BRICS SKILLS COMPETITION

(BRICS+ FUTURE SKILLS & TECH CHALLENGE)

Industrial Robot Digital Twin Technology Application

BRICS-FS-40

Technical Description

(International Final)

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catalogue

1.Project Introduction

1.1 item description

The competition focuses on the digital twin of industrial robots, with the production process of automotive wheel hubs as the main task. It evaluates contestants 'ability to use industrial robots to perform a series of processes, including quick tool installation, hub picking, hub grinding, CNC machining, hub inspection, RFID information reading and writing, and hub sorting. The competition covers areas such as virtual debugging of industrial robot systems, software and hardware installation and debugging, and integrated application. It assesses the comprehensive professional qualities of the participating teams, including planning, organization, and teamwork, emphasizing innovation and practical operational skills, thereby enhancing students' professional abilities and employment quality.

1.2 Purpose of the competition

To implement President Xi Jinping's important instructions on skilled talent development, and to better promote the spirit of model workers, labor, and craftsmanship throughout society, we aim to inspire more workers, especially the younger generation, to pursue a path of skill development and serve the country through their skills. This initiative also seeks to cultivate more highly skilled, versatile talents and master craftsmen, thereby promoting employment, entrepreneurship, and high-quality development in our country. Additionally, to further implement the spirit

of the BRICS countries' 'Xiamen Declaration,' 'Johannesburg Declaration,' 'Brasilia Declaration,' and 'Moscow Declaration' regarding skill development and innovation, and to jointly advance the cooperation of the second golden decade of BRICS countries, this competition is organized.

The competition aims to assess the contestants 'professional skills in industrial robot system layout, script programming, debugging, and virtual simulation debugging, as well as their professional qualities such as teamwork, quality control, and safety awareness. It also evaluates the contestants' technical application in system integration product operation and maintenance services. Using real industrial application scenarios as task carriers, the competition thoroughly tests the contestants' problem analysis, handling, and implementation capabilities when facing complex work tasks, showcasing their comprehensive professional qualities and skill application levels.

2. Competitors need to have the ability

2.1 Basic knowledge to be mastered

1) Industrial robot technology knowledge;

2) Knowledge of mechanical installation and debugging;

3) Electrical installation and commissioning knowledge;

4) Knowledge of pneumatic control technology;

5) Sensor technology knowledge;

6) PLC control and application knowledge;

7) Knowledge of intelligent vision detection technology;

8) HMI human-machine state technical knowledge;

9) Knowledge of structured programming and virtual simulation technology;

10) CNC system (CNC) application knowledge;

11) Knowledge of industrial network technology application;

12) Safety operation procedures and professional code of conduct.

2.2 Basic skills to be mastered

1) Skills in digital twin and virtual debugging software, including methods of virtual debugging;

2) The use method of industrial robot system, including parameter setting, system calibration, typical program design;

3) The use of vision, including communication setting, typical programming, etc.;

4) The use method of PLC system, including input and output connection, communication method, typical program design;

5) Application of industrial network technology, including network basic architecture, networking method, communication protocol, data acquisition and processing;

6) Application of industrial network technology, including network basic architecture, networking method, communication protocol, data acquisition and processing;

7) Installation, commissioning, maintenance and maintenance of general mechanical and electrical equipment.

3 Competition items

3.1 Competition module

The competition is conducted in a team of two people, and the competition tasks are completed through teamwork. The competition is divided into two sessions: session A, which lasts for 2 hours, and session B, which lasts for 4 hours. The scoring method is based on the results.

module	assignment
module A	Simulation environment construction
	Manual debugging of integrated system
	Integrated system virtual joint debugging
module B	Hardware construction and electrical wiring
	Robot and peripheral system unit debugging
	Industrial robot system integration and commissioning

3.2 Competition description

Module A: virtual debugging of industrial robot system

Module A-1 Simulation environment construction (model scene construction, part definition, address matching and other tasks in the virtual simulation software)

Module A-2 Manual debugging of integrated system (manual debugging of hardware buttons and virtual environment through PLC training box)

Module A-3 integrated system virtual joint debugging (by writing PLC and touch screen programs, the industrial robot program simulation is completed in the virtual simulation software, and finally the overall joint debugging is completed to complete the tasks of hub production storage, grinding, logo installation, processing, testing and sorting)

Module B: Industrial robot system integration application

Module B-1 hardware construction and electrical wiring (install each unit, circuit, network cable connection and debugging according to requirements)

Module B-2 robot and peripheral system unit debugging (complete the integration and debugging of CNC, vision and other peripheral units as required)

Module B-3 Industrial robot system integration and debugging (complete the comprehensive system integration and debugging, including starting the system, warehousing, grinding, assembly, vision detection, RFID reading and writing, CNC machining, sorting and other process tasks, and realize part of the digital twin function verification)

4. Competition method

There is no competition category. Teachers and students of vocational colleges (including higher vocational colleges and technical colleges) and college students, as well as employees of enterprises and institutions whose age is between 16 years old (born before January 1, 2009) and 35 years old (born after January 1, 1990) can register for the competition.

Each team consists of players, instructors (instructors), translators and team

support personnel (team leaders), among which players and instructors are essential. Each team is limited to two experts.

5 Competition process

Table 1 Competition workflow schedule

Competition Day	time	item	participant	place
first day	8:00-12:00	Participants report	Related staff of the team, instructors, referees and experts	hotel wineshop
	13:30-15:00	Judging training and technical briefing	The judging panel shall supervise the arbitration	assembly room
	15:00-16:30	Team leader meeting, draw of matches	Team, chief referee and supervision group	assembly room
	16:30-17:00	Familiarize yourself with the venue	Team members and team leaders	Field of Play
the next day	8:00-8:30	Check and encrypt	Check and encrypt the referee and the contestants	Field of Play
	8:30-10:30	Official competition (Schedule 1)	Referees, teams, technicians and staff	Field of Play
	10:30-12:00	Score the schedule	Judges, players	Field of Play
	12:00-12:30	have a rest	Judges, players	Field of Play
	12:30-16:30	Official competition (Schedule II)	Referees, teams, technicians and staff	Field of Play
	16:30-18:30	Score for round two	Judges, players	Field of Play
dieb tert	The next day			
the fourth day	9:00-10:00	closing ceremony	lecture hall	personnel
Note: The actual schedule of the competition guide is subject to change				

6 competition papers

The sample paper is consistent with the official paper in terms of question type, distribution ratio of knowledge points and skill points covered, proportion of free creative content, and layout of the paper, with no more than 30% change.

7. Assessment of achievements

7.1 Principles of scoring criteria formulation

The competition questions and scoring criteria are jointly designed by experts from the BRICS Skills Development and Technological Innovation Competition Executive Committee, relevant enterprises and industries, and educational institutions. The evaluation standards, scoring methods, and detailed scoring rules are formulated based on the principles of scientific rigor, fairness, and practicality. These standards also integrate the assessment of professional skills with professional ethics, with a total score of 100 points.

7.2 Scoring method

1. The competition referee group is responsible for the evaluation of the competition results, and there is a chief referee who is fully responsible for the referee and management of the competition.

2. The contestants shall operate according to the requirements of the task book, and the contents that need to be confirmed by the judges must be raised and confirmed by the judges, otherwise no points will be awarded.

3. The judging group shall evaluate the results in accordance with the principles of "fairness, impartiality, openness, science, standardization, transparency and no objection", based on the on-site records of the judges, the task book of the participants and the scoring standards.

4. There are two types of scoring methods: process scoring and result scoring. The results shall be evaluated according to the on-site records of the judges, the task book of the competition for the participants and the scoring standards. All scoring materials shall be signed by the corresponding judges and players and confirmed by the chief referee.

5. The division of judges shall be responsible for the chief referee. Judges without corresponding enforcement tasks shall not enter the player's workstation. Players shall display the functions described in the scoring items according to the instructions of the judges.

7.3 Scoring rules

The competition score will adopt a combination of qualitative and quantitative methods to objectively and fairly evaluate the scores of each task. In order to ensure the objectivity of the competition evaluation, for each set of competition questions, the scoring standards will be customized, and the scoring items will be detailed as much as possible to every detail, reducing the proportion of subjective judgment, so as to ensure the objectivity and fairness of the competition.

Table 2 Competition module distribution table

	Evaluation items	**Scored points**	

module			proportion
A	Simulation environment construction	1、The virtual environment is built and placed in the same way as the real environment 2、Correctly set the initial state of the software 3、Correctly define the state machine for the cylinder 4、Correctly define the sensor 5、Correctly define the indicator light 6、Correctly complete the signal address match 7、Establish communication correctly	10%
	Manual debugging of integrated system	1、The virtual debugging scene cylinder action is controlled by an external button 2、Control the virtual debugging scene indicator light by external button 3、Alarm such as safety grating and buzzer is realized	5%
	Integrated system virtual joint debugging	1. Complete the virtual simulation and joint debugging task of one or more hub production and processing process	20%
B	Hardware construction and electrical wiring	1、Complete the hardware construction of each module 2、Complete the circuit connection of each unit 3、Complete the pneumatic connection of each unit 4、Complete the network connection and test of each unit	6%

	Robot and peripheral system unit debugging	1、Integrated application debugging of numerical control unit 2、Visual unit integration application debugging 3、Other peripheral unit integration application debugging	24%
	Industrial robot system integration and commissioning	Complete the system comprehensive commissioning, including MES start-up system, warehousing, grinding, assembly, visual inspection, RFID reading and writing, CNC machining, sorting and other process tasks; including digital twin function debugging	35%
professional quality		1. Wear safety helmet, sportswear and electrician's insulating shoes; 2. Tools are neatly arranged; 3. Do not throw air tubes, zip ties and other garbage anywhere; 4. Take off the safety helmet during the competition; 5. In the process of completing work tasks, violate operating procedures or cause damage to components other than important components due to improper operation.	Subtracting points

Note: 1. The professional quality part is not specifically allocated, but in the process of work, if the relevant regulations are violated, 0-10 points will be deducted from the actual operation of the competition total score of the contestants, and serious violators will be stopped from the competition and the score of this competition module will be cancelled.

2. The proportion of each indicator may be slightly adjusted during the actual competition process.

8 Competition rules

8.1 Familiarize yourself with the site

One day before the competition, the participating teams were led by the staff to carry their identity documents and enter the stadium in an orderly manner according to the prescribed route. Any personnel can only observe in the designated area, and are not allowed to enter the competition position or touch the competition platform and items in the competition position.

8.2 Official Competition

1. Ten minutes before the competition, the contestants are allowed to enter the workstation by the chief referee, and check the competition platform, mechanical and electrical components, tools, consumables, stationery supplies, etc., according to the equipment list. They are not allowed to do anything related to the competition task.

2. All personnel shall not have any behavior that affects the athletes to complete their work tasks in the competition area. Participants are not allowed to leave the competition position without the permission of the on-site referee, use civilized language, and shall not verbally or physically attack the referee and the staff of the competition area.

3. Participants must strictly adhere to safety procedures to ensure the safety of

both individuals and equipment. If a participant causes personal injury or equipment damage due to personal error, the chief referee has the authority to suspend the team's competition. If abnormal factors arise that disrupt the normal progress of the competition, the chief referee will make a decision based on the specific circumstances and may award additional time as needed. In necessary cases, backup equipment can be activated.

4. When the player leaves the court, he/she shall not take the task book, draft paper, items for the competition and so on out of the court. Cooperate with the referee to make the record of the court.

8.3 Assessment of performance

During the evaluation process, contestants present their competition outcomes and task completion according to the judges 'requirements. Judges strictly follow the scoring criteria, evaluating based on the contestants' actual actions to ensure fairness and impartiality. Contestants are not allowed to watch or discuss the evaluations of other contestants. Judges must not disclose the contestants 'performances or the evaluation results. Staff members must comply with the judges' requirements and must not enter the competition area without permission, as this could interfere with the evaluation process.

8.4 Results announcement

The scorekeeper will compile the decrypted scores of all participating teams (athletes) into the competition results. After the chief referee and the supervision

group sign, the results will be announced. If there are no objections within 2 hours, the final total scores for each event will be entered into the competition management system. The chief referee, the head of the supervision group, and the chief arbitrator will review and sign the exported score sheet, which will then be announced at the closing ceremony.

9 Competition environment, facilities and venues

9.1 Overall environmental requirements

1. The competition site is flat, bright and well ventilated. The lighting of the site is good, there is no direct sunlight around, and the lighting conditions are excellent, which can ensure a stable light source environment for the competition during the competition.

2. The competition site shall be planned with independent visiting channels and experience areas, which shall not affect the normal competition.

3. Reasonable number of air conditioners shall be set up in the competition site to ensure a suitable temperature in the competition site.

4. Reasonable quantity monitoring of competition items shall be set to ensure that all competition positions and personnel activity ranges are covered without blind corners, and the monitoring video files shall be properly preserved.

5. Set up a medical station at the venue.

6. Place fire extinguishers in the stadium.

7. Set up backup power supply on the field.

9.2 Competition station requirements

1.The area of a single competition station shall not be less than 22m²(4m×5.5m), indicating the number of the competition station, with obvious regional division. In addition to the competition station, one standby station shall be prepared, and the area of the competition site shall not be less than 500
m²。

2. Each competition station is equipped with one competition platform, one operation table (the operation area is not less than 1000mm x 1600mm), two programming computers (with computer desk), and two stools.

3. Each competition station provides one power outlet for the competition platform (380V-6kW) and four power outlets for the programming computer (220V-2kW).

4.Programming computer configuration requirements: CPU is INTEL i5-8700 CPU (the 8th generation, the main frequency is 2.8GHz, the number of cores is 6) at the same level or above, 2G or above NVIDIA independent graphics card, 8GB memory at the same level or above, 500GB hard disk at the same level or above, and the installation of legitimate Windows 10 or above operating system.

10 Technology Platform

Figure 2 Schematic diagram of the competition platform

10.1 Technical platform requirements

The competition platform focuses on the wheels of the automotive industry, covering processes such as material retrieval from warehouses, manufacturing and processing, grinding and polishing, inspection and identification, and sorting and positioning. It is designed to meet the needs of future intelligent manufacturing plants. The platform uses industrial Ethernet for rapid data exchange and process control, employs PLCs for flexible on-site control structures and overall control design logic, and utilizes MES systems to collect operational information and status data from all equipment. By integrating big data, it enables the implementation and intelligent control of the production process. Additionally, the cloud network facilitates remote monitoring of the system's operational status. This platform serves not only as a skills competition venue but also meets the teaching, experimental training, and skill

training needs of vocational colleges in fields such as industrial robots, automation control, and virtual simulation.

The technical platform includes a PLC training box capable of virtual simulation verification, which supports PLC programming and touch screen interface programming. It features an operation panel, buttons, sensors, and indicator lights. The PLC training box is paired with the factory's virtual debugging simulation software, PQFactory. This setup enables the PLC control box to process real production signals and transmit them to the PQFactory system. The PQFactory system then simulates the production process based on the attributes of the control variables and passes the results back to the PLC control box.

10.2 Main equipment parameters

Table 3 Equipment configuration specifications of the competition technology platform

order number	name	Contains modules
1	Execution unit	Industrial robot x1 Industrial robot expands IO module x1 Tool quick change module flange end x1 Translation slide x1 PLC controller x1 Remote IO module x1
2	Tool unit	Rim clamping claw, hub clamping claw, rim inner ring clamping claw, suction cup tool, suction cup clamping claw, end face grinding tool, side grinding tool, tool bracket, demonstrator bracket
3	Warehouse unit	Palletized warehouse x1 Remote IO module x1 Wheel hub parts x6
4	Processing unit	CNC machine tool x1 Simulation tool chest x1 Numerical control system (Siemens 828d system) x1

		Remote UO module x1
5	Polishing unit	Polishing station x1 Rotary station x1 Flip the tooling x1 Shedding station x1 Remote IO module x1
6	detecting unit	Visual system x1 Supporting light source and display x1 RFID detection module x1 Logo library x1
7	Sorting unit	The conveyor belt x1 Sorting mechanism x3 Sorting station x3 Remote IO module x1
8	Central control unit	PLC controller x2 Switch x1 Wireless router x1 Monitor x1 Operation panel x1 Power module x1 Gas source module x1 Industrial Gateway x1
9	PLC control cabinet	1) PLC: 100KB of working memory, 4MB of load memory, CPU with 14 digital input points, 10 digital output points, and 2 analog input interfaces. The Boolean operation execution speed is 0.08 μ s per instruction, the move word execution speed is 1.7 μ s per instruction, and the real number mathematical operation execution speed is 2.3 μ s per instruction. It has 2 PROFINET ports. 2) Human-machine interface HMI: button/touch operation, 7" TFT display, 65536 colors, PROFINET interface. 3) Operation panel: including one set of grating sensor, two photoelectric sensors, one proximity switch, one slot photoelectric, one power button and emergency stop button, one start button, one reset button, one stop button and one alarm buzzer
10	Control integrated MES	It includes but is not limited to the following functional modules: 1) System management center

	system	2) Produce data centers 3) Product data center 4) Process work center 5) Production execution center 6) Quality Management Center 7) Warehouse management center 8) Equipment management center 9) Information monitoring center 10) Development and operation tools
11	Digital twin software	1) It can freely define various devices, including robots, cylinders, sensors, etc. The basic equipment of the production line can be defined independently, and there is no dead end virtual simulation. It supports various signals of PLC, such as numerical type and Boolean type. It communicates with PLC in real time and simulates the communication of equipment; 2) In the software, it can replace real-world robots, cylinders, modules, sensors, CNC machines, and other production line equipment to perform production line programming and debugging with PLCs. It perfectly simulates the actions and signal transmission of actual equipment, saving time and money for factory production lines. Real PLC programming can be performed without the need to purchase all real equipment; 3) The underlying layer utilizes advanced OpenGL display components, enabling modular development and reducing program interference dependencies. The interface uses mature tools like Microsoft Visual Studio, offering user-friendly human-computer interaction and simple, easy-to-use operations. It features realistic simulation design and efficient, accurate equipment action simulation. This is a virtual debugging software that is easy to operate and highly functional.

Table 4 The competition site provides operation tools and consumables

order number	Tool/material type	quantity	technical specifications
1	Competitive platform	1 set	PLC control box and robot system integration workstation
2	Operation table	1 sheet	/

3	chair	Two	/
4	computer	Two	Intel i5-8700 CPU (8th generation, 2.8GHz, 6 cores) or above; 8GB or more memory, 500GB or more hard disk capacity, Windows 10 or above operating system
5	safety helmet	Two	/
6	Competition stationery	1 set	/
7	parvicostellae	a surname	/
8	power line	a surname	/
9	Cleaning tools	1 set	/

11. Competition safety

11.1 Organizational structure

A competition safety assurance team will be established, with the team leader being the director of the organizing committee. Members will include the safety officers from each venue. Each venue will designate a safety officer responsible for the venue's safety, who will be in charge of mobilizing rescue teams and professional rescuers in case of emergencies and ensuring the evacuation of personnel within the venue. A coordination mechanism will be established with relevant departments such as public security, fire control, judicial administration, transportation, health, food safety, and quality inspection to ensure the safety of the competition. Emergency plans will be developed to promptly address any unexpected incidents. Special contact lines will be set up for medical staff, firefighters, and security personnel, with designated contacts who will be directly connected by the venue's safety officer. The

layout of the competition venue and the use of equipment will strictly follow the safety construction regulations. The venue will be divided into zones, with evacuation routes marked according to safety requirements, and safety evacuation route maps will be prominently displayed on the walls.

11.2 Safety management of events

The installation of competition equipment and facilities shall be carried out in strict accordance with the safety construction standards, and the power wiring and electrical installation shall be carried out in accordance with the regulations.

Fire extinguishers shall be configured according to fire safety requirements, and responsible persons shall be designated to use them in emergency situations. The competition regulations of the event specify the national (or industry) safety norms, regulations and qualification certificate requirements for relevant occupational positions.

The organizing committee will provide safety training to all judges and staff members before the competition. In accordance with the 'Labor Law of the People's Republic of China' and other relevant laws and regulations, a comprehensive safety accident prevention system will be established. Before the competition, participants will receive training to prevent personal injury accidents. The organizing committee will develop a specific plan to ensure the safety of the competition questions, including their storage, distribution, recovery, and evaluation.

11.3 Competition environment safety management

Before the competition, the organizing committee sends specialists to inspect the competition venue, accommodation facilities, and transportation services, setting clear safety standards. The venue is designed to comply with national safety regulations, and simulations are conducted to identify potential issues. Prior to the competition, the host institution must eliminate all safety hazards as required by the organizing committee.

A warning line will be set up around the venue to prevent irrelevant personnel from entering and accidents from happening. Necessary labor protection will be provided for the players in accordance with the requirements of relevant professional positions at the competition site. Before the competition, the referee will check and confirm that the equipment is normal, and during the competition, the players should strictly prevent wrong operation.

In order to ensure the smooth progress of the competition, the organizing college has established the corresponding safety guarantee system during the competition, which is implemented by the security, campus environment and health care groups.

（1）During the competition, all vehicles and personnel entering the venue must present valid credentials and show them to the staff. (2) Before the competition begins, participants should carefully read the 'Entry Guidelines' and emergency evacuation map posted at the venue. (3) The referee will supervise the inspection of the electrical control system before it is powered on, and promptly remind and stop any operational hazards.

(4) Each competition equipment uses an independent power supply to ensure safety.

When the contestant is programming, he/she should save the data in time to avoid data loss caused by sudden power failure.

(5) During the competition, the participants shall strictly abide by the safety operation rules. In case of emergency, they shall immediately cut off the power supply and leave the venue in an orderly manner under the arrangement of the staff.

(6) All kinds of personnel must strictly abide by the rules of the competition, and are strictly prohibited from carrying prohibited items into the competition.

(7) Security personnel shall inform the person in charge of the stadium of potential safety risks in time.

(8) Smoking is strictly prohibited in the competition venue, and security personnel are not allowed to lend their certificates to others.

(9) In case of safety problems, evacuate the site quickly according to the emergency evacuation route under the command of security personnel.

11.4 Living conditions guarantee

1. During the competition, the host institution shall uniformly arrange the accommodation and food for the participants and instructors. The host institution shall respect the religious beliefs and cultural customs of the minority participants and arrange their diet and daily life in accordance with the relevant national ethnic and religious policies.

2. The accommodation arranged during the competition shall have hotel and accommodation operation license.

3. The traffic safety of organized visits and observation activities during the

competition shall be the responsibility of the organizing committee of the competition area. The organizing committee of the competition and the host institution shall ensure the traffic safety of the players, instructors, referees and staff during the competition.

4. In addition to necessary security isolation measures, strictly abide by relevant national laws and regulations to protect personal privacy and personal freedom.

11.5 Responsibilities of the team

1. Each participating unit shall arrange to purchase personal accident insurance for the participants during the competition when organizing the team.

2. After the formation of each unit's team, relevant management system shall be formulated, and safety education shall be provided to all participants and instructors.

3. All participating teams shall strengthen the safety management of their participants and coordinate with the safety management of the competition site.

4. If the participating team has a vehicle, they must enter and leave the school gate with the certificate issued by the organizing committee of the competition, drive according to the designated route and park at the designated place.

11.6, emergency treatment

In the event of an accident during the competition, the discoverer should immediately report it to the competition organizing committee and take measures to prevent the situation from escalating. The competition organizing committee should promptly activate the emergency plan to address the issue and report to the venue

organizing committee. If a major safety issue arises, the venue organizing committee will decide whether to suspend the competition. After the incident, the venue organizing committee must report the detailed circumstances to the competition organizing committee.

11.7, Punishment measures

1. If a major safety accident occurs in the competition, the qualification of the host institution to host the competition shall be suspended.

2. If a major safety accident is caused by the participating team, it will be disqualified from the award.

3. If the participating team has a major safety accident hazard and fails to be warned by the staff of the competition venue, it will be disqualified from continuing the competition.

4. If the competition staff violates the rules, they shall be held accountable according to the corresponding system. If the circumstances are bad and cause a major safety accident, the judicial organs shall investigate the corresponding legal responsibility.

12. Complaints and arbitration

12.1 Complaints and Arbitration

1. The competition shall establish an arbitration working group, which shall carry out its work under the leadership of the competition organizing committee and

be responsible to the competition organizing committee.

2. Duties of the arbitrators

(1) Familiar with the competition rules and regulations of the event.

(2) Keep abreast of the progress of the competition.

(3) Accept written appeals from each team.

(4) Conduct in-depth investigation on the accepted appeal and make objective and fair collective arbitration.

12.2 Procedure for appeal and arbitration

1. Each team shall appeal to the arbitration working group against any instrument, equipment, tooling, materials, articles, computer software and hardware, competition tools and supplies, competition enforcement, venue management, competition results, or irregular behavior of the staff that does not conform to the regulations of the competition.

2. The subject of appeal shall be the guiding expert of the participating team.

3. When the appeal is started, the guiding expert shall submit a written appeal report signed by himself to the arbitration working group. The report shall fully and truthfully describe the phenomenon, time of occurrence, personnel involved and basis for appeal of the appeal event. Non-written appeal shall not be accepted.

4. The appeal should be filed within 2 hours after the end of the competition. It will not be accepted if it exceeds 2 hours.

5. The arbitration working group of the competition shall organize a review within 2 hours after receiving the appeal report and inform the appellant in writing of

the review result in time. If the appellant still has objections to the review result, the guiding expert may appeal to the arbitration committee of the competition area. The arbitration result of the arbitration committee of the competition area is the final result.

6. The complainant shall not refuse to accept the arbitration result for any reason; shall not take drastic actions to disrupt the order of the court for any reason; the arbitration result shall be signed by the complainant and cannot be collected on behalf of the complainant; if the complainant leaves at the agreed time and place, it shall be deemed to have abandoned the appeal by himself.