[WIP] Briefing: BR-UTM Field Test 3

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1. Introduction & Vision

Following the successful validation of the end-to-end operational lifecycle in Field Test 2, this Third Field Test will shift focus to **real-time contingency management and provider responsiveness**. The vision is to move beyond pre-planned scenarios and evaluate how USS platforms and operators react to dynamic, unexpected events in a more organic operational environment.

This test, scheduled for **December 15-17, 2025, at IEAv**, will concentrate on the validation of advanced contingency procedures, the integration of dynamic constraints on active flights, and the automated handling of in-flight deviations.

1.1. New Features for Validation

This test will validate all previously tested features, with a specific focus on the following new capabilities:

- **Dynamic Constraint Integration:** The ability for the system and participants to manage airspace restrictions that are created or modified *after* a flight has been activated.
- **Geo-Fencing and Automated Alerts:** Real-time detection and notification of deviations from the approved 4D operational volume (OIR).
- **Non-Nominal Volume Management:** The automated creation and management of non-nominal volumes in response to an in-flight deviation, as per BRAC requirements.
- **Provider Reaction Time:** Measurement and evaluation of the time taken for a USS to detect a conflict or deviation, process it, and deliver actionable instructions to the operator.

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2. Core Objectives

The primary goals of this field test are to:

1. **Validate Real-Time Contingency Response:** Demonstrate that USSs can detect dynamic constraints affecting an active flight and guide the operator through appropriate, timely mitigation measures.
2. **Test Geo-Fence Compliance and Deviation Handling:** Verify that USSs can automatically detect when a drone exits its authorized OIR and trigger the appropriate operational response (e.g., alerts, a contingency declaration, or the creation of a non-nominal volume).
3. **Evaluate Non-Nominal Volume Procedures:** Ensure that in case of a deviation, USSs correctly calculate and create a non-nominal volume, and that flights cannot be activated within one.
4. **Measure USS Performance:** Quantitatively measure the reaction time of USS providers in responding to simulated emergencies and dynamic changes in the airspace.
5. **Standardize Contingency Maneuvers:** Test the implementation of specific, pre-defined contingency procedures beyond the default "Return to Home," based on information provided in dynamic constraints.

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3. Technical Architecture & Protocols

The core architecture remains the DECEA-provided **Discovery and Synchronization Service (DSS)**, based on the InterUSS Platform. All interactions will continue to adhere to the API contracts and authentication protocols established in Field Test 2.

- **Governing Standards:** All operations will continue to be governed by **ASTM F3548-21** (UTM Interoperability) and **ASTM F3411-22a** (Remote ID).

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4. Test Scenarios

The field test will focus on dynamic scenarios designed to assess real-time decision-making and system responsiveness.

Scenario 1: Dynamic Constraint on an Active Flight

- **Objective:** To validate the USS's ability to manage a new constraint that appears during flight and measure its reaction time.
- **Execution:**
  1. A USS activates an OIR, and the corresponding drone begins its mission.

2. A test coordinator creates a new, high-priority `Constraint` that partially overlaps the active OIR (e.g., simulating a helicopter landing zone). The constraint will contain detailed instructions.
3. The USS must detect the conflict in near real-time. The time from constraint publication to USS action will be measured.
4. The USS must instruct its operator to take appropriate action based on its safety procedures (e.g., immediately exit the restricted area, hold position, or land at an alternate location).

Scenario 2: OIR Deviation and Non-Nominal Volume Creation

- **Objective:** To validate the automated response to a drone breaching its approved flight geometry (Geo-Fence).
- **Execution:**
  1. A drone is operating under a valid, `Activated` OIR.
  2. The operator intentionally flies the drone outside the lateral and/or vertical boundaries of the OIR.
  3. The managing USS must automatically detect the deviation via Remote ID data or other tracking means.
  4. The USS must issue an immediate alert to the operator.
  5. Per BRAC requirements, the USS must then calculate the potential flight area and automatically create a `non-nominal volume` in the DSS to represent the contingency.

Scenario 3: Response to Flight Outside UTM Zone

- **Objective:** To evaluate the system's response to an operation that deviates outside the designated UTM test zone.
- **Execution:**
  1. An operator flies a drone near the boundary of the defined UTM Zone.
  2. The drone then proceeds to fly *outside* this zone.
  3. The managing USS and the overall system must detect this breach and initiate the appropriate alert and contingency procedures.

Scenario 4: Standardized Check-in / Check-out

- **Objective:** To validate a formal, standardized electronic procedure for flight check-in and check-out.
- **Execution:**
  1. Before activating an OIR, a USS must perform a formal "check-in" using a defined digital process. Informal communications (phone, etc.) are not permitted.
  2. Upon normal completion or early termination of the flight, the USS must perform a formal "check-out" to close the operation.

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5. Operational Safety Considerations

All safety protocols from the previous test remain in effect.

- **Flight Rules:** All flights will be conducted under **Visual Line of Sight (VLOS)** conditions, per **ICA 100-40**.
- **Immediate Termination:** Operators must be prepared to terminate flight operations immediately upon command from their USS.
- **Loss of C2 Link Procedure:** All UAS must be configured with a "Return to Home" (RTH) procedure upon loss of C2 link.
- **Emergency Declaration:** Operators must immediately declare any fly-away or loss-of-control event to DECEA personnel and their USS.

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