The Aerial Response Governance Framework (ARGF™) establishes a unified governance system purpose-built for autonomous aerial operations

Turning Autonomous Aerial Technology into Trusted Operational Infrastructure.

ARGF-WP01 v1.0 – March 2026
ARGF aligns with evolving FAA BVLOS rules, NIST AI RMF updates, and recent public safety Drone as a First Responder (DFR) pilot.

ARA
AUTONOMOUS RESPONSE ADVISORY

Executive Summary

This paper presents ARGF as a conceptual governance framework designed for real-world applications.

Autonomous aerial systems are rapidly transforming public safety, infrastructure protection, and security operations [1]. However, governance (the policies, procedures, and oversight mechanisms that define decision authority and accountability) has not kept pace with technology [2].

As a result, many organizations are deploying aerial capabilities without the governance structures required to manage operational risk, ensure compliance, and sustain scalable deployment.

The Aerial Response Governance Framework (ARGF) introduces a structured governance architecture designed specifically for autonomous aerial systems. ARGF is designed to enable organizations to transition from fragmented drone programs to governed, scalable operational infrastructure.

ARGF is not just a conceptual framework; it is an operational governance system supported by assessment tools, control catalogs, and implementation playbooks that translate strategy into execution.

ARGF is designed for operational deployment, with ongoing validation through real-world implementation and future empirical study.

The **ARGF™** Framework defines governance architecture, **ARGF-GEM™** executes governance across the lifecycle, the Control Catalog defines enforceable controls, **AARRA™** assesses readiness, and **AARGMM™** measures governance maturity and progression over time.

ARGF is informed by operational experience, cross-domain governance models, and emerging industry practices.

Why This Matters Now

Organizations deploying drones and autonomous systems face increasing pressure across multiple fronts:

- Regulatory pressure: FAA BVLOS expansion and evolving compliance requirements [1]
- Legal exposure: Liability risks from autonomous operations and AI decision-making [3]
- Public trust: Privacy and transparency concerns impacting program viability [4]
- Insurance scrutiny: Requirement for structured governance and documented risk management [5]

Without a formal governance model, organizations risk program failure, regulatory action, or inability to scale operations.

The Governance Gap

Most organizations approach aerial systems as technology deployments rather than governed infrastructure [2].

This results in fragmented operations, vendor-driven system design, limited scalability, and increased operational and legal risk.

Organizations consistently repeat the same deployment failures:

- Treating drones as tools instead of infrastructure
- Vendor-driven program design
- Lack of structured oversight and accountability
- Failure to integrate sensor ecosystems
- Inability to scale beyond pilot programs

Organizations deploying autonomous aerial systems without governance are not building capability, they are building liability.

Existing frameworks (including enterprise risk management, aviation safety systems, and AI governance) provide important foundations. However, they do not address the integrated operational challenges of autonomous aerial systems.

This creates a critical governance gap at the intersection of:

- Aviation Safety
- AI Autonomy
- Cybersecurity
- Privacy & Civil Liberties
- Operational Accountability

ARGF is designed to address this gap by providing a unified governance architecture that enables organizations to deploy, manage, and scale autonomous aerial systems within a structured and accountable framework.

What ARGF Enables

Organizations implementing ARGF can achieve:

- Scalable deployment of drone programs across jurisdictions
- Reduced legal and regulatory risk exposure
- Faster approval for advanced operations (e.g., BVLOS)
- Improved operational accountability and auditability
- Increased public trust through transparency and governance

ARGF transforms aerial systems from experimental tools into operational infrastructure.

What Makes ARGF Distinct

ARGF differs from existing governance frameworks in three key ways:

1. **Pillar/Domain-Specific Design**
   ARGF is purpose-built for autonomous aerial systems rather than adapted from general IT or risk frameworks.

2. **Integrated Governance Model**
   It unifies aviation safety, AI governance, cybersecurity, and privacy into a single operational architecture.

3. **Operational Implementation Focus**
   ARGF is designed for deployment, supported by control catalogs, assessment tools, and operational playbooks.

ARGF Governance Architecture Overview

ARGF is built on a layered governance architecture:

- Five strategic governance pillars that define core responsibilities
- Nine operational domains that translate governance into actionable controls
- A lifecycle governance model that applies oversight across planning, deployment, and operations
- A structured control catalog translates governance into enforceable operational safeguards

- An assessment model that measures readiness and identify governance gaps
- A maturity model that enables organizations to assess and scale governance capability
- ARGF aligns with NIST RMF, NIST AI RMF, FAA SMS, and ISO 31000.

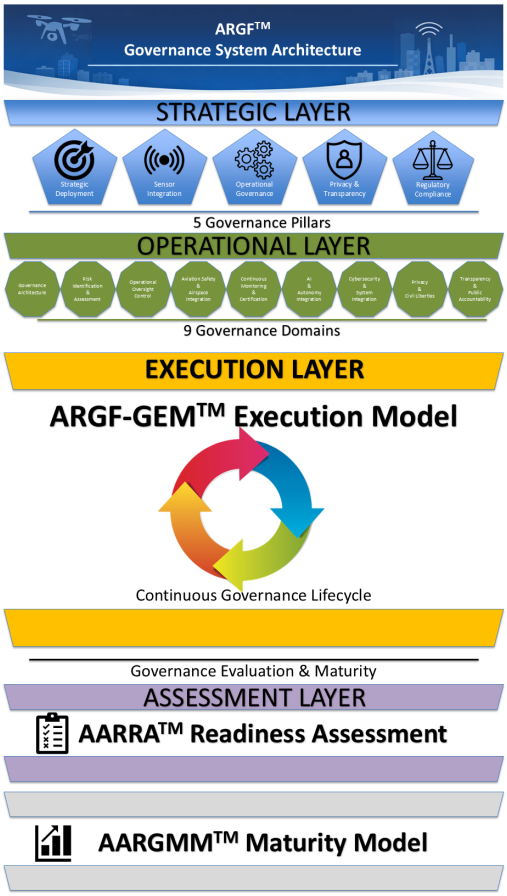
These components operate as an integrated system, not independent tools. This structure ensures that governance is both strategically aligned and operationally actionable.

The Aerial Response Governance Framework (ARGF) defines the governance architecture for autonomous aerial systems.

The ARGF Governance Execution Model (ARGF-GEM) is the governance execution engine that activates controls, enforces lifecycle governance, and supports continuous monitoring, auditability, and performance assurance across operations.

Figure 1 illustrates the ARGF Governance System Architecture, including strategic, operational, execution, and assessment layers. This layered model integrates governance across the full operational lifecycle, enabling continuous oversight from strategy through execution and assessment. This allows organizations to align strategy, operations, and oversight within a unified governance system.

FIGURE 1



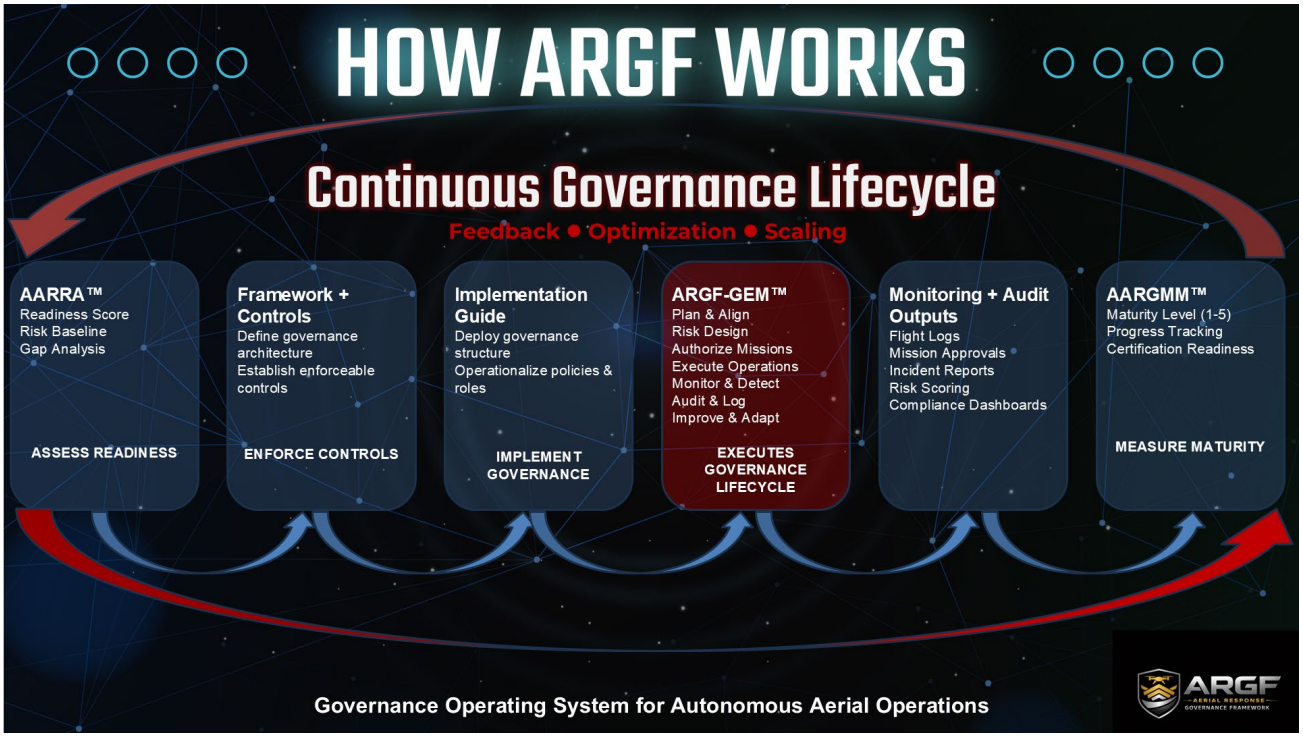
ARGF aligns with evolving FAA BVLOS rules, NIST AI RMF updates, and recent public safety Drone as a First Responder (DFR) pilot.

From Framework to Implementation

ARGF is supported by a full implementation ecosystem:

- **ARGF™ Core Framework:** (WHAT) Defines governance architecture
- **ARGF-GEM™:** (HOW) Executes governance through lifecycle-driven, auditable, and scalable operations
- **AARRA™ Toolkit:** (ASSESS) Assesses readiness and identifies governance gaps
- **AARGMM™:** (MEASURE) Measures governance maturity and progression over time
- **ARGF Control Catalog:** (IMPLEMENT) Defines actionable governance controls
- **ARGF Operational Playbook:** (OPERATE) Delivers real-world procedures and workflows
- **ARGF Implementation Guide:** Provides structured deployment methodology

Together, these components enable organizations to move from concept to fully governed operations.



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Operational Deployment Model

While ARGF defines a comprehensive governance system, organizations typically adopt and implement ARGF through a structured engagement model aligned to their operational maturity, risk profile, and deployment objectives.

ARGF is not delivered as a static framework; it is implemented as a governance capability

Entry Point: Readiness Assessment (AARRA™)

Organizations begin with an AARRA™ readiness assessment to establish a governance baseline, identify gaps, and define a risk-informed implementation roadmap.

Foundation: Governance Architecture & Controls

The ARGF Framework and Control Catalog establish governance architecture and define enforceable controls aligned to operational, regulatory, and risk requirements.

Operational Deployment: Governance Execution (ARGF-GEM™)

ARGF-GEM™ activates governance across the operational lifecycle, applying controls, monitoring performance, and producing auditable governance outputs.

Scaling & Optimization: Maturity Progression (AARGMM™)

AARGMM™ enables organizations to measure governance maturity, support certification readiness, and scale governance across multiple sites and operational environments.

This structured approach allows organizations to transition from fragmented deployments to fully governed, scalable, and auditable autonomous aerial operations.

Implementation Lifecycle

Organizations can adopt ARGF through a structured six-phase approach:

1. Strategic Assessment
2. Governance Development
3. Pilot Deployment
4. Integration & Automation
5. Scaled Deployment
6. Continuous Improvement

ARGF-GEM™ becomes active during pilot deployment and operates continuously once systems are operational.

This phased model ensures controlled, risk-informed adoption of autonomous aerial capabilities.

This lifecycle is defined in detail within the ARGF Implementation Guide, which provides a structured roadmap for organizational adoption.

- **Pilot Program:** Entry AARRA
- **Foundation Tier:** Framework + basic controls
- **Operational Tier:** Full GEM + controls + implementation
- **Enterprise Tier:** Scale + integration + certification

Who Should Use ARGF

ARGF is sector-agnostic and applies to public safety, critical infrastructure, corporate security, and emerging autonomous logistics systems.

ARGF is designed for organizations deploying or overseeing autonomous aerial systems, including:

- Public safety agencies
- Critical infrastructure operators
- Corporate security programs
- Drone service providers
- Government and regulatory bodies

The framework is sector-agnostic and adaptable to multiple operational environments.

Conclusion

Autonomous aerial systems represent a major advancement in operational capability but without governance, they introduce significant risk [3].

ARGF provides the governance architecture required to transform autonomous aerial systems into trusted operational infrastructure.

Organizations that adopt governance-first approaches today will be positioned to scale safely, maintain compliance, and lead in the next generation of autonomous operations.

While this paper establishes the strategic need for structured governance, the ARGF Framework provides the detailed architecture for implementation.

The framework defines the five governance pillars, supporting domains, lifecycle model, and maturity structure required to operationalize autonomous aerial response systems at scale.

Autonomous aerial systems are becoming operational infrastructure. Governance will determine which organizations scale safely, maintain public trust, and achieve regulatory approval.

Next Steps

"Start with an AARRA™ readiness assessment to baseline your program and identify immediate governance gaps.

Structured governance is the foundation for scalable autonomous operations.

References

1. Federal Aviation Administration (FAA). *Beyond Visual Line of Sight (BVLOS) Operations and Part 108 NPRM*, 2025–2026.
2. National Institute of Standards and Technology (NIST). Risk Management Framework *(SP 800-37 Rev. 2)*, 2018.
3. National Institute of Standards and Technology (NIST). *AI Risk Management Framework (AI RMF 1.0)*, 2023.
4. National Institute of Standards and Technology (NIST). *Privacy Framework 1.0*, 2020.
5. ISO. *ISO 31000: Risk Management Guidelines*, 2018.

Industry Context and Illustrative Deployments

These deployments highlight a consistent pattern: operational capability is advancing rapidly, while governance structures remain fragmented or underdeveloped - reinforcing the need for a unified governance system such as ARGF

- Skydio/Axon DFR Solution: https://www.skydio.com/solutions/dfr/axon-integration
  Skydio DFR Command Feb 26, 2026 milestone: >10M calls processed; integrates 25+ systems including CAD, next generation 911, and gunshot detection. The most deployed/trusted DFR platform in the U.S.

- Ohio DFR Pilot: https://drive.ohio.gov/about-driveohio/news/Nations-First-Statewide-DFR
  Nation's first statewide DFR pilot (launched Feb 2026; nine agencies selected; Ongoing operations to commence Spring 2026; evaluating response times, effectiveness, NDAA compliance, real-time streaming, UTM via CAL Analytics. Initial results expected Q2 2026.

- Seneca/Colorado Fire Suppression: http://kdvr.com/news/local/aspen-adopts-ai-powered-autonomous-fire-suppression-tech-a-first-in-the-world/
  Announced Feb 2026 with operations for Summer 2026: First US/world coordinated autonomous wildfire suppression system of 5 aircraft with mobile bases via Seneca partnership. Responds in seconds to inaccessible/night fires.

- DHS/NUSTL Urban Drone Evaluations: https://www.dhs.gov/science-and-technology/news/2025/09/23/feature-article-first-responders-put-drones-test-complex-urban-environments
  First responders test drones in complex urban environments for situational awareness/damage assessment post-disaster.

- DJI/Kentucky Agriculture: https://ag.dji.com/case-studies/agras-t40-corn-usa
  Family owned Hust Farms (12,000+ acres of corn/soybean) fully integrated DJI Agras T40 drones by 2023 for fungicide applications.

- North Carolina/California Medical: https://www.ups.com/us/en/healthcare/news/press-releases/medical-drone-service-california
  Launched 2019–2020 with expansions; ongoing hospital-campus BVLOS ops under FAA Part 135/107 waivers.

- North Dakoda Medical: https://blogs.und.edu/press-releases/2025/08/unds-center-for-innovation-partners-complete-landmark-medical-drone-delivery-trial/
  In July 2025, Project Rural Reach, led by the University of North Dakota's Center for Innovation, completed a landmark long-range BVLOS drone delivery trial for medical supplies.