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

UAS CNS systems
Compliant with risk based performance standards

Registration

Notification

Schedule (UTM)

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

UAS Information Systems

Functionality Over Time
### 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

- **Registration**
  - Static Identification
  - User Provided
  - None Beacon?

- **Notification**
  - Schedule (UTM)

- **UAS Information Systems**

- **UAS Integrated Information Systems with ATM**

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

- **ADS-B**

- **Detect, Sense and Avoid**

- **Command and Control**

- **Transit Controlled Airspace (UTM)**

- ** ADS-B**
CNS/ATM Evolution

Risk/Complexity

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By Rule 107 – VLOS Class G

333/336 Ops – Segregated Operations
By Waiver/Exemption

Functionality Over Time

Registration

Fly autonomous

UAS Info Management

Notification

Schedule (UTM)

Communication

Identification, Location and Intent

Detect, Sense and Avoid

Command and Control

Transit Controlled Airspace (UTM)

Integrate

Class A,B,C,D Airspace

Fly like an aircraft

UAS ATM Integration

UAS Traffic Management

Automation and Information

Vehicle Information

Integrated Operations

Fly as an aircraft
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