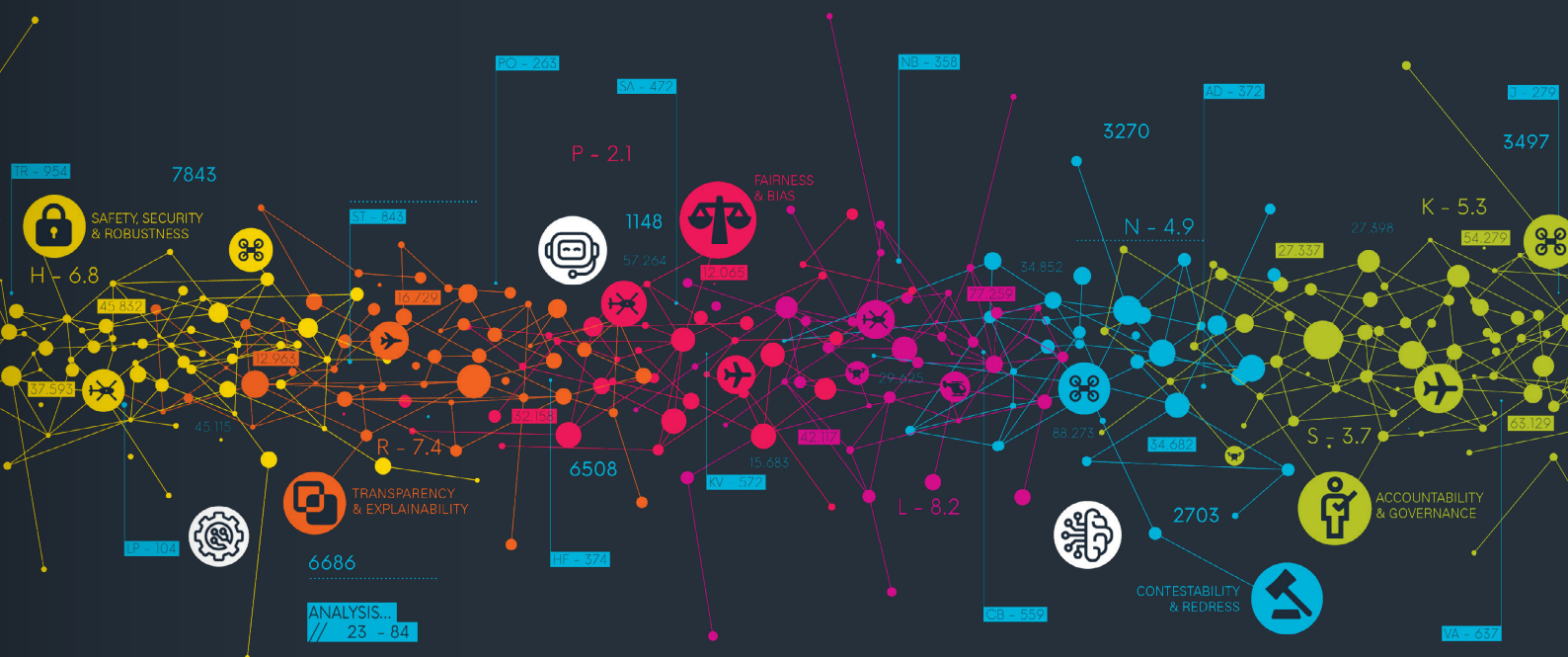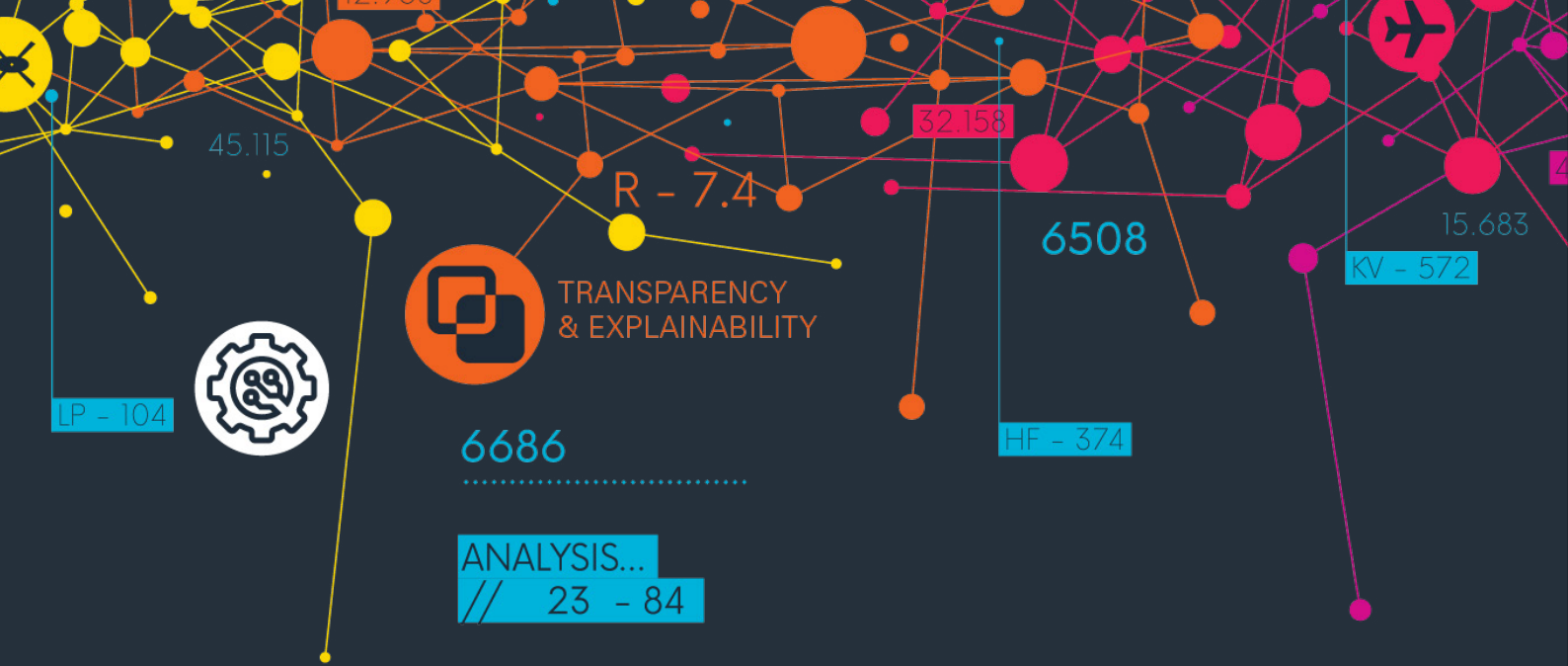# CAA's Response to AI-Enabled Automation

Building Trust Through Principles-Based Oversight

PROTECTING PEOPLE, ENABLING AEROSPACE

CAA Ai Innovation Strategy

Our AI Principles

The UK Civil Aviation Authority (CAA) is taking a measured and considered approach to automation in aviation that is enabled by Artificial Intelligence (AI). We recognise both the transformative potential and inherent challenges this technology presents.

Our response establishes a principles-based framework that will:

- Guide the safe regulation of AI in aerospace.
- Enable responsible adoption within our organisation.
- Build trust through transparent governance.
- Foster innovation while maintaining our commitments to safety, security, environmental sustainability, and consumer protection.

This balanced approach ensures we can harness the benefits of AI while upholding our core responsibilities.

This brochure provides an overview of how the CAA is responding to AI-enabled automation in aerospace and within our organisation. It summarises our strategic approach and implementation plans.

For comprehensive information about our AI strategies, including guidance and links to other resources, please visit our dedicated AI webpage: www.caa.co.uk/AI

Building Trust Systematically

Our strategy is built on five core principles that guide both the regulation and use of AI.
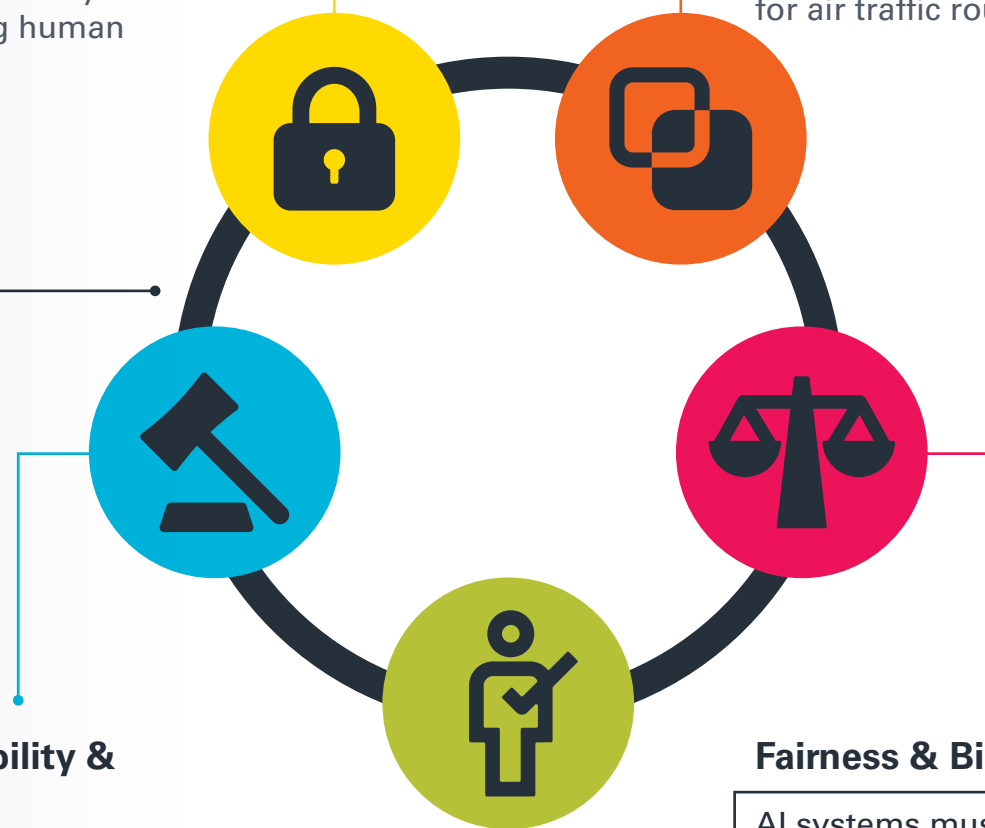
Safety, Security & Robustness

AI systems must operate safely and securely, maintaining robust performance even in challenging conditions.

Example: Predictive maintenance using AI to analyse aircraft sensor data, ensuring problems are detected early while maintaining human oversight

Transparency & Explainability

We must understand where AI is used within a system, how it works within a system, and why it makes specific decisions.

Example: Clear documentation of how AI-powered systems make recommendations for air traffic routing

Contestability & Redress

Users must have clear ways to challenge AI-generated decisions.

Example: Clear processes for airlines to query AI-generated safety recommendations

Accountability & Governance

Clear lines of responsibility must exist for AI-based operations, actions, and their outcomes.

Example: Defined roles and responsibilities for AI system oversight in airport operations

Fairness & Bias

AI systems must treat all users equitably, regardless of their characteristics; and requiring careful assessment of training data and ongoing monitoring of AI-enabled systems to identify and address potential bias.

Example: Ensuring automated passenger screening systems treat all travellers equitably

Two Complementary Strategies

Strategy for Regulating AI
Focusing on four key areas:

Safety
We will oversee AI-enhanced systems and operations across aerospace to ensure that they meet rigorous safety standards, while enabling innovation to flourish.

Security
From AI-powered baggage screening to threat detection, we will ensure security systems remain effective and reliable.

Consumer Protection
We will collaborate with the sector to build trust in AI consumer-facing systems, ensuring fair treatment remains paramount.

Environmental Sustainability
We will support AI applications that optimise aerospace operations to reduce their environmental impact, helping aviation meet its sustainability goals.

Strategy for Using AI in the CAA
We will explore the use of AI across three domains:

Regulatory Use
We will explore how AI can enable greater efficiency of regulatory processes for our colleagues and customers, while maintaining the essential role of human expertise and judgment.

Business Operations
We will identify and test areas of our business operations where AI-enabled tools can unlock efficiencies and improvements. This includes exploring opportunities in finance, procurement, human resources and other corporate functions while ensuring fair processes and appropriate oversight

Everyday Activities
We will enable colleagues to use AI responsibly to assist with routine tasks, maintaining quality standards while enhancing productivity.

Our Approach

Focused Implementation

We are taking a measured and phased approach:

- Development begins immediately, building on the development of this approach.

- Regular review points ensure we stay aligned to the needs of our customers and colleagues.

- Flexibility to adapt our approach as technology and needs evolve.
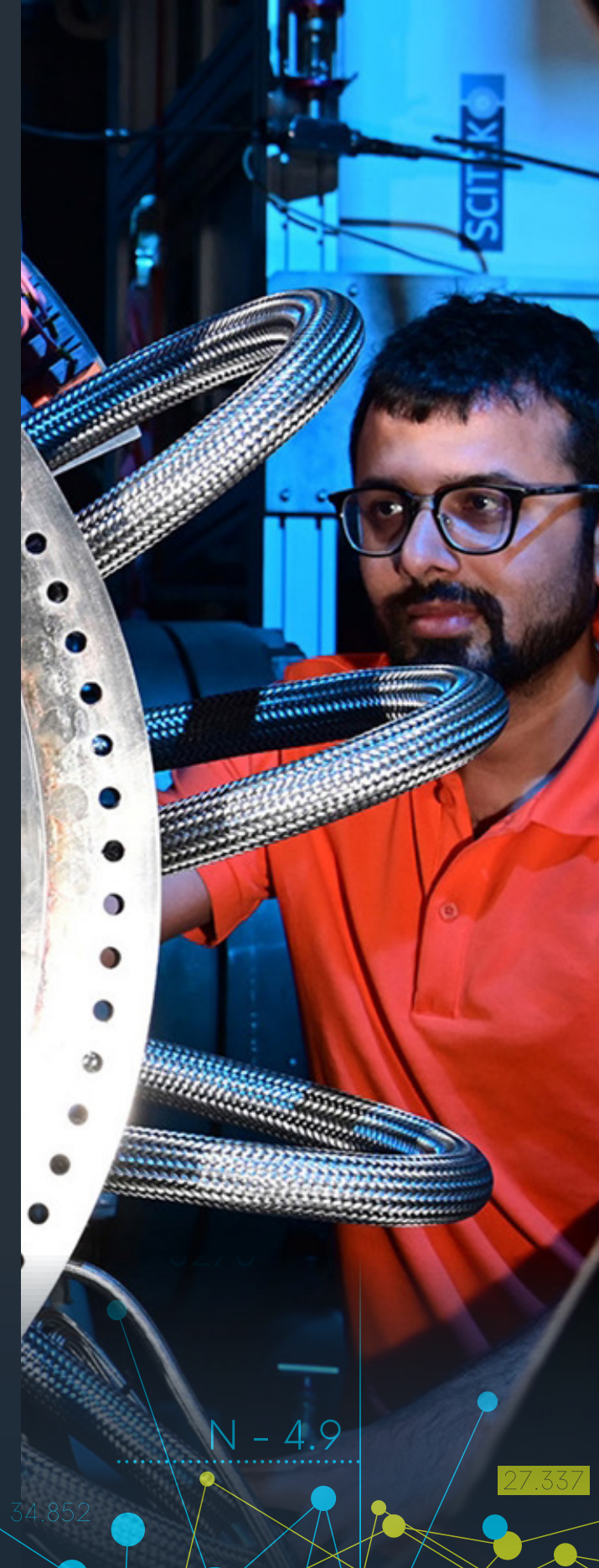
Collaborative Evolution

We will work collaboratively alongside:

- Colleagues who are using and regulating AI

- Industry partners developing AI solutions

- Academic institutions researching aviation AI

- International regulators sharing best practices
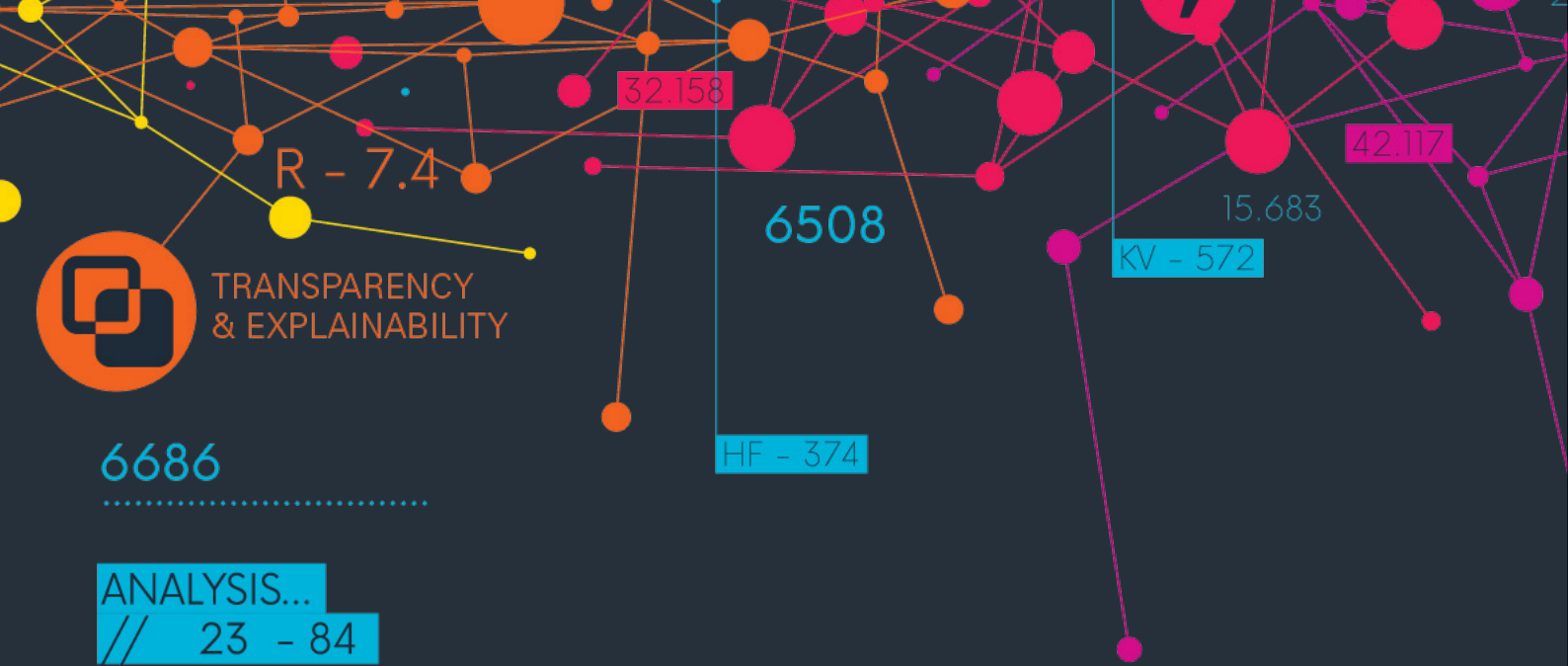
- Stakeholders providing ongoing feedback

Practical Governance

Our oversight framework includes:

- Risk-based assessment of AI applications

- Clear governance structure

- Measured implementation approach

- Regular review and updates

R – 7.4

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42.117

6508

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KV – 572

6686

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ANALYSIS...
// 23 – 84

Getting Involved

We welcome engagement from everyone in shaping the future of AI in aviation and within the CAA.

Visit our dedicated AI webpage:
www.caa.co.uk/AI

Contact our AI team:
strategyforai@caa.co.uk

We encourage:

- Feedback on our approach
- Participation in consultations
- Sharing of experiences and insights
- Ongoing dialogue about AI in aviation

Scan me for AI webpage

NB – 358

A – 472

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3270

FAIRNESS
& BIAS

1148

N – 4.9

57.264

34.852

12.065

77.259

29.625

PROTECTING PEOPLE, ENABLING AEROSPACE

"This overview reflects our initial approach and strategies as of November 2024. Our approach will continue to evolve through stakeholder feedback and emerging developments in AI technology."

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