

## **11 Final Field Round:**

### **11.1 Platform Requirements for Final Round:**

The platform requirements for the final round remain the same as that of the elimination round. However, teams are expected to further enhance the autonomy, robustness, and performance of the ANAV as required for demonstrating all the tasks of final field round detailed in section 11.3. All hardware and software upgrades must comply with the overall constraints of the challenge.

### **11.2 Venue and Arena:**

#### **Venue:**

The final round of the IROc-U 2025 will be conducted indoor at Mangaladhama Multi Utility Hall (Complex), Indiranagar, Bengaluru. (Approximately 3.5 km from URSC Campus).

- Address: Mangaladhama Multi Utility Hall (Complex), ISRO, DOS Housing Colony, Shridi Sai Baba Mandir Road, Opp. ESI Nursing Hospital, Defence Colony, Indiranagar, Bengaluru, Karnataka – 560008

#### **Arena:**

- Arena Type: INDOOR.
- Maximum Size of Arena: 30 ft. x 40 ft (Including the 1ft. width yellow color boundary). However, there may be minor deviations due to Arena constraints.
- Home Position: 4 ft. x 4 ft. level surface;
- Safe Spots: Three safe spots of size 5 ft. x 5 ft. will be present. One of them will include a 15° slope. Safe spot coordinates will NOT be disclosed with teams.
- Undulated Surface: Areas outside home and safe spots will contain terrain material (e.g., boulders, gravel etc.).
- Illumination: Moderate and indoor through lamps.
- Wind Disturbance: Negligible.

### **11.3 Final Round Tasks:**

After a single start command, ANAV must perform all tasks autonomously:

#### **11.3.1 Stable Vertical Take-off**

- Must reach a hover height of at least 2 m (max 6 m).

#### **11.3.2 Scanning of Arena**

- Must detect and identify all safe spots.
- Coordinates must be displayed on base station map.

#### **11.3.3 Safe Landing at identified safe spots**

- Land on each identified safe spot.
- Perform vertical take-off and repeat until all landings are done.

#### **11.3.4 Return to Home Position**

- Return and land at original home position after completing all landings.

- Extra task: After completion of the above tasks, at discretion of evaluators, teams may be instructed to complete the tasks with different home position and safe spots. During extra task, the home position and safe spots may be placed arbitrarily as instructed by the evaluators.

#### **11.4 Evaluation Methodology for Final Round:**

1. All tasks are to be demonstrated live at the venue and as per the evaluator's instructions.
2. Telemetry (including home and safe spots coordinates) must be visible on base station.
3. Key evaluation: flight stability, detection accuracy, landing success, and autonomy.
4. Any manual intervention after start command will lead to penalization.

#### **11.5 General Notes:**

- ANAV must not be equipped with GPS or external navigation aids.
- Emergency safety systems must be functional.
- Emphasis is on real-time perception and autonomy.

#### **11.6 Mandatory Information to be Provided by Teams:**

At the time of the final round demonstration, each team must clearly present the following information to the evaluators:

1. The coordinate reference scheme used for localization:
  - Whether the home position is treated as (0, 0) or
  - The corner of the arena is considered as (0, 0).
2. Clarification on whether the ANAV resets coordinates during each landing and take-off cycle.
3. The scanning logic and pattern (e.g., spiral, grid, sweeping) implemented by the ANAV to detect safe spots.
4. Information on where the primary data processing occurs:
  - Onboard the ANAV (preferred) or
  - At the ground station/base station.

All the above details must be compiled and clearly presented to the evaluators during the challenge.

## **12 Non-Technical Rules and Guidelines – Final Round**

The following rules and guidelines are to be strictly followed by all participating teams during the Final Round of IRoC-U 2025. These pertain to logistics, participation, reimbursements, and event conduct.

### **12.1 Communication and Participation**

- Individual email communications will be sent to the designated focal points of each team confirming the final round dates and the approved number of attendees.
- Only registered participants and mentors listed in the official team roster will be permitted inside the venue. No additional attendees will be allowed under any circumstances.
- In response to the email communication, the teams shall provide all the necessary inputs such as date and time of arrival and the confirmation of actual number of participants.

### **12.2 Travel and Accommodation**

- No accommodation will be provided to the participants and mentors.
- No transport arrangements will be made to or from the venue. Participants and mentors must make their own arrangements to reach the venue.
- Travel Allowance (TA) reimbursement for the entire team will be processed only to the bank account of the participants (not to the third party) upon submission of proof of travel as required.
- The focal point (team lead) must collect and consolidate all travel tickets of the team and submit them at the time of final round registration.
- Re-imbursement of Travel allowance for all the members of teams (including mentors) shortlisted for Final field round of IRoC-U2025 i.e., Onward and return journey fare equivalent to 2<sup>nd</sup> AC train ticket or Actual fare whichever is minimum between the city of respective team's college and Bangalore subject to production of travel (Air/Train/Bus) tickets. Ticket and Boarding pass shall be provided by the participants & mentors for Air travel.

### **12.3 Food and Onsite Arrangements**

- Lunch, snacks, and dinner will be served at the counter near to the venue on the days of the challenge.
- Entry to the venue is strictly restricted to the allocated time slot. Participants will not be allowed inside the venue before or beyond their scheduled slot.

### **12.4 Demonstration Slot**

- Each team will be given a single 45-minute time slot for demonstration and review by the evaluators.
- This includes both setup and autonomous task execution.
- Time slots will be allocated through a lottery system, and no requests for rescheduling will be entertained.

### **12.5 Final Round Registration Requirements**

- College ID/ ID proof of all team members including mentors
- Aadhar Card
- PAN Card
- Bank account details of all the participants and mentors
- Consolidated travel ticket details for the entire team

## 12.6 Inaugural & Valedictory Function

- All student participants and mentors are invited to attend the Inaugural & Valedictory Functions, which will be held at the venue.

## 12.7 Souvenir – ANAV Details Submission Format

A one-page summary in the following format for inclusion in the official IROCU 2025 souvenir shall be submitted by all teams through email id [irocu2025@urisc.gov.in](mailto:irocu2025@urisc.gov.in)

Field	Details to be Provided
Team Name	
Team ID	
College Name	
City & State	
Team Members (Names)	
Mentors (Names)	
ANAV Name (if any)	Optional – adds a unique identity
ANAV Mass (in kg)	
ANAV Dimensions (L × W × H in cm)	
Number of Propellers	
Type of Frame	e.g., X, H, +, Hex, etc.
Frame Source	Specify whether Custom-built or Commercially procured.
List of Sensors Used	e.g., IMU, Optical Flow, Lidar, Depth Camera, etc.
Navigation Technique Used	e.g., Visual SLAM, Optical Flow, Feature Matching
Max Flight Time Achieved	Under competition constraints (approx.)
Novelty / Innovation (Max 1 paragraph)	Highlight unique aspects of your design, technique, or solution
What the Team Feels About This Challenge	1–2 lines describing the experience, learnings, or excitement
Team Quote or Motto	1 line – inspirational or humorous statement by the team
QR Code (optional)	Link to project video, GitHub, or team webpage