



**Asia-Pacific
Economic Cooperation**

2024/TPTWG/AEG/TM1/004

Agenda Item: 2.3

Enabling Unmanned Aircraft Systems Delivery - Enhancement Update

Purpose: Information
Submitted by: Chinese Taipei



**Thematic Session on Unmanned
Aircraft Systems: Flightpath to the
Future
9 April 2024**



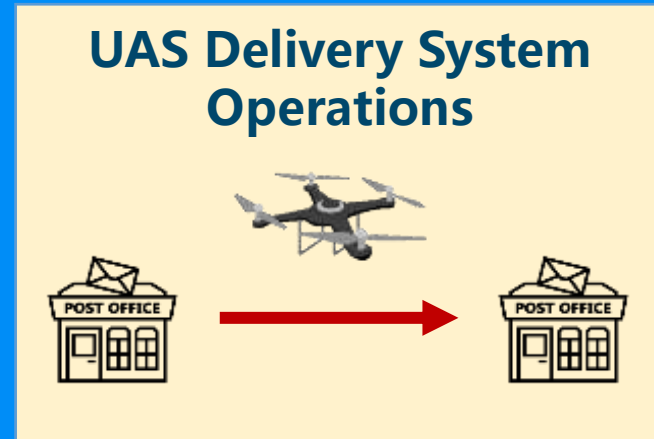
Asia-Pacific
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ENHANCEMENT UPDATE

Enabling UAS Delivery

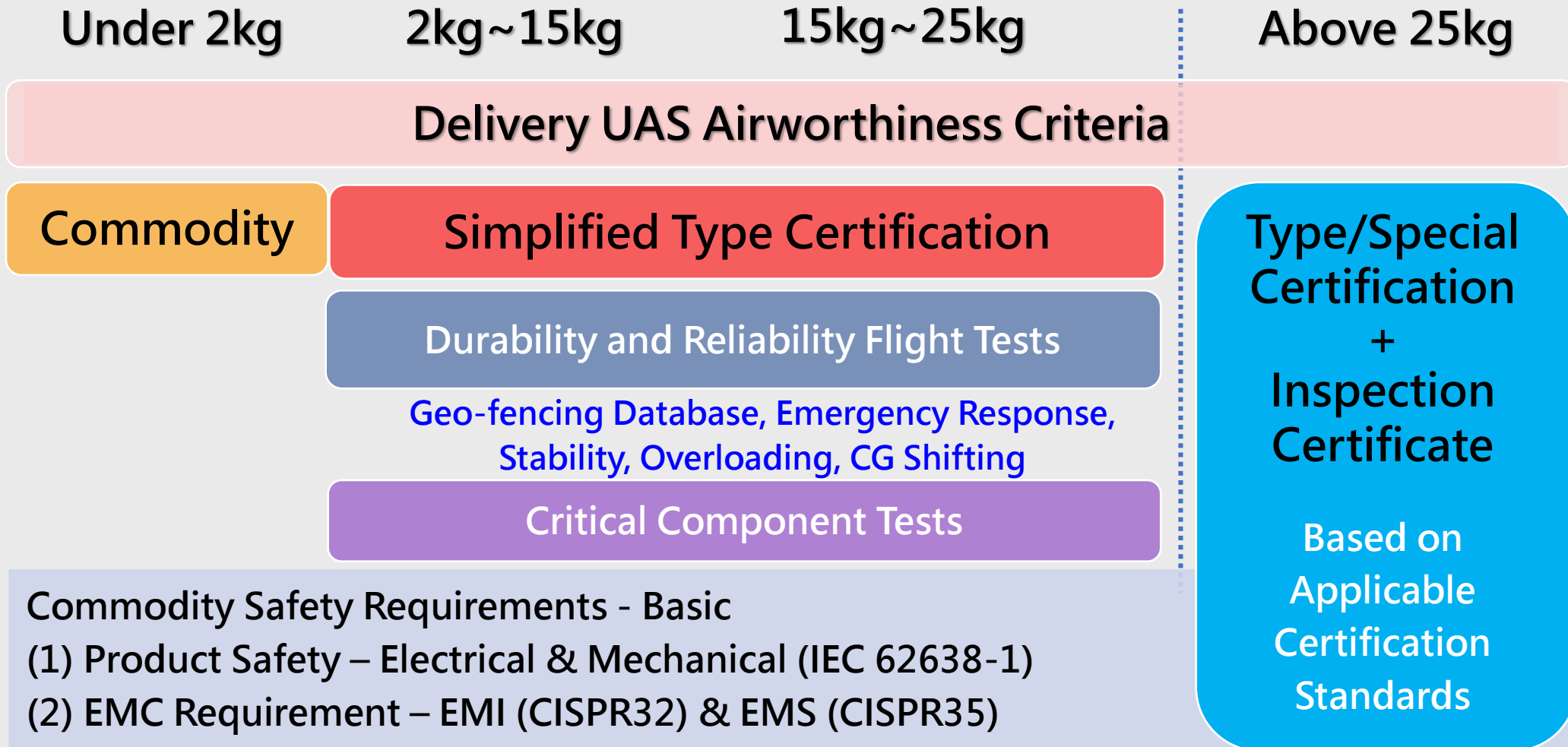
Presenter: Eric Yu-Cheng Chen, Technical Specialist, Chinese Taipei

April 9, 2024



Delivery UAS Certification →

UAS Certification Framework - Enhancement



Delivery UAS Airworthiness Criteria

General

- UAS.001 Concept of Operations

Design and Construction

- UAS.100 Control Station
- UAS.110 Software
- **UAS.115 Cyber Security**
- UAS.120 Contingency Planning
- UAS.125 Lightning
- UAS.130 Adverse Weather Conditions
- UAS.135 Critical Parts

Operating Limitations and Information

- UAS.200 Flight Manual
- UAS.205 Instructions for Continued Airworthiness (ICA)

Testing

- **UAS.300 Durability and Reliability (D&R)**
- UAS.305 Probable Failures (FA)
- UAS.310 Capabilities and Functions
- UAS.315 Fatigue
- UAS.320 Verification of Limits

Durability and Reliability Flight Test Approach

Mission Capabilities

- 1. Overload Tests
- 2. C.G. Shift Tests
- 3. Low and High Altitude Tests
- 4. Low and High Temperature Tests
- 5. Maximum Speed Tests
- 6. Maximum Wind and Gust Tests
- 7. Weather Condition Tests
- 8. Daytime and Night Flights
- 9. Battery Fail-Safe Tests
- 10. Maximum Pilot Ratio Tests
- 11. Maximum C2 Range Tests
- 12. Combinations of Risk Tests

Emergency - General

- 13. Power Loss Tests
- 14. C2 Performance Degradation Tests
- 15. Data Link Loss Tests
- 16. GNSS Degradation Tests
- 17. GNSS Loss Tests
- 18. Unmanned Aircraft Control Jamming
- 19. Ground Station Failure Tests
- 20. Other Specified Failure Tests
- 21. Pilot Ratio Failure Tests

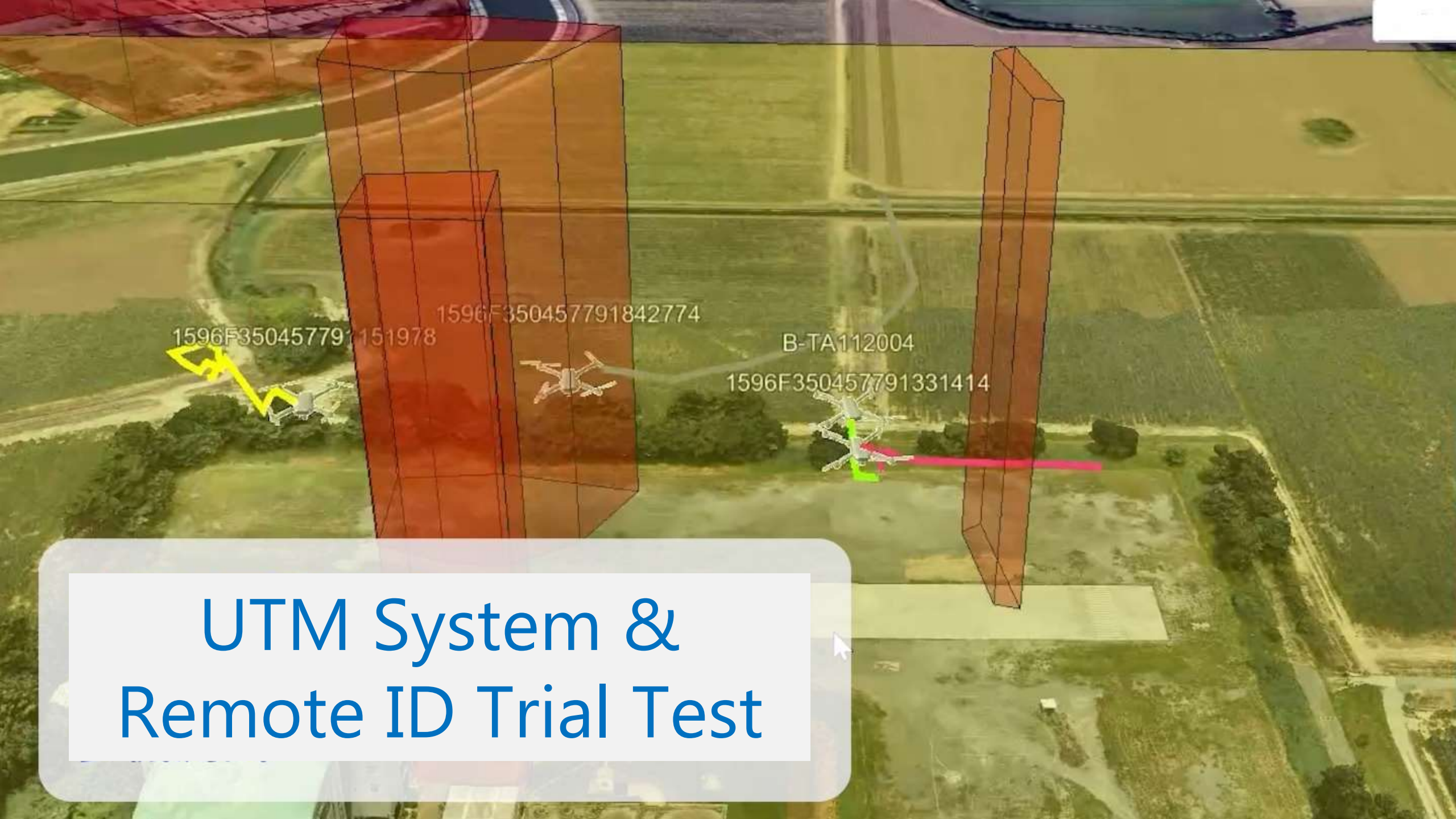
Specific Functions

- 22. Link Loss Re-Connection Tests
- 23. Continued Flight Upon Power Loss
- 24. Geo-Fencing Tests
- 25. Maximum Electrical Loading Tests
- 26. UAS Recall Capability Tests
- 27. Mission Change Capability Tests
- 28. Mission Abort Capability Tests
- 29. UAS Go-Around Capability Test
- 30. Extreme Structural Tests
- 31. Multiple GCS Transfer Tests
- 32. Cargo Release Tests

ASTM F3478



UAS R&D Test Center



1596F35045779151978

1596F350457791842774

B-TA112004

1596F350457791331414

UTM System &
Remote ID Trial Test

Delivery Operation Approval

Delivery Operation Requirements – Enhanced

(1/2)

Mission Objective

- 1. Background
- 2. Airspace
- 3. Scheduling
- 4. Flight Duration
- 5. Special Operation & Safety Objective

Safety Objective

Risk Assessment

- Specific Operations Risk Assessment, SORA

Risk Management

Operations

- 1. Mission Profiles
- 2. Duty Hours
- 3. Air Corridor Designation
- 4. Station and Emergency
- 5. Flight Watch
- 6. Personnel Qualification
- 7. Operation Procedures
- 8. Goods Manifest

Safety Assurance

Fleet

- 1. Fleet Formation
- 2. Drone Specifications
- 3. Fleet Management
- 4. Route and Scheduling
- 5. Flight Records
- 6. Maintenance Records

Safety Assurance

Safety Management System (SMS)

Delivery Operation Requirements – Enhanced

(2/2)

UTM

- 1. Flight Plan
- 2. Flight Data Management
- 3. Identification & Surveillance
- 4. Geographical Information
- 5. Detect and Avoid Capability
- 6. Data Connectivity and Communications
- 7. Air Corridor and Geo-fencing
- 8. Interoperability

Risk Management & Safety

Maintenance

- 1. Organization and Responsibilities
- 2. Maintenance Program
- 3. Maintenance Procedures
- 4. Repair and Modification
- 5. Software Update Control
- 6. Maintenance Release
- 7. Failures, malfunctions, and defects

Safety Assurance

Personnel Training

- 1. Training Program
- 2. Training Records

Safety Promotion

Safety Management System (SMS)

Closing Remark – Future Works

- More complex operations needs to be developed, such as combinations of hub-to-hub and hub-to-customers.
- Flight test envelopes will be further expanded.
- UTM and remote ID techniques should be further enhanced.
- Cargo release methodology should accommodate the urban use case.
- New operation approval requirements needs to be further substantiated.
- Air corridor will be developed and connectivity should be further surveyed.

Thank you!

PRACTICE MAKES THINGS BETTER.

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