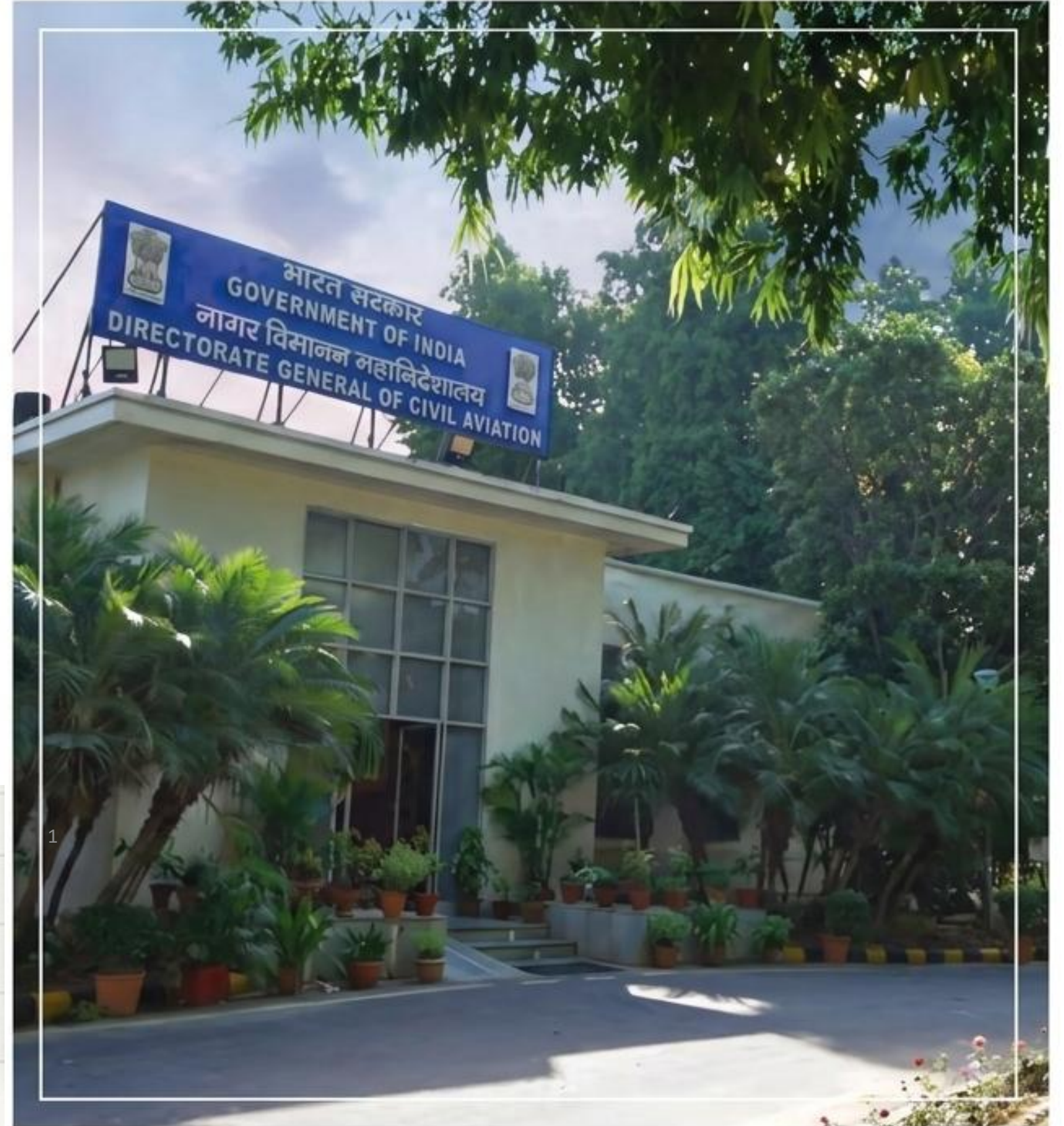


# Digital India in Aviation: Achievements, Impact, and the Road Ahead

A presentation by the Directorate  
General of Civil Aviation (DGCA), India



# Scope



## Act I

### Legacy System and Challenges

(The Friction of Paper)



## Act II

### eGCA Journey 1.0

(Biggest Achievements and Lessons Learnt)



## Act III

### New Challenges and Way Ahead

(The Predictive Horizon)



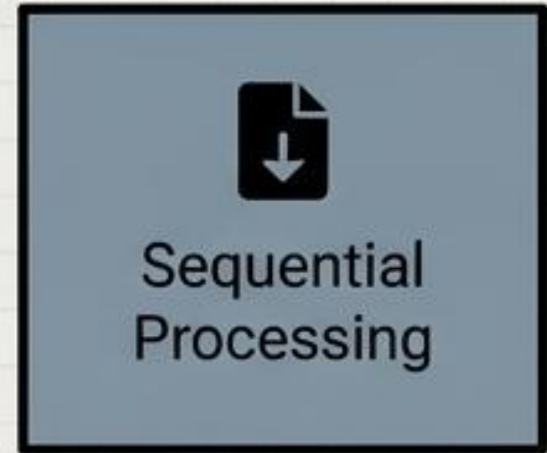
## Conclusion

### Reflections - Q&A

# The Baseline: Vulnerabilities of a Paper Legacy



**LEGACY VULNERABILITIES**

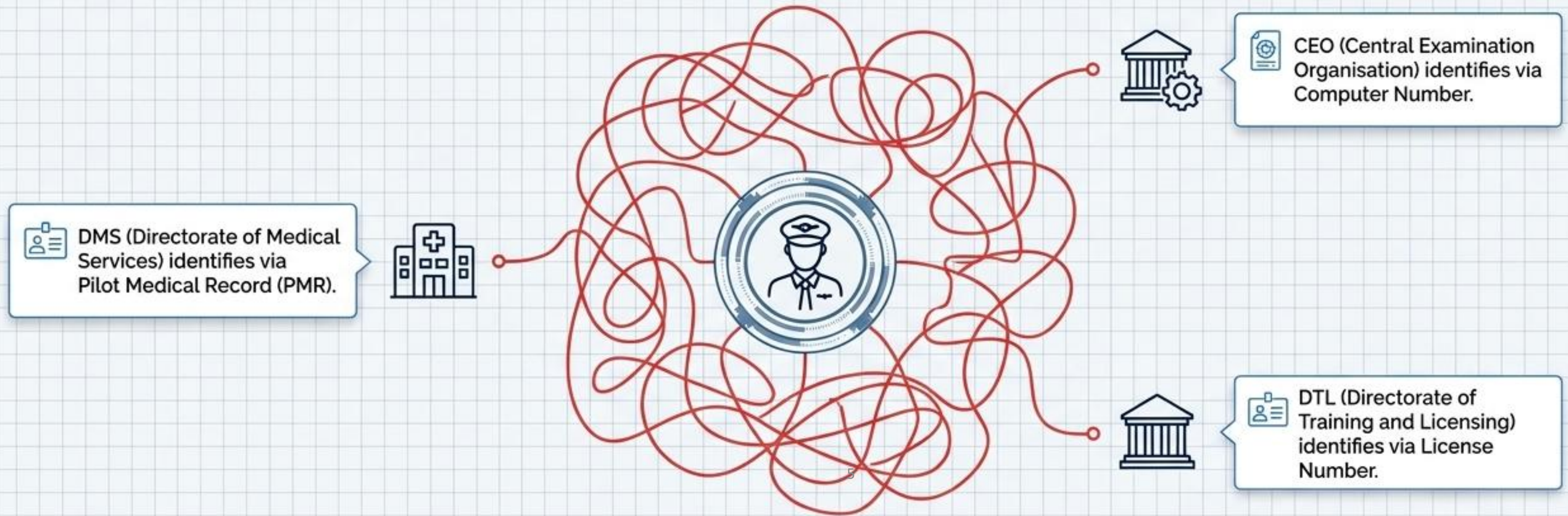


# A System Weighed Down by Physical Constraints

Prior to eGCA, regulatory processes were wholly manual and paper-driven.



# The Core Friction: The Multiple Identities Problem



A single stakeholder (a pilot) was forced to maintain multiple identities, completely blocking the sharing of applicant information between directorates.

# The Catalyst: Turning Crisis into Continuity

“Executing eGCA was like swapping a tyre on a moving vehicle.”



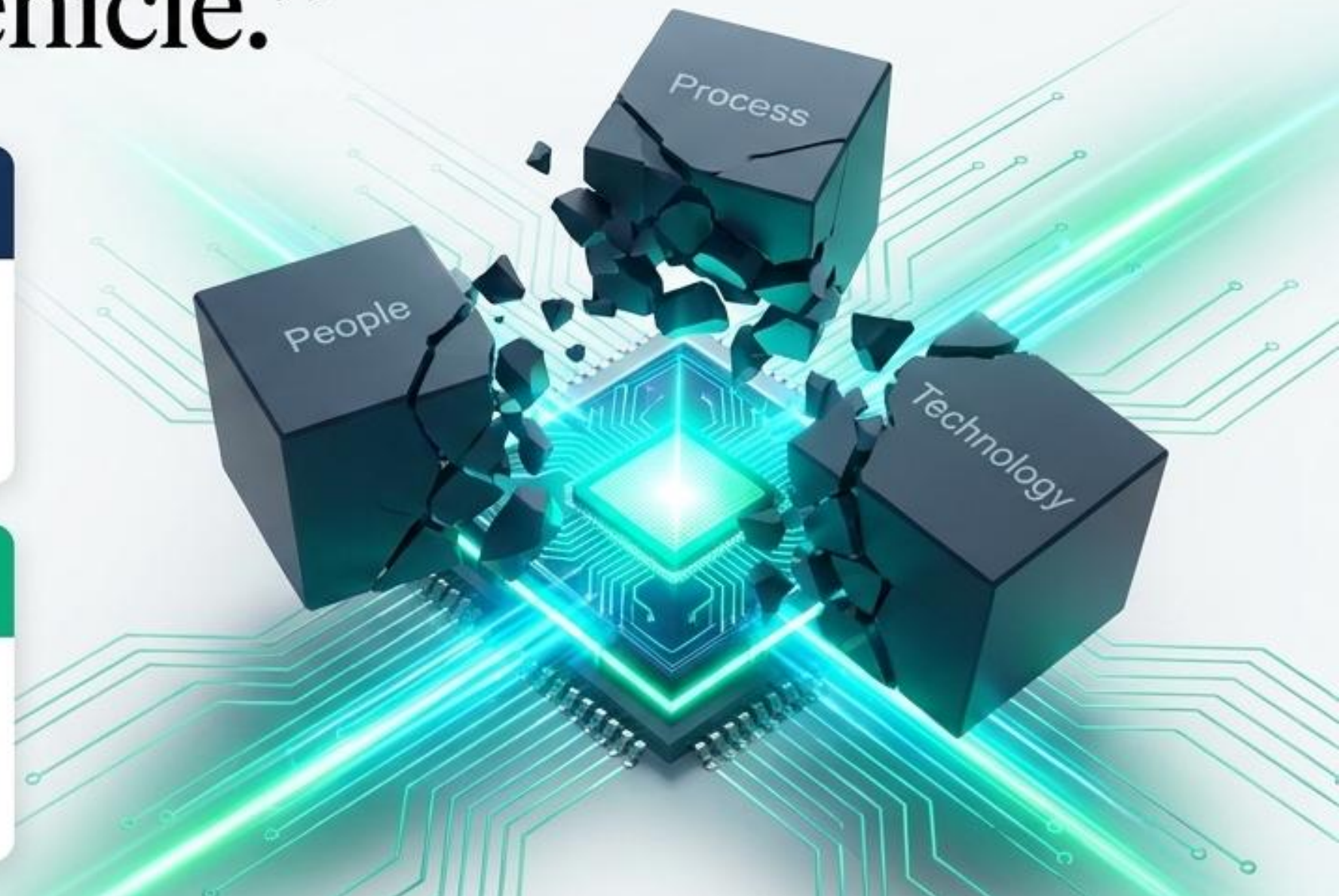
## The Mandate

Unprecedented COVID-19 challenges forced a Business Continuity Plan for rapid digitization, stakeholder sourcing, and data validation.



## The Solution

A Single Window e-Governance platform (eGCA 1.0) became fully operational in 2021, establishing a transparent, efficient, and technology-driven regulatory framework.



# The Digitization Leap: eGCA 1.0 Scale & Impact

## 300+

Live regulatory services delivered digitally

## 5 LAKH+

Applications processed through the system

## 3 CRORE

Pages and files digitized into a centralized repository

### Impact Note

The platform fundamentally altered the operational footprint of the DGCA, instantly improving transparency and the ease of doing business.



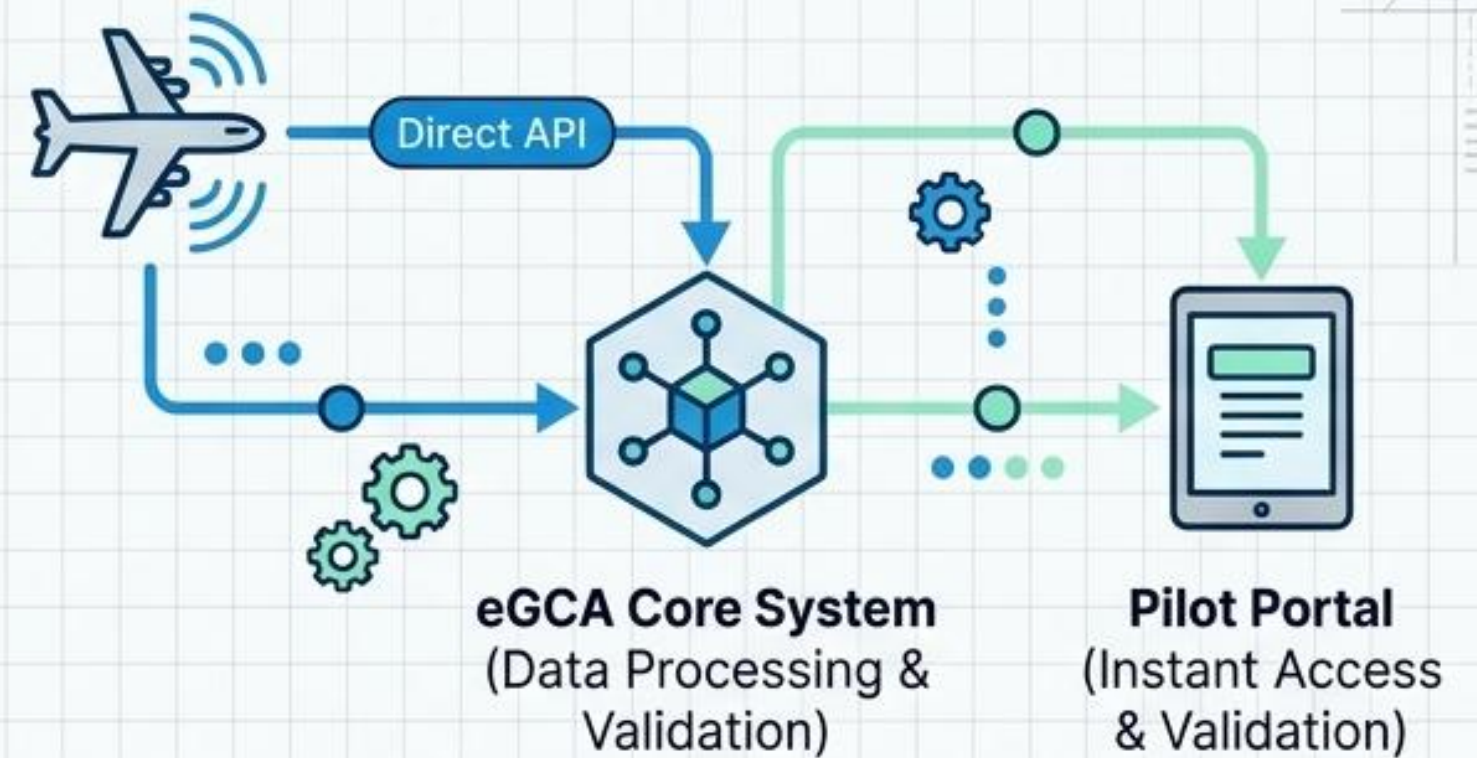
# The E-Logbook Revolution: Zero Manual Intervention

**LEGACY** (Physical System)



Replaced 15,000+ bulky physical logbooks.  
Ended slow verification cycles vulnerable to human error and tampering.

**NEW ECOSYSTEM** (Digital & API-Driven)



Direct API integration (ACARS/AIMS) with scheduled airlines.

**The Result: Live, real-time logging of flying experience with instant automated validation for licensing—completely bypassing manual entry.**

# Electronic Personnel License (EPL): A Global Early Adopter

## The Booklet (Legacy)



Physical booklet subject to wear and tear.  
Required frequent physical submission for endorsements.

## Smart Card (Transitional)



QR code introduced. Physical CPL/ATPL cards phased out of print.

## Digital EPL (ICAO-Compliant & Secure)



**Global Standing:** India is only the 2nd country globally to implement ICAO-compliant EPL. Universal Access via QR code (online and offline). Dynamic and static security features with digital signatures.

# Impact of eGCA 1.0

## Systemic Transparency

- Stakeholders can track application status in real time.
- Digital workflows have fundamentally enhanced accountability.
- Total reduction in the dependency on the physical movement of files.



## User Mobility

- Dedicated mobile applications newly implemented for Flight Crew.
- Instant, on-the-go digital access to licenses, regulatory approvals, and professional records.
- Massively improved stakeholder convenience and user experience.

# Integration with External Systems

The eGCA platform acts as a central digital hub, integrating securely with external government and aviation systems to enable end-to-end online processing, verification, and approvals.



# Comprehensive Digital Services Delivered Through eGCA

## Personnel, Training & Medical

-  **Licensing:** Pilots, AME, ATCO.
-  **Medical:** Medical assessment of pilots.
-  **Mobile App:** E-logbook updates, offline access, auto-updation of flying experience (eFAR).
-  **Reports:** Complete active pilot database.

## Aircraft & Operations

-  **Airworthiness:** Initial and continuing airworthiness.
-  **Aircraft Registration:** Issue/renewal of AOP, Aerodrome Licenses.
-  **Airline Organisations:** Approval of Design/ Manufacturing/MRO/ATO.
-  **Flight Operations:** Approval of Post Holders.
-  **Drone:** Approval of Type Certificate, UIN, RPTO.

## Oversight & Compliance

-  **Surveillance:** Surveillance and Audit operations.
-  **Investigations:** Incidents, follow-ups, and recommendations.
-  **International Affairs:** Flight schedules, dangerous goods carriage.

**As on 10 Aug 2026**

**501,606**

Total Digital Applications Received



## Human Capital Registered

**80,196** 

Pilots

**10,023**

AMEs (Aircraft  
Maintenance Engineers)

**4,348** 

ATCOS

**212+**

Active Medical  
Examiners



## Organizational Infrastructure



**117**

Airport  
Operators

**41** 

Approved Flying  
Training Organizations

13

### Air Operators Breakdown:

|                    |            |                  |    |
|--------------------|------------|------------------|----|
| NSOP:              | <b>212</b> | Govt. Operators: | 22 |
| Foreign Operators: | 137        | SOP:             | 17 |
| Pvt. Operators:    | 84         | SCO:             | 13 |

# The Problem with Success: The Imperative for eGCA 2.0

## eGCA 1.0: The File Movement Engine



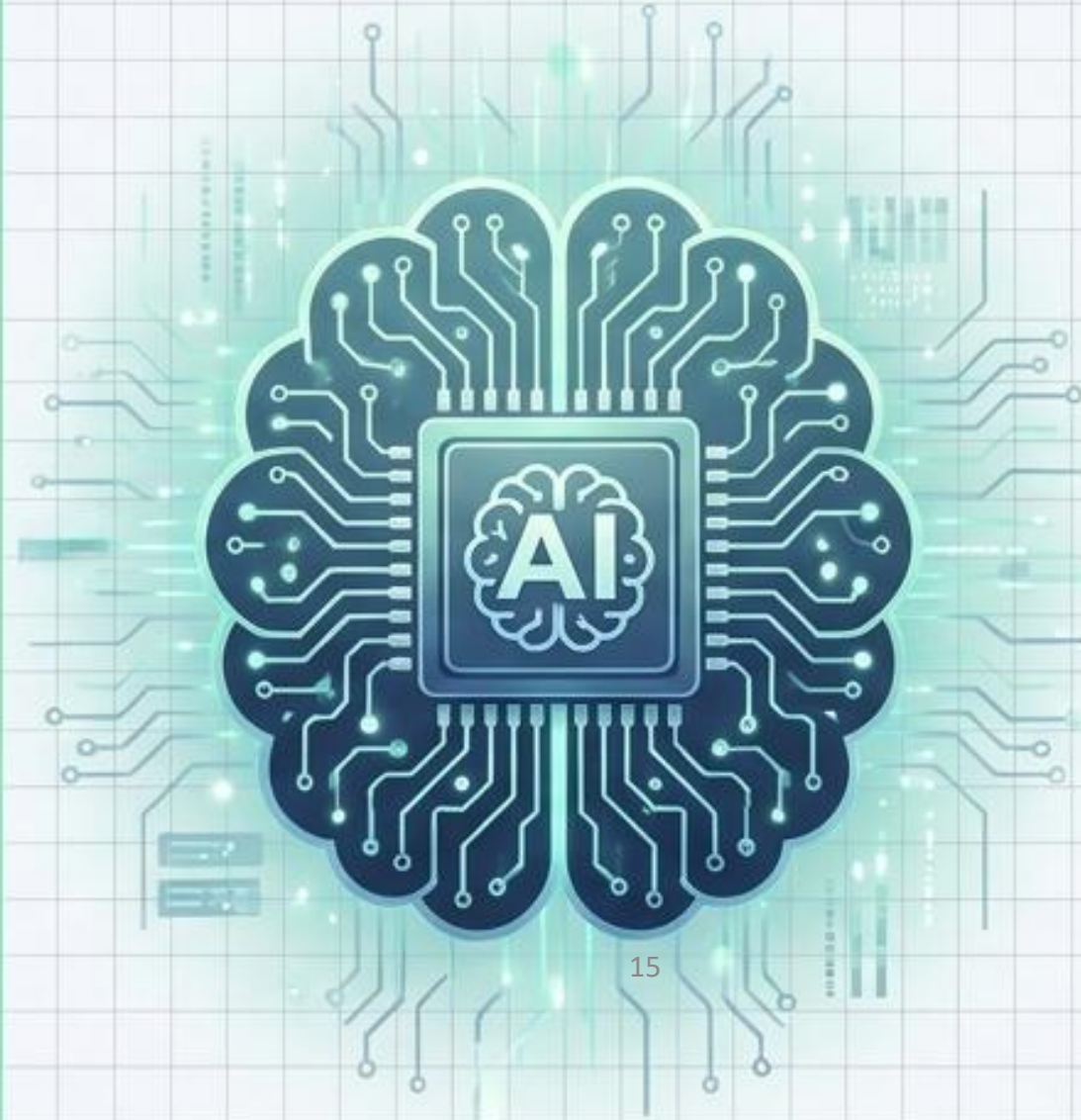
- Digitizing a bad process just **creates a bad digital process.**
- Sequential physical routing was perfectly mirrored in the digital space.
- Increasing volume of regulatory approvals now overwhelms manual digital document scrutiny.

## eGCA 2.0: The Regulatory Intelligence Engine



- We must transition from reactive manual validation to automated compliance.
- Structural redesign is mandatory—IT infrastructure must be highly agile.
- Hardcoding rigid service logic fails dynamically during regulatory changes.

# The Way Ahead: Enter eGCA 2.0



## The Core Shift



Transitioning from a reactive 'File Movement Engine' to an AI-enabled 'Regulatory Intelligence Engine'.

## Action Plan



Moving beyond mere workflow processing into intelligent scrutiny and automated compliance validation.

## Immediate Milestone



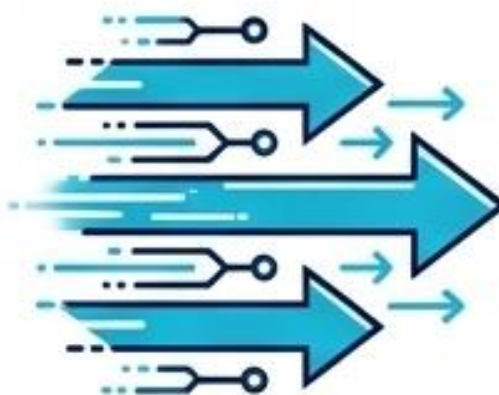
DGCA has already commenced AI implementation for 16 high-impact Phase-I services.

# Architecture of eGCA 2.0



## Rules-First Architecture

Encoding Aircraft Rules and CARs directly into machine-readable logic to ensure compliance validation at the source.



## Parallel Processing

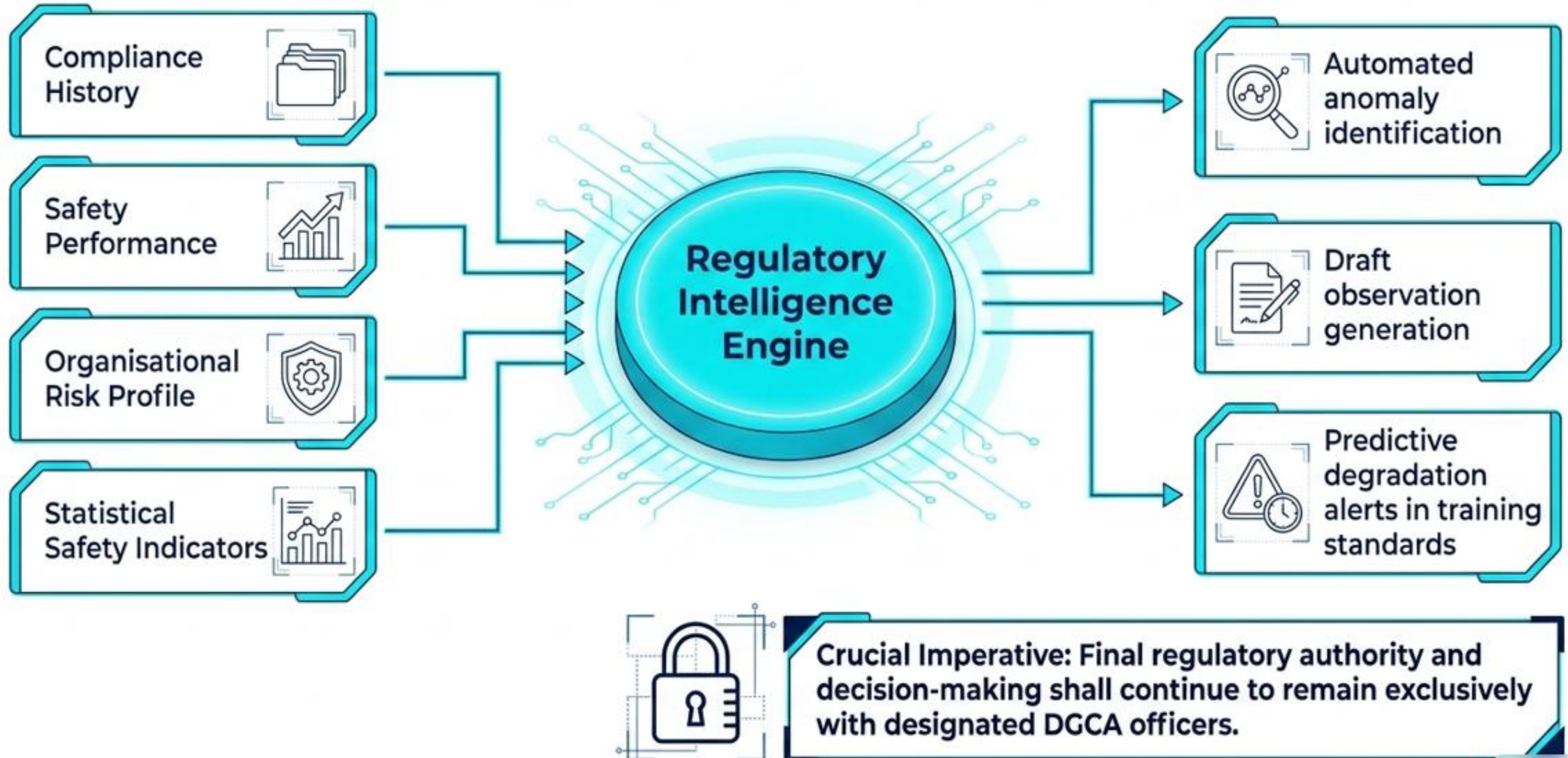
Shattering old sequential bottlenecks to drastically reduce processing timelines through concurrent evaluation.



## Structured Data Conversion

Moving beyond flat PDFs. Using OCR and intelligent processing to convert scanned documents into validated, queryable datasets.

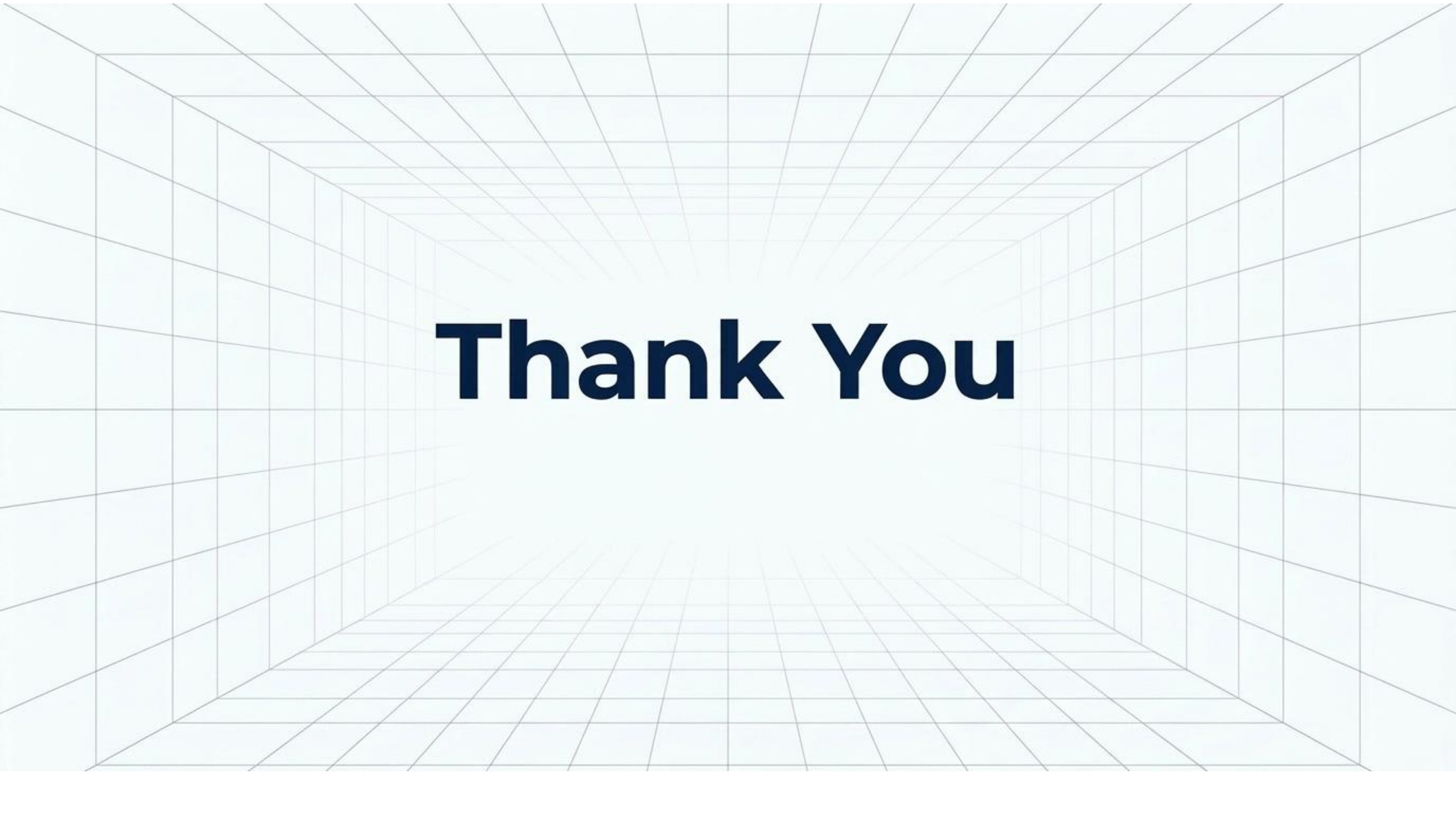
# AI-Assisted Oversight & Predictive Safety



# Reflections & Open Discussion

Exploring the transition from the File Movement Engine to the Regulatory Intelligence Engine.





**Thank You**