI deployment assurance technology, and GB2622891.6, relating to AI governance processing technology. Patent pending status does not indicate that a patent has been granted.

Selected research

Operational AI Deployment Assurance arXiv: 2605.27827

When Fairness Metrics Disagree arXiv: 2604.15038

AI Reliability in Safety-Critical Systems arXiv: 2604.01449

Fairness in Law Enforcement Facial Recognition arXiv: 2603.28675

ENGAGING WITH DUCALTUS

From initial evaluation to controlled technical review

Ducaltus can support organisations evaluating AI assurance requirements, reviewing an existing deployment workflow, or assessing the suitability of the Ducaltus Enterprise platform for a pilot or controlled evaluation.

1. Discovery & Scope	Define the AI system, deployment context, assurance questions, stakeholders and available evidence.
2. Evaluation / Pilot	Use a controlled scope to evaluate platform workflows, assurance outputs and fit with the organisation's governance process.
3. Technical Review	Where appropriate, provide deeper deployment, security and technical assurance information under the relevant disclosure controls.
4. Operational Adoption	Establish repeatable evidence, reassessment and governance workflows aligned with the agreed deployment context.

Customer documentation

Customer-facing documentation is provided according to the stage of engagement. This includes platform overview material, evaluation and pilot guidance, quick-start and user documentation, and controlled security or technical assurance information where appropriate.

CONTROLLED DISCLOSURE

Customer-facing material is intentionally separated from confidential source code, proprietary assurance logic, internal architecture, security-sensitive configuration and patent working records.

COMPANY & CONTACT

Ducaltus Ltd

Ducaltus develops operational AI assurance and governance infrastructure for organisations working with high-stakes or decision-critical AI systems.

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Founder

Khalid Adnan Alsayed

Founder of Ducaltus, with work focused on operational AI assurance infrastructure, deployment governance, fairness and reliability evaluation, and high-stakes AI systems.

- BSc (Hons) Artificial Intelligence - First-Class Honours, Teesside University
- FdSc Software Engineering – Distinction



AI ASSURANCE. GOVERNANCE. REAL-WORLD IMPACT.

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