Technological Enablers and Restrictors Discussion

How Do We Evolve Together?

Moderator: Jim Eck

- Jay Merkle
- Earl Lawrence
- Dr. Ed Waggoner
- Paul McDuffee
- Michael Lewis

Send questions to talkUAS@faa.gov – include breakout session topic in subject line
CNS/ATM Evolution

Risk/Complexity

Integrated Operations
By Full Performance-Based Rules
(Class A/B/C/D Ops)

Segregated Operations VLOS –
Over People / High Density

Segregated Operations –
VLOS Over People / Low Density

Segregated Operations
By Rule 107 –
VLOS Class G

333/336 Ops –
Segregated Operations
By Waiver/Exemption

Functionality Over Time

UAS CNS
systems
Compliant with risk based performance standards

Registration

Notification

Schedule (UTM)

UAS Information Systems

Transit Controlled Airspace (UTM)

Integrated Class A,B,C,D Airspace

UAS Integrated Information Systems with ATM

UAS CNS/ATM systems fully interoperable with NAS services
CNS/ATM Evolution

Risk/Complexity

- Integrated Operations
  By Full Performance-Based Rules
  (Class A/B/C/D Ops)

- Segregated Operations VLOS –
  Over People / High Density

- Segregated Operations –
  VLOS Over People / Low Density

- Segregated Operations
  By Rule 107 –
  VLOS Class G

- 333/336 Ops –
  Segregated Operations
  By Waiver/Exemption

Functionality Over Time

- Identification, Location and Intent
- Communication
- Detect, Sense and Avoid
- ADS-B
- Command and Control
- Transit Controlled Airspace (UTM)
- Integrated Class A,B,C,D Airspace
- UAS Integrated Information Systems with ATM

Registration

- Static Identification
- User Provided
- None Beacon?
- Notification
- Schedule (UTM)
- UAS Information Systems

333/336 Ops – Segregated Operations
By Waiver/Exemption

Integrated Operations
By Full Performance-Based Rules
(Class A/B/C/D Ops)
CNS/ATM Evolution

Functionality Over Time:

- **Risk/Complexity**
  - Integrated Operations
    - By Full Performance-Based Rules (Class A/B/C/D Ops)
  - Segregated Operations
    - VLOS – Over People / High Density
    - VLOS Over People / Low Density
    - By Rule 107 – VLOS Class G
    - 333/336 Ops – Segregated Operations By Waiver/Exemption

- **Registration**
  - Fly autonomous
  - UAS Info Management

- **Notification**
  - None Beacon?

- **Schedule (UTM)**
  - Transit Controlled Airspace (UTM)

- **Communication**
  - User Provided

- **Identification, Location and Intent**
  - ADS-B

- **Detect, Sense and Avoid**
  - Command and Control
  - Vehicle Information
  - Automation and Information
  - UAS Traffic Management

- **Fly like an aircraft**
  - Integrated Operations
    - By Full Performance-Based Rules (Class A/B/C/D Ops)

- **Integrated Operations**
  - 333/336 Ops – Segregated Operations By Waiver/Exemption

**Integrated Class A,B,C,D Airspace**
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