



2026

BRICS SKILLS COMPETITION

(BRICS+ FUTURE SKILLS & TECH CHALLENGE)

Low-altitude Intelligent Aircraft Application BRICS-FS-64

Test Project

(International Final_Online)

June , 2026



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1. Competition Format

Event with two-person teams

2. Competition Content

This competition consists of one single module. During the competition, all contestants will be provided with standardized competition question documents, competition equipment, basic equipment operation manuals, as well as data sources and other technical basic conditions required to ensure the independence and fairness of each task module. The competition covers the following task module:

UAV Multi-industry Application Simulation Flight Module

Competition tasks and scoring criteria may only be revised if the tasks cannot be finished on-site and the revision is approved by the Chief Expert.

Any contestant who fails to comply with occupational health, safety and environmental requirements, or endangers themselves or other contestants, will be disqualified from the competition.

Scores will be assessed right after contestants finish each module.

3. Modules and Time Requirements

3.1 General Specifications for Modules and Time Limits

The Low-Altitude Intelligent Aircraft Application Event consists of one module, which contestants are required to finish within four hours. See Table 1 for the specific module name and time requirements.

Table 1 List of Competition Modules and Time Requirements

No.	Module Name	Allocated Completion Time
1	UAV Multi-industry Application Simulation Flight Module	240min

3.2 Task Content

UAV Multi-industry Application Simulation Flight Module (240 min)

(1) Task Background

The low-altitude economy has become the frontier of competition for emerging industries worldwide. In China, this sector is designated as a national strategic development priority. Its application scenarios range from emergency rescue and logistics transportation to public security law enforcement, water conservancy patrols and forestry monitoring, deeply penetrating all aspects of social governance and public services.

Nevertheless, the rapid advancement of UAV technology has raised higher requirements for practitioners. Beyond sophisticated flight control capabilities, greater emphasis is placed on proficiency in intelligent UAV functions and the ability to complete industrial missions with smart UAV platforms.

Based on the virtual simulation training and assessment system for multi-industry UAV mission flights, this module builds a highly immersive full-process simulation operation environment modeled on real industrial cases and authoritative standards. Contestants will tackle typical tasks covering six major industries, and complete the full workflow including mission planning, flight execution and post-data processing.

This module is not merely a contest of flight manipulation skills, but also a comprehensive test of contestants' awareness of safety red lines and emergency response capabilities. In this environment, virtual simulation equals real combat. Through international competitions among peers, young skilled talents from all participating countries will jointly explore a "universal skill standard system" for the low-altitude intelligence era, and promote mutual recognition of standards and joint cultivation of talents in the field of UAV industrial applications across BRICS nations.

(2) Key Assessment Items

① Correct Assembly of UAVs and Payloads The system integrates no less than 4 mainstream industrial-grade UAV models, equipped with matched simulated mission payload models, including gimbal cameras, infrared cameras, loudspeakers, searchlights, gas sampling devices, water sampling equipment, delivery launchers and fire extinguisher bomb launchers. The functions, operation logic and operation effects of all payloads are fully consistent with real industrial UAV equipment. This

assessment item requires contestants to complete assembly steps in the correct sequence and in compliance with standard requirements.

② Precise Flight Control and Obstacle Avoidance Capability Contestants operate with physical remote controllers. Supported by high-precision physical engines and flight control algorithms, the assessment covers precise hovering, route tracking and dynamic obstacle avoidance in complex environments, as well as flight stability, fixed-point photographing and payload delivery performance.

③ Mission Planning and Execution Efficiency Scoring focuses on the rationality of route design, accuracy of flight parameter and payload parameter configuration, and timeliness of full mission completion.

④ Data Collection and Post-processing Evaluation indicators include image capture quality, validity of evidence chains, accuracy of intelligent identification, image processing & data sharing, and timeliness of data upload.

(3) Task Description

Centered on intelligent UAV applications, this system constructs a training framework integrating scenario-based missions and virtual-real combined practice. Contestants are required to complete typical industrial tasks on the virtual simulation platform, including basic UAV control training, mountain search and rescue, medical material transportation, investigation and evidence collection, water conservancy inspection, geological and environmental monitoring, as well as forestry monitoring. They shall master full-process operations and core technologies, with their professional proficiency evaluated by the intelligent assessment system.

(4) Task Content

① Basic UAV Control Task

Training Task Cases: Triangular area image acquisition, hexahedral image acquisition, heat source target capture, material delivery.

Core Content: Contestants complete high-precision target locking and data acquisition within designated zones, master fine gimbal control, accurate payload release timing, and obstacle avoidance skills in complex environments.

② Emergency Rescue Task

Typical Scenarios: Mountain search and rescue, forest fire rescue, high-rise building rescue.

Core Content: Pre-mission preparation covers correct assembly and parameter calibration of UAVs and rescue payloads (loudspeakers, thermal imagers, delivery launchers). Practical operations include rapid search and target positioning under diverse environments; the assessment evaluates flight precision, together with the timeliness and quality of collected information.

③ Logistics Transportation Task

Typical Scenarios: Cross-regional transport of medical supplies, mountain material replenishment.

Core Content: Load assembly and balance verification based on cargo weight and center of gravity; design optimal cross-regional flight routes. This item assesses flight stability, obstacle avoidance performance, and the safe and accurate delivery rate of goods during flight.

④ Public Law Enforcement Task

Typical Scenarios: On-site investigation and evidence collection, public security patrols.

Core Content: Rapid deployment and takeoff for emergency missions; multi-angle shooting of accident or crime scenes to guarantee clear and complete images; on-site crowd management via loudspeakers in full compliance with law enforcement recording standards. It also includes patrol project creation and custom flight zone setup, as well as polygon aerial survey routes and refined waypoint routes for detailed patrol missions.

⑤ Water Conservancy Inspection Task

Typical Scenarios: Water administration law enforcement, reservoir patrol inspection.

Core Content: Project creation and custom flight zone definition, drafting polygon aerial survey routes and precise waypoint routes. Intelligent operations involve standardized cloud platform operation and automatic inspection execution; contestants shall mark abnormal targets (cracks, illegal personnel, etc.) via images, complete 3D model reconstruction and data sharing.

⑥ Geology & Environmental Protection Task

Typical Scenarios: Water body sampling, air quality monitoring.

Core Content: Pre-flight preparation including assembly of sampling and monitoring equipment; configure flight parameters and inspect equipment status in accordance with task documents, then fly to designated sampling points, complete water sampling and safely return to the takeoff and landing zone. Design monitoring

routes as required, carry out comprehensive pre-flight inspections, set parameters for air monitoring payloads, and execute scheduled flight missions while guaranteeing stable equipment operation and real-time accurate data collection.

⑦ Forestry Monitoring Module Task

Typical Scenarios: Fire prevention patrol monitoring, forest area law enforcement patrols. Core Content: Project creation and pre-mission preparation, including drawing custom flight zones and activating terrain obstacle avoidance; design law enforcement waypoint routes, set downward vertical camera orientation, intelligent identification and equidistant shooting functions, configure route parameters and establish leapfrog operation plans. During mission execution, contestants shall monitor UAV takeoff, scheduled flight and leapfrog transfer to maintain stable flight status. After task completion, abnormal points shall be marked through image recognition.

(5) Scoring Method

The system is equipped with assessment and automatic scoring functions, requiring no manual intervention from referees or experts. The score will be displayed instantly upon task submission, and the time consumed for the task will be recorded simultaneously. Contestants may log into the "Assessment Mode" of the system with their assigned accounts to participate in the evaluation.

Specific Task Score Allocation is as follows:

Task Name	Score
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Basic UAV Control	10
Emergency Rescue	15
Public Law Enforcement	15
Logistics Transportation	15
Water Conservancy Inspection	15
Geology & Environmental Protection	15
Forestry Monitoring	15

4. Weight of Each Module in the Total Score

Module Name	Full Score	Score Weight (%)
UAV Multi-industry Application Simulation Flight Module	100	100



BRICS Skills Competition (BRICS Future Skills Challenge)