“Future FAA Transitions - UAS Part 137 to Part 108 Agriculture”

About Me

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- UAS Instructor at Orange Coast College in Costa Mesa, CA since 2018
- Worked with Farm Bureau CA on State Assembly Bill 1016 that updates Aerial Pesticide Regulations to better reflect UAS operations
- Moderator for The Ag Drone Podcast
- NAAA UAAS Committee Member
- PERC – UAS Committee Member
- FAA Safety Team Representative Drone Pro – Little Rock FSDO
- Owner of Drone Crop Services
  - Licensed in Arkansas, California, Missouri, Oklahoma, and Wisconsin
  - Written Operations and Training Manuals for Swarm, BVLOS, and Night Operations.

Agenda

- Look to the Past – What Was: Prescriptive Regulation
- Currently Arriving - Performance-Based Regulation
- Confusion and Opposition
- The BVLOS NPRM (Current Status as of March 2026)
- Key Elements of Part 108 • Categories, Declarations of Compliance, Permits & Certificates
- Ag Areas of Operations – Permit vs Certificate
- Comparing Part 108 to UAS Part 137
- Concerns for Local and State Regulatory Authorities, Pilots, Loaders & Operators
- You Hold the Future – Required Changes to State Pesticide Laws
- What to Expect During the Adoption Period
- Questions & Discussion

Look to the Past – What Was: Prescriptive Regulation

- **Traditional FAA approach: Rigid, one-size-fits-all rules written for crewed aircraft**
- **Part 137 (Agricultural Aircraft Operations): Prescriptive requirements for every aspect**
  - Mandatory AAOC certificate (Form 8710-3) for all operators
  - Specific PIC knowledge/skills tests (§137.19) – manned-focused
  - Strict hazmat carriage limits and operations manual details (§137.29)
  - VLOS default with exact procedural checklists
- **Philosophy: Safety through fixed compliance – "do it exactly this way"**
- **Worked for manned era but created mismatches for UAS innovation**

Currently Arriving - Performance-Based Regulation

- Core Philosophy: Focus on outcomes and mitigations instead of exact processes
- FAA's Safety Continuum: Rigor scaled to public risk exposure
- Benefits for UAS: Scalable BVLOS, automation, innovation
- Challenges from studies: OECD/ITF 2018 – resistance, data overload, cultural change needed
- Sets stage for full risk-based framework (Part 108)

Papers on Performance- or Risk-Based Regulation

- **OECD/ITF 2018 Roundtable: "Safety Management Systems – Summary and Conclusions[1]"**
  - Shift from prescriptive ("how") to performance/risk-based ("what outcome")
  - Benefits: Flexibility for new tech, scalability, innovation
  - Complications: Skill gaps, resistance, weak implementation can create new hazards
- **FAA Reauthorization Act 2018 (§347) & 2024 (§930): Mandated risk-based UAS framework**
- **National Academies 2024: "Emerging Hazards in Commercial Aviation"**
  - Risk-based needed for transformative changes (e.g., UAS) but requires strong oversight
  - Hybrid systems risk "oversight silos" and unmitigated interactions between old/new rules

[1] *OECD = Organisation for Economic Co-operation and Development ITF Roundtable Reports, No. 172 (2018), OECD Publishing, Paris.*

44807 Introduces Performance (Risk)-Based Operations

- **49 U.S.C. §44807 (2018): Special authority for FAA to exempt UAS based on risk assessment (size, speed, proximity to people/airports)**
- **“Risk-Based Test”: Pulls in Part 107 performance elements while keeping Part 137 prescriptive shell**
  - Waives manned PIC skills if operator demonstrates mitigated risk
  - Allows BVLOS, night, swarm via case-by-case safety case
- **Philosophy: First hybrid – prescriptive framework + risk-based exemptions**
- **Result: Enabled UAS ag growth but created patchwork approvals**

Confusion and Opposition

- **Hybrid created widespread confusion (inside/outside FAA)**
  - Operators juggle dual frameworks; states tie licenses to mismatched manned rules
  - EPA Labels for Aerial Application
- **Studies on complications:**
  - Vertical Magazine/TSB 2015: SMS (risk-based) oversight missed non-compliance in hybrid systems
  - Safety Science 2024: “Workarounds & exhaustion” when prescriptive rules meet real-world risk
  - National Academies 2024: “Regulatory incompatibilities” delay certification
- **Opposition (“Straw Man” arguments) from crewed community:**
  - “Drones ignore safety” – ignores actual risk tests in exemptions
  - NAAA concerns: Right-of-way, collision risk in shared airspace

The BVLOS NPRM
(Beyond Visual Line of Sight – Notice of Proposed Rule Making)

- Published August 7, 2025 (Federal Register)
- Initial comment period closed October 6, 2025
- Reopened for an additional 14 days (January 28 – February 11, 2026) with another ~800 comments submitted
- FAA is currently reviewing all comments
- Final rule expected within the next 90 days (as of March 2026)
- Introduces performance/risk-based regulations to normalize BVLOS operations
- Creates new Parts 108 & 146; makes Part 137 non-applicable to UAS
- Effective date expected: Summer / Fall 2026

Changes to 14 CFR Parts

- **Amendments or updates to 13 distinct 14 CFR parts**
- **2 new 14 CFR Part**
  - Part 108 - New: Full framework for BVLOS operations.
  - Part 146 - New: Automated data service provider certification.

Changes to 14 CFR Parts

Part	Key Updates/Amendments
1	Definitions (e.g., light-sport aircraft and weight limits).
5	Safety Management System requirements for service providers.
13	Investigative and enforcement procedures.
21	Production approvals for remote ID-equipped UAS.
36	Noise certification standards for Part 108 UAS.
43	Maintenance rules (non-applicability to Part 108 UAS).
45	Identification and marking for UAS.
47	Aircraft registration procedures for all Part 108 UAS.
48	Remote ID registration (updates to module serial numbers).
61	Airman certification (departures for UAS personnel).
74	UAS flight restrictions alignment.
89	Remote ID rules (additions for broadcast and reporting).
91	General operating rules (e.g., right-of-way, ADS-B Out).
107	Small UAS rules (removal of BVLOS allowances, airworthiness references).
108	**New**: Full framework for BVLOS operations.
119	Air carrier certification (non-applicability updates).
121	Operations oversight roles (e.g., for supervisors).
135	Commuter and on-demand rules (non-applicability).
137	Agricultural operations (non-applicability).
139	Airport certification (non-applicability).
146	**New**: Automated data service provider certification.

Permits and Certificates - The Operators

- **Permits: Low-risk ops (Cat 1–3, rural ag) – temporary, lighter oversight**
- **Certificates: Higher-risk/complex (Cat 4–5) – formal, SMS required**
- **Major Training Shift: No individual FAA Remote Pilot Certificate required (unlike Part 107)**
  - Training and qualification now managed entirely by the Operator via FAA-approved program
  - Operations Supervisor has final authority over personnel training and knowledge
- **No more Part 137 AAOC for UAS under Part 108**
- **Risk-Based: Scaled authorization based on demonstrated safety**

Operators - 10 Types of Operations

1. Package Delivery
2. ***Agriculture***
3. Aerial Surveying
4. Civic Interest
5. UA Operations Training
6. Demonstration
7. Recreational
8. Flight Test
9. Hazardous Materials Operations
10. Other Operations

Declarations of Compliance – The Drones

- **Manufacturer self-declares UA meets risk-based standards (consensus standards)**
- **Covers DAA, durability, payload for specific categories**
- **Risk Philosophy: Performance-tested vs. prescriptive FAA type certification**
- **Ag Benefit: Ag drone makers can certify for spraying in targeted densities**

Environment – The Airspace

The NPRM defines five categories of BVLOS operations under Part 108, each with specific requirements impacting how UAS interact with crewed aircraft (Section IV.B.5, Pages 50–52). These categories help you anticipate the types of UAS in Class G and their capabilities.

Category 1: Low-Risk Operations (Class G, <400 feet AGL)

Category 2: Moderate-Risk Operations (Class G with Population)

Category 3: Controlled Airspace (Class D/E with ATC)

Category 4: Large UAS, Broad Airspace Operations

Category 5: Complex Operations with Automation

Part 108 & Part 146

- **Part 108: Full framework for BVLOS ops (permits, certs, DAA, training)**
- **Part 146: New – Automated Data Service Providers (traffic, weather, deconfliction)**
- **Together: Enable scalable, automated ag operations with third-party support**
- **Philosophy: Ecosystem approach to risk management**

Automation and Data Services

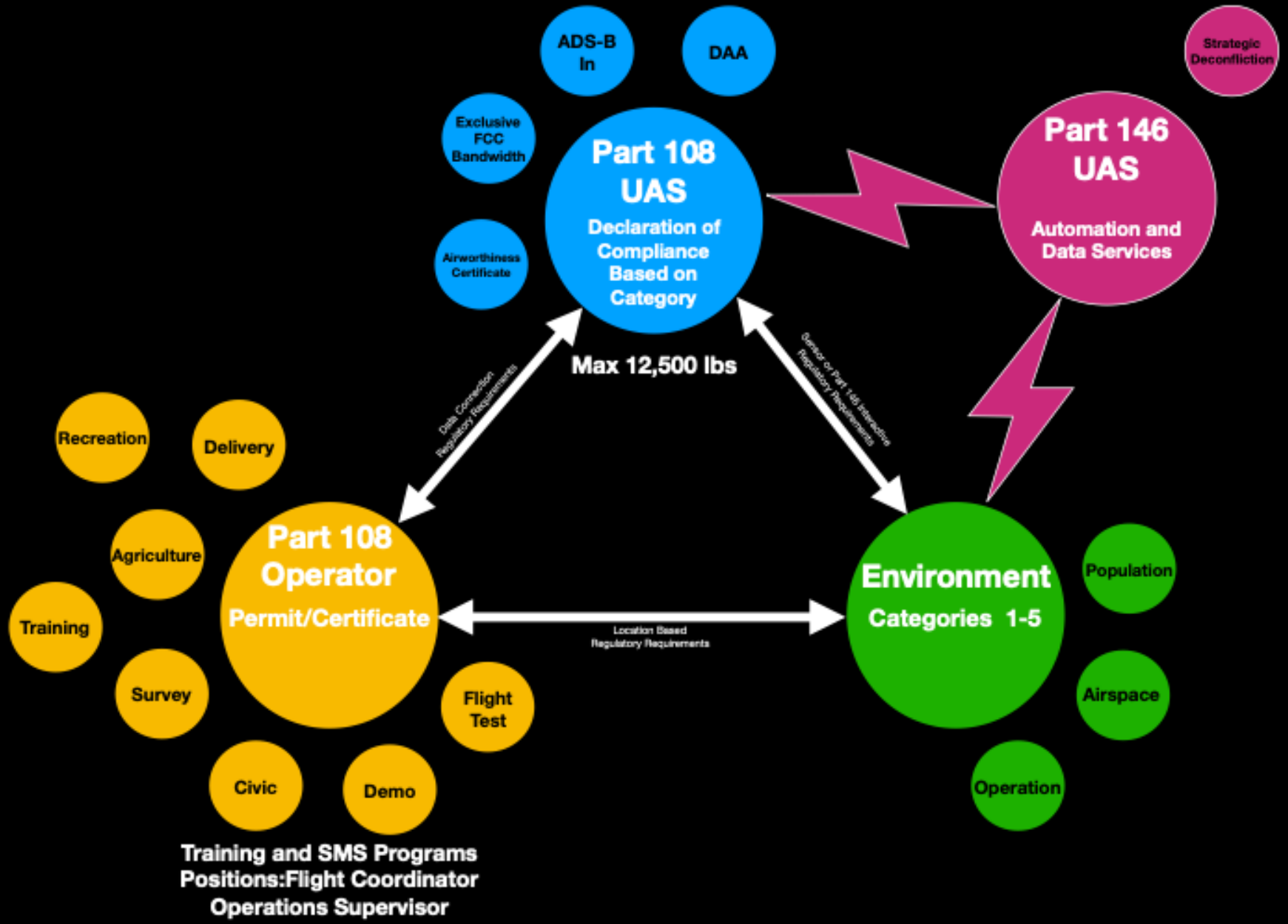
Requirements for automated systems and third-party data providers supporting BVLOS operations.

- **Part 108, Subpart B (Operating Rules):**
  - BVLOS operations may rely on automated data service providers (ADSPs) certified under Part 146 for navigation, DAA, and traffic deconfliction data.
  - UAS operators must validate ADSP data integrity and ensure compatibility with Part 108 systems.
- **Part 146 (New):**
  - Establishes certification standards for ADSPs, including data accuracy, cybersecurity, and system reliability.
  - ADSPs must provide real-time data feeds for situational awareness, weather, and traffic, integrated with Part 108 UAS.
  - Requires ADSPs to maintain a Safety Management System (SMS) per Part 5 amendments.

How All Parts Work Together

- **Diagram: Part 108 core + supporting changes (Parts 1, 5, 21, 91, 107 → non-applicable)**
- **Shared Airspace: Prescriptive Part 137 crewed ops + risk-based Part 108 UAS in Class G**
- **Manned right-of-way remains (§91.113); UAS use DAA/lights/Remote ID**
- **“Assembling it all together” – risk-based ecosystem**

BVLOS NPRM Diagram - General



Agriculture Fits Here

- Explicitly listed as one of 10 allowed operation types under Part 108
- Perfect for risk-based categories (most ag = Cat 1–2 sparse/low density)
- Enables true BVLOS on large fields, swarm, night ops
- Removes repeated 44807 exemptions

Ag Areas of Operations – Permit vs Certificate

- **Permit (most routine ag): Cat 1–3, farmland Class G, <400 ft – low-risk spraying**
  - Operator-managed training program (no individual cert)
- **Certificate: Cat 4–5, near urban/traffic – advanced ops with full mitigations**
  - Same operator-led training but with higher SMS oversight
- **Tiered access: Higher investment = broader areas (over people/traffic if DOC allows)**

Comparing Part 108 to UAS Part 137

- **Big Change: Training shifts from individual to organizational responsibility**

Aspect	**UAS Part 137 (Hybrid)**	**Part 108 (Risk-Based)**
Certification	AAOC + exemptions	Permit or Certificate
BVLOS	Case-by-case	Routine, scalable
Remote Pilot Training	**Individual FAA Remote Pilot Cert (Part 107)**	**Operator-managed training program** (no individual FAA cert required)
Risk Handling	Prescriptive + patches	Performance mitigations by category
State Impact	Easy carryover from crewed	Requires new recognition

Concerns for Local and State Regulatory Authorities, Pilots, Loaders, Operators

- **Shared airspace mix → potential confusion in first 1–2 years**
- **Major Training Shift Impact:**
  - Remote pilot training now comes through the Operator (not individual FAA certification)
  - States must adapt pesticide applicator licensing to recognize Part 108 Ag Programs
- **Concerns for:**
  - **State Boards**: How to verify “certified applicator” status when one Operations Supervisor oversees multiple remote pilots/swarm ops?
  - **Pilots/Loaders/Operators**: New training pathways; who holds ultimate responsibility?
- **Studies show transition risks: oversight gaps, collision potential (National Academies 2024)**

You Hold the Future

- Many fundamental changes will be required to state aerial pesticide laws to allow Part 108 aerial applications
- Key Change Needed: Update licensing to accept operator-managed remote pilot training programs (instead of individual Part 107 certs)
- Opportunity for AAPCO leadership: Proactively preparing for new rule
- Like CDPR with AB 1016 future proofing licensing – Industry, Ed, and Regulatory
- Prepare for operators “knocking on doors” wanting access with Part 108

What to Expect

- **Prescriptive-based opposition will likely continue – concerns over right-of-way and perceived safety erosion**
- **Many operators will continue under UAS Part 137 until those options are no longer available**
- **Threatens long-term safety of the industry if states delay recognition of Part 108**
- **Expect 1–2 years of highest risk and confusion during the adoption period (shared airspace, training shifts, etc.)**
- **Final rule expected within the next 90 days (as of March 2026)**
- **Rule effective: Likely Summer / Fall 2026**

Be Proactive – Building Mature Safety Culture & Core Competency

- **In being proactive, I encourage states, pesticide boards, operators, applicators, and pilots to work closely with organizations that recognize the importance of developing a Mature Safety Culture and competency**
- **Recommended Partners:**
  - FAA Safety Team (FAASTeam) – proven programs in positive safety culture, training, and outreach
  - NAAA UAAS Committee – ag-specific safety tools and guidelines (Flight Risk Assessment Tool, best practices)
  - UAS organizations focused on safety – PERC UAS Committee and similar groups dedicated to competency and risk-based operations

Why Mature Safety Culture Matters Under Part 108

- Operator-managed remote pilot training replaces individual FAA certificates
- SMS becomes mandatory for higher-risk certificates
- Shared airspace with prescriptive Part 137 crewed operations requires strong safety culture to minimize the 1–2 year “shock” period
- Long-term success of risk-based BVLOS in agriculture depends on competency and positive safety culture – not just compliance

Questions?

Automation and Data Services

Requirements for automated systems and third-party data providers supporting BVLOS operations.

- **Part 108, Subpart B (Operating Rules):**
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- **Part 146 (New):**
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  - ADSPs must provide real-time data feeds for situational awareness, weather, and traffic, integrated with Part 108 UAS.
  - Requires ADSPs to maintain a Safety Management System (SMS) per Part 5 amendments.

Two New Positions for UAS Operators

What Crewed Pilots Need to Know: The NPRM introduces two new positions under Part 108 to ensure safe BVLOS operations: the Operations Supervisor and Flight Coordinator. These roles oversee UAS flights, ensuring compliance and reducing risks in shared airspace like Class G.

Operations Supervisor

Responsibilities:

- Has final authority for safe operations of all UAS; oversees personnel, training, maintenance, and compliance with regulations and the operations manual.

Flight Coordinator

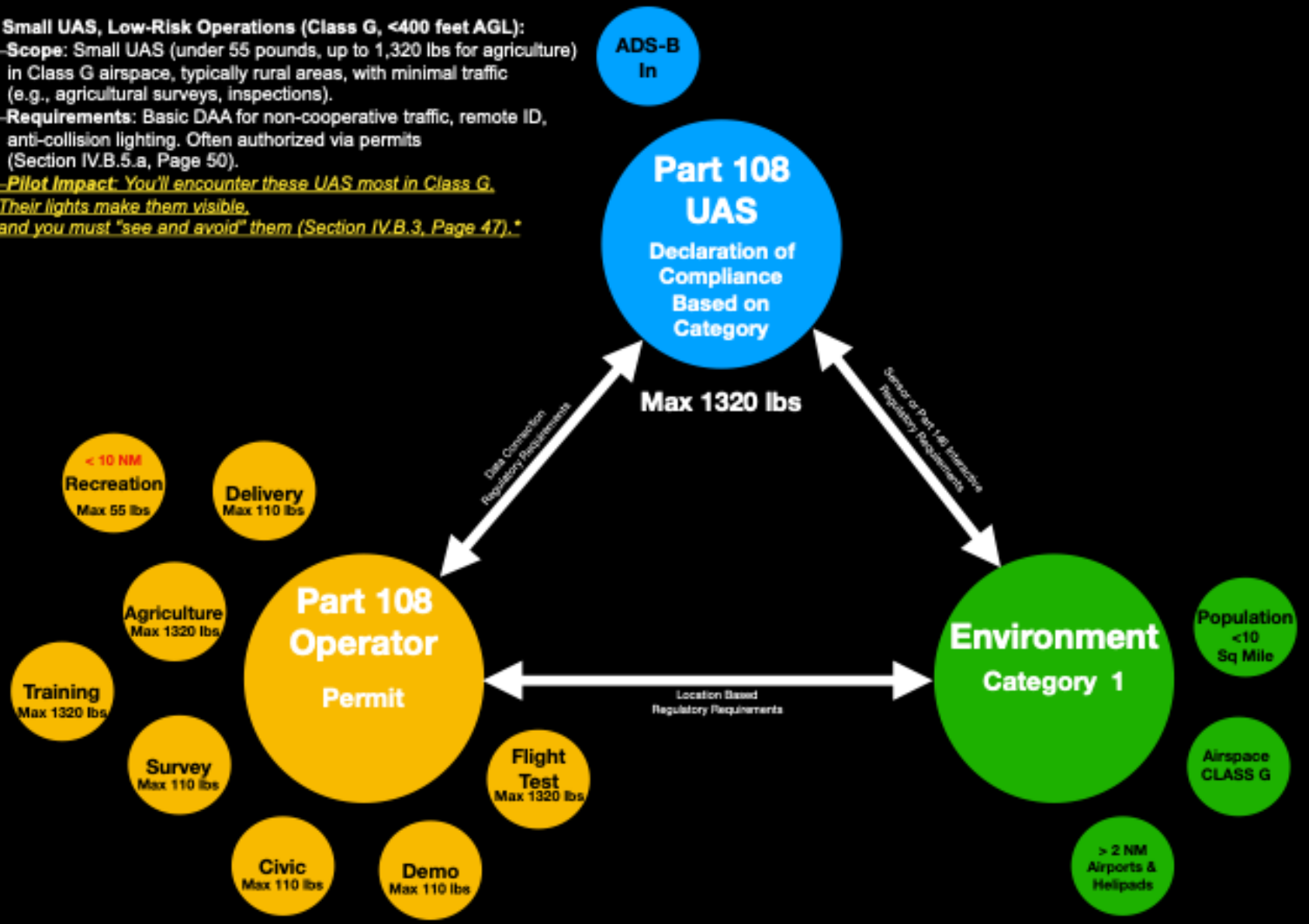
Responsibilities:

- Monitors and intervenes in UAS flights for safety; manages UA-to-coordinator ratio (1:1 default, higher with approval); handles emergency actions, flight info transmission, and control handoffs.

BVLOS NPRM Diagram - Category 1

Small UAS, Low-Risk Operations (Class G, <400 feet AGL):

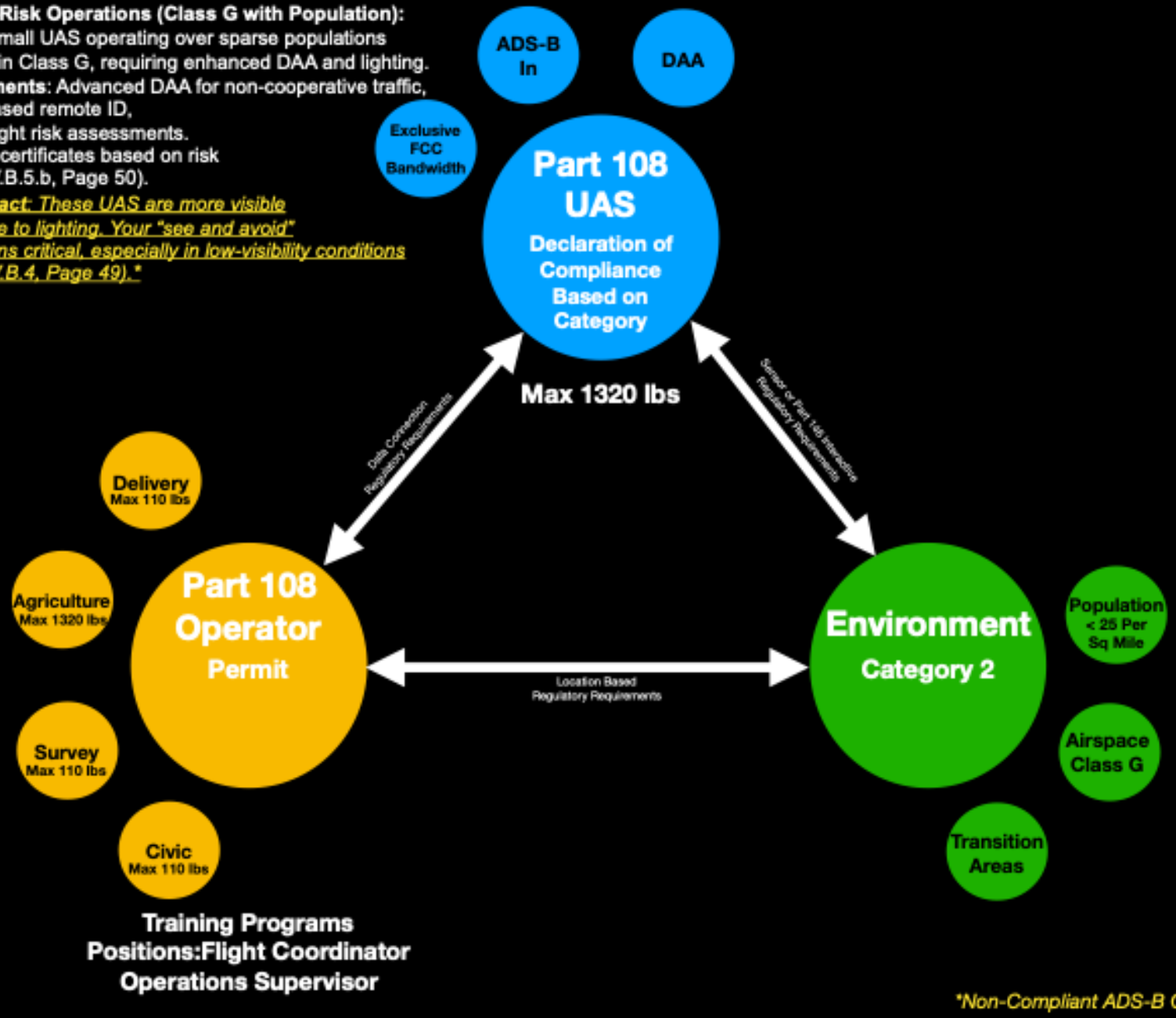
- **Scope**: Small UAS (under 55 pounds, up to 1,320 lbs for agriculture) in Class G airspace, typically rural areas, with minimal traffic (e.g., agricultural surveys, inspections).
- **Requirements**: Basic DAA for non-cooperative traffic, remote ID, anti-collision lighting. Often authorized via permits (Section IV.B.5.a, Page 50).
- ***Pilot Impact**: You'll encounter these UAS most in Class G. Their lights make them visible, and you must "see and avoid" them (Section IV.B.3, Page 47).**



*Non-Compliant ADS-B Crewed Aircraft

BVLOS NPRM Diagram - Category 2

Moderate-Risk Operations (Class G with Population):
–**Scope**: Small UAS operating over sparse populations or at night in Class G, requiring enhanced DAA and lighting.
–**Requirements**: Advanced DAA for non-cooperative traffic, network-based remote ID, and pre-flight risk assessments. Permits or certificates based on risk (Section IV.B.5.b, Page 50).
–***Pilot Impact***: *These UAS are more visible at night due to lighting. Your "see and avoid" duty remains critical, especially in low-visibility conditions (Section IV.B.4, Page 49).**



*Non-Compliant ADS-B Crewed Aircraft

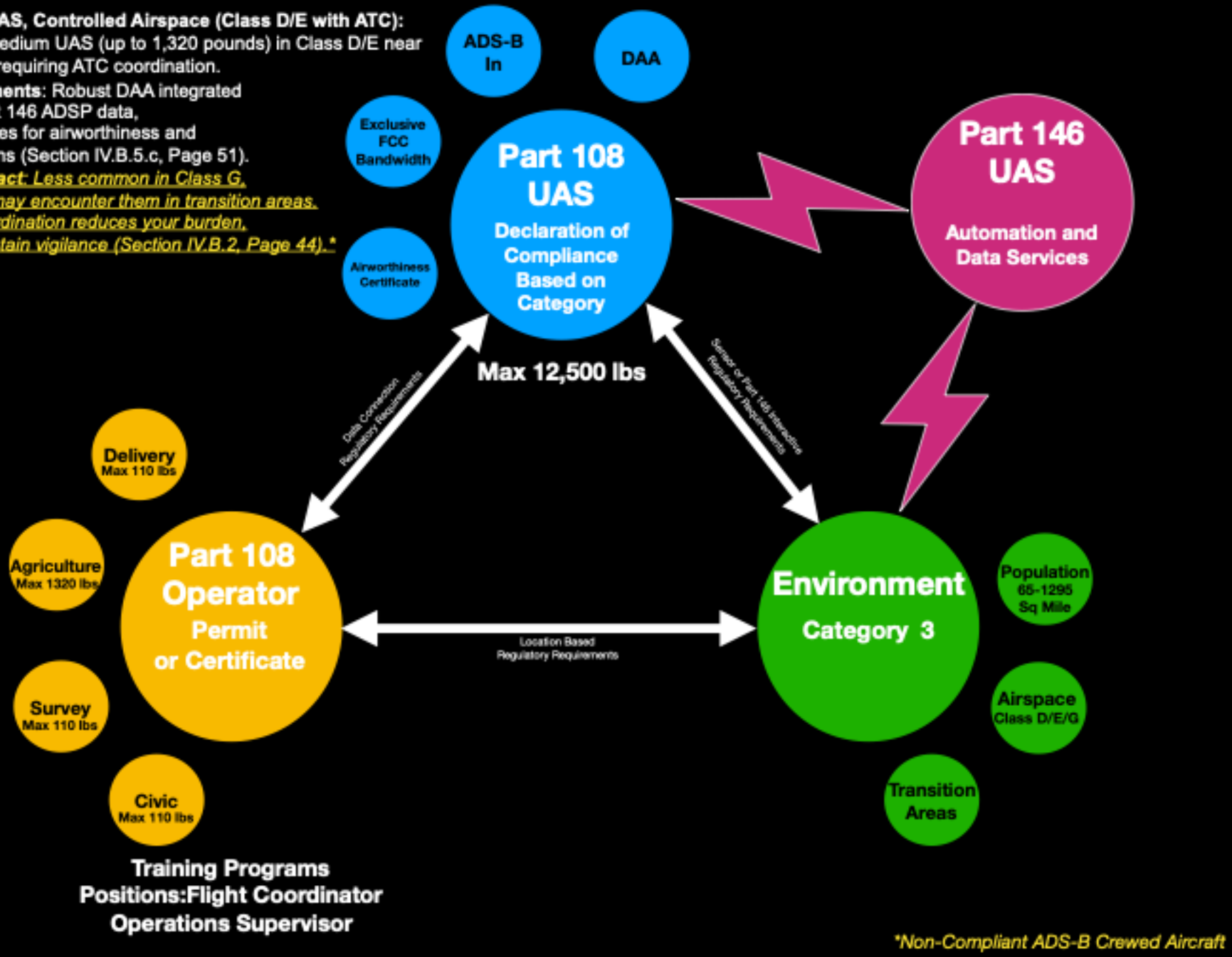
BVLOS NPRM Diagram - Category 3

Medium UAS, Controlled Airspace (Class D/E with ATC):

–**Scope**: Medium UAS (up to 1,320 pounds) in Class D/E near airports, requiring ATC coordination.

–**Requirements**: Robust DAA integrated with Part 146 ADSP data, certificates for airworthiness and operations (Section IV.B.5.c, Page 51).

–***Pilot Impact***: *Less common in Class G, but you may encounter them in transition areas. ATC coordination reduces your burden, but maintain vigilance (Section IV.B.2, Page 44).**

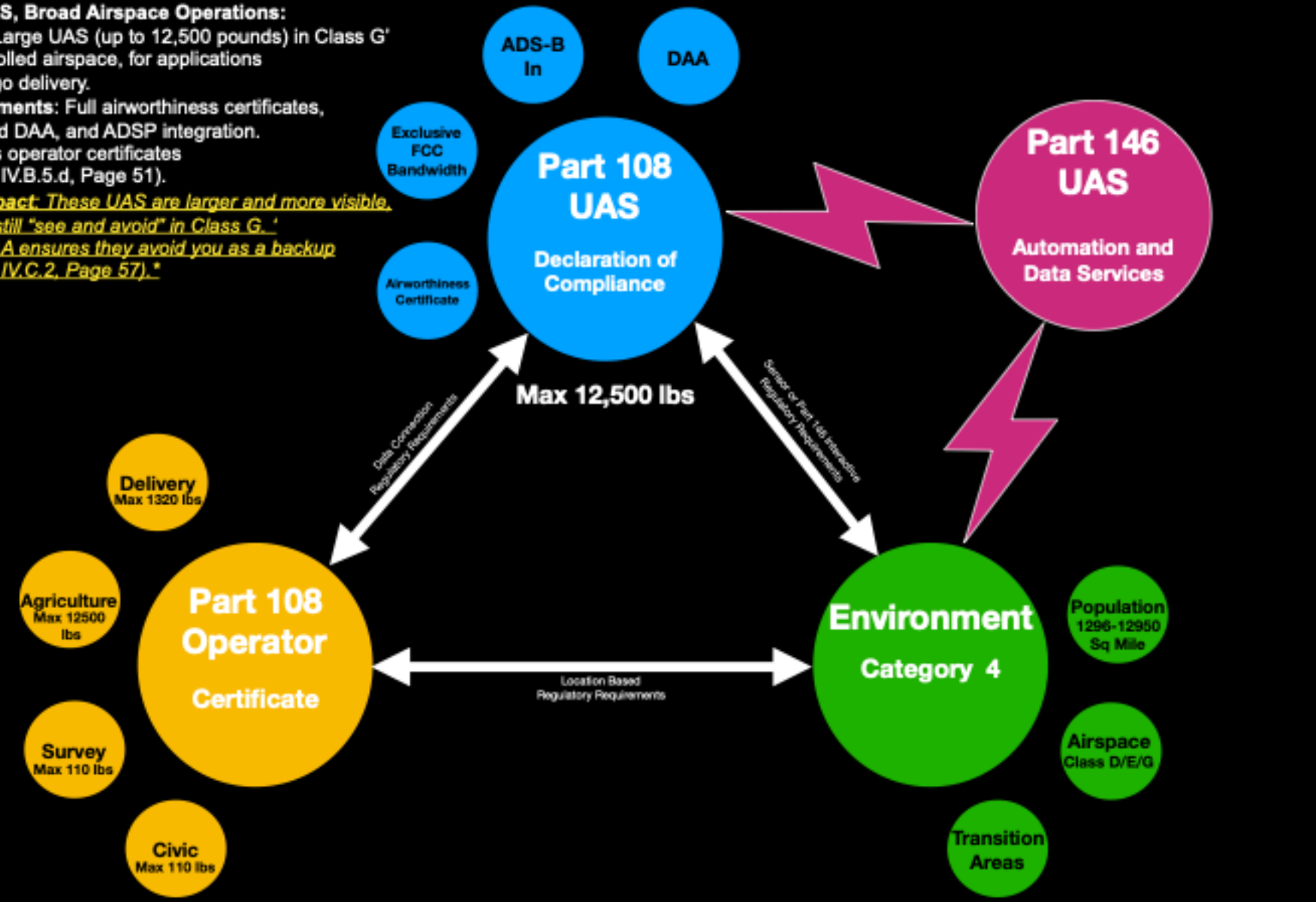


*Non-Compliant ADS-B Crewed Aircraft

BVLOS NPRM Diagram - Category 4

Large UAS, Broad Airspace Operations:

- **Scope**: Large UAS (up to 12,500 pounds) in Class G' or controlled airspace, for applications like cargo delivery.
- **Requirements**: Full airworthiness certificates, advanced DAA, and ADSP integration. Requires operator certificates (Section IV.B.5.d, Page 51).
- ***Pilot Impact**: These UAS are larger and more visible, but you still "see and avoid" in Class G. ' Their DAA ensures they avoid you as a backup (Section IV.C.2, Page 57).**

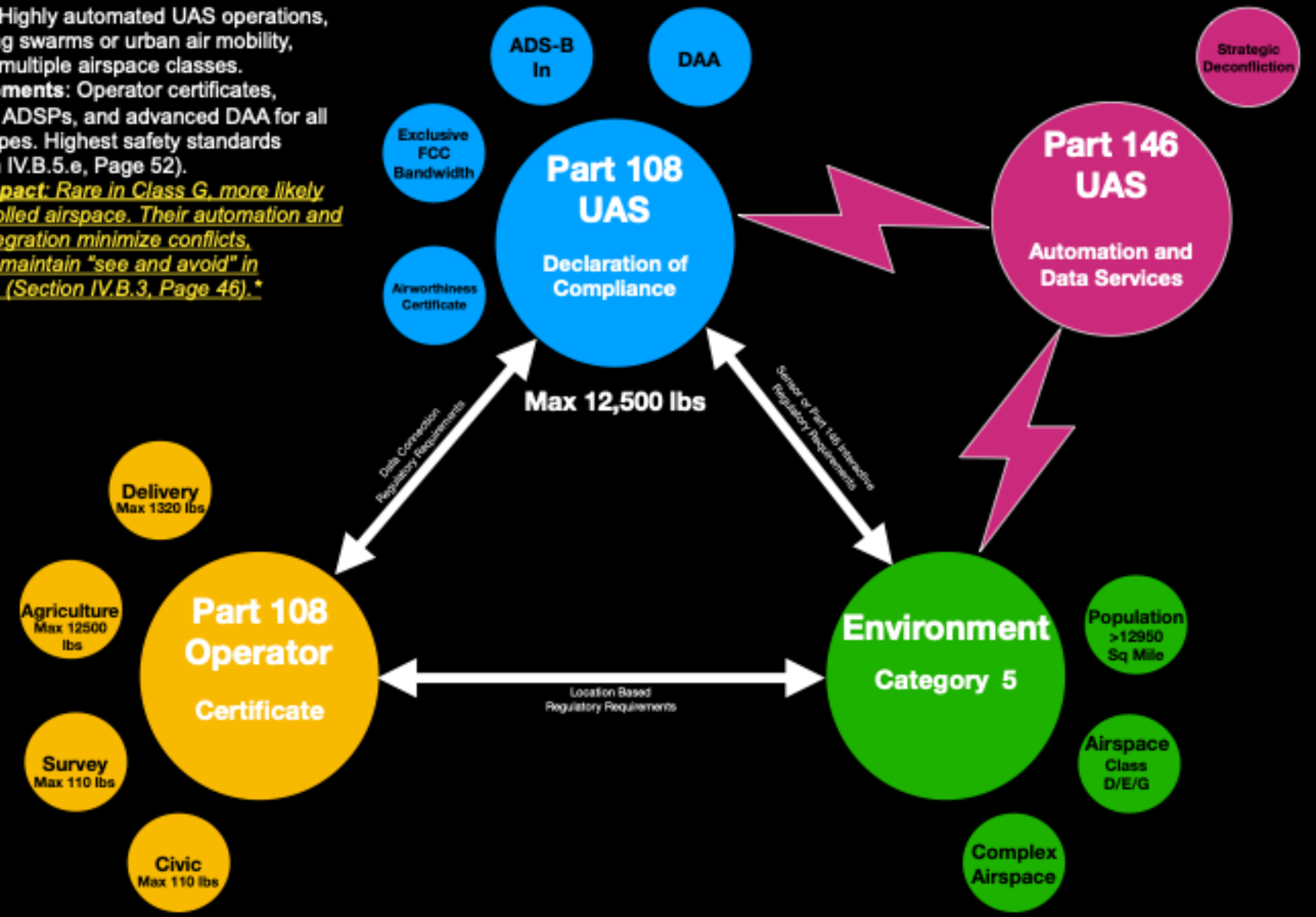


Training and SMS Programs
Positions:Flight Coordinator
Operations Supervisor

**Non-Compliant ADS-B Crewed Aircraft*

BVLOS NPRM Diagram - Category 5

- **Scope**: Highly automated UAS operations, including swarms or urban air mobility, across multiple airspace classes.
- **Requirements**: Operator certificates, certified ADSPs, and advanced DAA for all traffic types. Highest safety standards (Section IV.B.5.e, Page 52).
- ***Pilot Impact**: Rare in Class G, more likely in controlled airspace. Their automation and ATC integration minimize conflicts, but you maintain "see and avoid" in Class G (Section IV.B.3, Page 46).**



*Non-Compliant ADS-B Crewed Aircraft