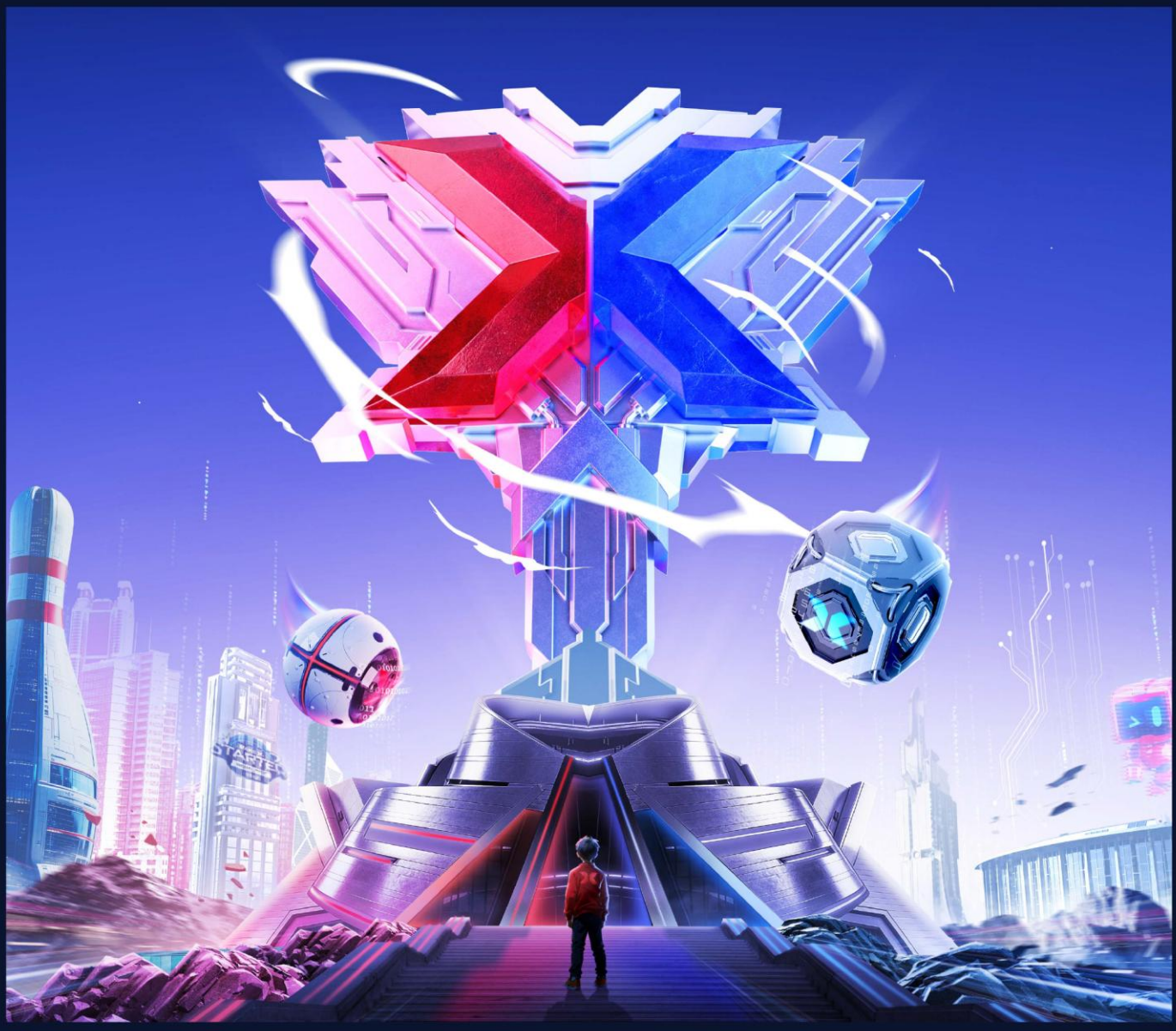
2026

V1.0

MAKEX

ROBOTICS COMPETITION



RULES GUIDE

MakeX Spark

Creativity · Teamwork · Fun · Sharing

Date	Version	Modifications Record
2025.11	1.0	MakeX Spark Smart Terra Rules Guide First Publish.

CONTENTS

1. Introduction

1.1 About MakeX

MakeX is an international robotics competition platform designed for young people worldwide. Originating from China, it is centered on STEAM and engages youth through various forms such as robotics competitions, STEAM carnivals, innovation showcases, and international exchange events. These activities allow participants to experience the joy of creation in practice and inspire their passion for technology.

The MakeX Robotics Competition upholds the spirit of Creativity, Teamwork, Fun, and Sharing, combining challenge and enjoyment. It encourages young people to embrace Science (S), Technology (T), Engineering (E), Arts (A), and Mathematics (M), and to apply this knowledge to real-life situations — exploring boldly and solving problems with creativity and teamwork.

1.2 MakeX Spirit

Creativity: We advocate curiosity and innovation by encouraging all contestants to create unique high-tech works with their talent, and challenge themselves for continuous progress!

Teamwork: we advocate solidarity and friendship, encouraging all contestants to develop a sense of responsibility and an enterprising spirit, and sincerely work with their partners for win-win development!

Fun: we encourage contestants to build a positive, healthy mindset in the competition. Enjoy the journey and grow in the process.

Sharing: we encourage contestants to have an open mind as a maker and share their knowledge, responsibility, and joy with everyone, including their teammates and competitors.

MakeX spirit is the cultural cornerstone of the MakeX Robotics Competition. We hope to provide a platform for all contestants, mentors and industry experts to exchange ideas, study and grow up, and help young people acquire new skills during creation, learn to respect others in teamwork, gain an enjoyable life experience in the competition, take delight in sharing their knowledge and responsibility with society, and work hard to achieve their grand aspiration of changing the world and creating the future!

1.3 About MakeX Spark

MakeX Spark is an innovation competition program in the form of online or onsite events. Teams need to focus on the theme of each competition, carry out the projects through software programming and hardware construction, and display the projects to others.

With the characteristics of a low entry threshold and flexible forms, Spark focuses on guiding teenagers to not only learn interdisciplinary knowledge and apply them on practical problems but also improve their problem-solving and logical thinking skills, developing their creativity and

imagination. Through the theme of learning and practice in the competition, contestants are able to effectively improve their ability to communicate and express, thus gaining the joy of sharing.

2. Participation Requirements

2.1 Contestants

The contestants' requirements for MakeX Spark are as follows:

Age: Team members must be teenagers or children between the age of 6-13 (born between January 2, 2012 and December 31, 2020), and the mentor must be at least 18 years old.

Participants:

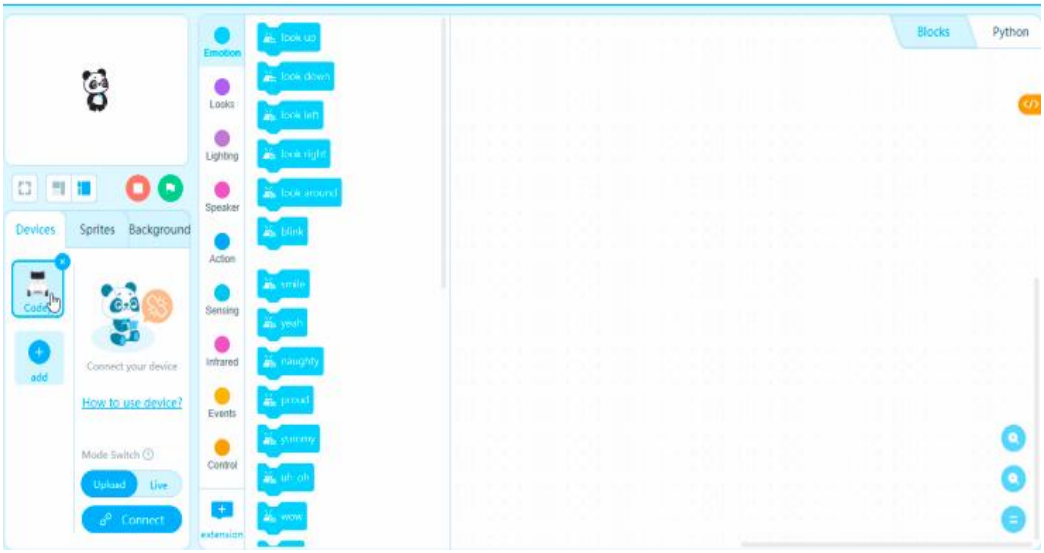
The contestants shall participate in teams, instructed by 1-2 mentor(s).

For online competitions, each team is composed of 1 to 2 members.

For onsite competitions, each team is composed of 1 to 3 members.

2.2 Software and Hardware

MakeX Spark is an innovation contest for contestants to conduct hardware construction and software programming. The contestants must use the mBlock programming platform by Makeblock, which includes the web version, Windows version, Mac version, and other compatible versions.



Contestants are recommended to use either CyberPi or Halocode as the hardware main-board, and construct projects based on their selected main-board.

2.3 Recommended Equipment

There is no fixed equipment kit for MakeX Spark, the details will be determined by the single competition. We recommend using the CyberPi Educational Competition Kit, mBot2, Halocode, laser machine and other equipment.

CyberPi Educational Competition Kit

Halocode

Desktop Smart Laser Machine

3. Competition Plan

3.1 Introduction

Each match has different sub-themes based on the annual theme in the MakeX Spark competition. The theme mainly comes from STEAM education at home and abroad, important international or national events, the latest developments in science and technology, news reports and daily life, etc. Contestants are encouraged to participate in multiple matches to gain a full and thorough understanding of the competition. The theme of the project should be positive and closely related to the sub-theme of each match.

3.2 Schedule

The MakeX Spark competition for the 2026 season plans to hold multiple rounds of online or offline city matches, national competitions, global matches, etc. Winning teams will have the opportunity to advance to the MakeX Global Finals.

Each competition is independent with a different theme. Participants can

choose to compete in one or multiple rounds within the same competition area, but simultaneous participation across different competition areas is not allowed. Please stay updated on the specific competition dates by regularly checking the MakeX official website's competition page.

3.3 Sub-theme Interpretation

With the rapid development of technology, artificial intelligence and robotics are profoundly reshaping the relationship between human society and the natural environment. Our planet is facing a series of challenges, such as climate change, resource scarcity, and social inequality. At the same time, it also holds boundless possibilities.

The theme “Smart Terra” aims to encourage young people to think about how wisdom and creativity, combined with AI and robotics, can help envision a greener, more inclusive, and collaborative future world.

Guided by this annual theme, participants will explore various dimensions, from environmental protection and human care to accessible living and human–machine symbiosis. Through innovative projects, competitors are expected to make technology a force for protecting the Earth, caring for humanity, promoting equality, and advancing society. Together, they will “paint” a future Earth full of wisdom and hope. Projects should remain positive, closely relevant to the sub-themes of each round, and avoid

opportunistic or purely narrative-based approaches. Detailed introductions to the sub-themes are as follows, with the final confirmed theme announced before each competition.

3.3.1 Theme One ——"AI Earth Doctor"

In recent years, the world has faced a series of ecological crises, including climate change, environmental pollution, forest fires, and ocean waste. Countries and organizations worldwide are actively exploring the use of artificial intelligence, big data, and robotics to help humans better understand the natural environment and protect our planet. For example, AI can use sensors to monitor air and water quality in real time, predict extreme weather events, or even help scientists track endangered species and carry out ecological restoration.

Participants are required to create projects around the theme “AI Earth Doctor”, using hardware and programming. They may design intelligent robots that act as the “doctors” of our planet—diagnosing, treating, and preventing problems to safeguard our shared home.

3.3.2 Theme Two ——"Compassionate Ally"

In modern society, technology should not only serve the majority but also pay attention to groups that are often overlooked. Lonely elderly people, children with autism, left-behind children, and people with disabilities often need more support in terms of daily living, communication, and

mental health. Advances in AI and robotics bring them new hope: robots are no longer cold machines, but can become warm companions and accessible assistants in life.

Participants are required to create projects around the theme "Companion of Care", using hardware and programming. This theme encourages contestants to design robots that can deliver emotional warmth while also breaking physical and social barriers, turning technology into a true bridge of "care and equality."

3.3.3 Theme Three——"AI and Us"

Artificial intelligence is deeply influencing human society, from education and healthcare to everyday life. AI is gradually becoming our "partner." However, AI is not merely a cold technical tool—it may also become a friend, helper, and collaborator of humans. In the future, how humans and AI will coexist and cooperate is an important question worth exploring.

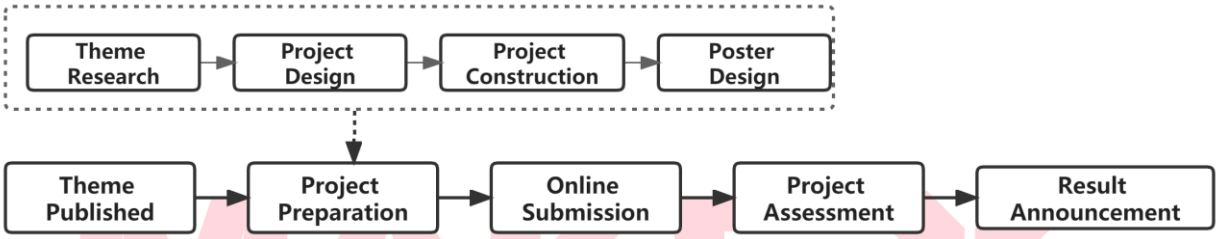
Participants are required to create projects around the theme "AI and Us", using hardware and programming. They may design intelligent AI companions and explore the concept of "human–AI symbiosis," making AI a reliable partner and helpful assistant in daily life. Through their creative projects, participants will showcase the infinite possibilities of collaboration between humans and AI in the future.

Mysterious Mission

Mysterious Mission: The mysterious mission will be announced at the scene in different competitions.

4. Procedure and Rules of Online Competition

4.1 Participation Procedure



The period of the MakeX Spark online competition is two to four months, ranging from theme publication, project preparation, and online submission to project assessment and results announcement. Under the guidance of mentors, the contestants follow a step-by-step project-based learning process and then prepare and submit their projects.

Theme Published

The sub-theme of each competition will be published on the MakeX official website at least two or three months before the competition. Contestants should pay close attention to the MakeX Official website to approach the competition theme and relevant timeline.

Project Preparation

In the early stage of the competition, contestants can focus on the research of realistic problems and put forward the general structure of the project. After confirming the project plan, project function and equipment list, the contestants are required to construct and program the project, as well as record the process including the idea of coding, construction structure and exterior design. The contestants are also required to create a poster and submit it online. Please refer to "**4.2 Project Submission Rules of Online Competition**" for the specification.

Online Submission

Online submission is usually valid for 10 days, and each team must turn to the submission web page to publish projects, fill in the correct registration information and upload the poster before the deadline for submission.

Web page and Submission Link of Previous Online Competition

Project Assessment

The judging panel of the MakeX Spark Online Competition consists of the

judges, the judge group leader and the expert judge. Judges are responsible for the preliminary evaluation of all projects; Judge group leaders are responsible for the re-evaluation of the project; expert judges are responsible for arbitration, dealing with the complaints that judges and judge group leaders cannot solve, and confirming the scoring results and awards.

Results Announcement

The awarding results will be announced on the competition web page.

4.2 Project Submission Rules

4.2.1 Publishing Rules

R01. Each team can only publish one project to participate in a single match.

R02. Each team must publish original and non-adapted projects.

R03. Each team must publish the project before the deadline for submission. Please do not publish your project in advance.

R04. The Name of the Project: The published project must include the official name of the project, which must be the same as the name of the project poster.

R05. Project Introduction: The introduction of the project shall include the content of theme and the functions of project. The description should not exaggerate the actual functions and working mechanism of the project. The

introduction of the whole project is generally 700 to 900 words, without exceeding 2000 words.

R06. Instruction: The steps should be clearly identified in the instructions, and there should be a sequential relationship between the steps. Avoid situations that readers cannot understand, perform or achieve the desired effect with the instructions. Do not mistake, miss, or skip steps.

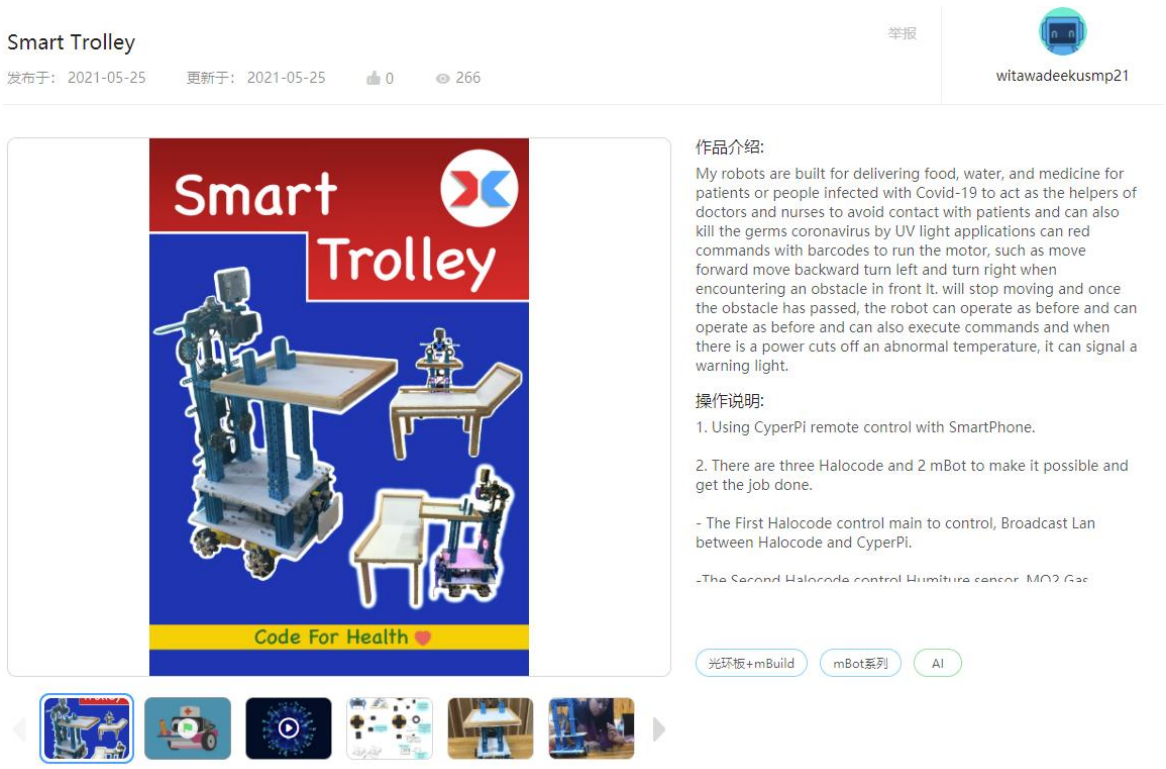
R07. Project Program: The uploaded program should have clear notes on the implementation of each function. The notes should be as straight forward as possible to help the judges understand the logic of the program.

R08. Project Videos: The video content shall include oral introduction by the contestant and functional demonstration of the project, ideas for creating the project (find question- solve question) and project construction and programming. The videos support MP4 and MOV formats, with single storage no more than 200M. The shooting lighting should be clear and bright to avoid blurry video. There is no limited display form for the video, but it needs to be easily understood.

R09. Project Picture: The photos support GIF, JPG, PNG format, and the size of a single one should not exceed 10M. Uploading at least three photos, and choose one photo as the cover of the project when publishing the project. Photos should be clearly visible with no ambiguity in the main displaying subject. Take photos from several angles to fully present the structure and

design of the project.

R10. Check the uploaded materials initiatively after the submission just in case anything goes wrong. Contestants may fail to get a score of the



corresponding dimension if there is no corresponding information in the submitted materials.

Previous Project Sample-Smart Trolley

4.2.2 Poster Specifications

S01. The poster must be created by the contestants themselves and drawn manually. Paper and digital versions are both accepted. Contestants are encouraged to give full play to their imagination and artistic creativity to display their projects embedded with pictures and texts vividly and

concisely.

S02. Format Requirements: The name of the poster must be the same as the submitted project when submitting the poster. The poster is preferably submitted in PDF format. If failing to transfer the poster into PDF, the contestant is suggested to take HD pictures and upload up to 3 pictures and size no more than 30M in total.

The size of a single poster should not exceed 297 mm*420 mm (standard A3 paper size). Paper or other environment-friendly display board materials can be used, with clear content for easy reading.

S03. Content Recommendation: The content of poster should include the basic information of the project, including but not limited to the name of the project, the author, main functions and inspirations of the project. The poster can also display problem discovery – problem solving process, preferably with manuscripts such as the design drafts, structure and the

logical of programming. Please list the main hardware materials on the poster. If a large number of non-quantifiable material such as paper shell or metal beam is used, just fill in the name of the material without marking the quantity. For example: CyberPi x1, Paper shell several, ultrasonic sensor x1.

Project Poster Sample

5. Procedure and Rules of Onsite Competition

5.1 Participation Procedure

The period of MakeX Spark onsite competition is usually two to three days, ranging from theme announcement, project construction, and display board design to onsite assessment and results announcement. According to the competition theme announced on the spot, participating teams must carry out teamwork with ideas and creativity and complete the project construction, programming, display board design, etc. in a limited time, while joining in the onsite assessment and presentation. The specific process and duration of a single competition will depend on the actual situation.

Theme Announcement

The theme of a single match in the MakeX Spark onsite competition is usually announced on the spot, and the theme content is projected to be formulated based on the annual theme of "Dream Home". After announcing the theme, the contestants should carefully read and understand the theme content, brainstorm and exchange ideas with teammates, and determine the name of the project and the action plan.

Previous Onsite Competition- Theme Discussion

Project Construction

Before the project construction, teams must cooperate efficiently to ensure that each contestant engages in the preparation deeply. Teams are also encouraged to allocate their work based on different tasks in terms of career development, such as engineers, software engineers, designers and so on. Please refer to "**5.2 Creation**

Rules of Onsite Competition" for the specifications.

Previous Onsite Competition-Project Construction

Display Board Design

The contestants are required to design a display board based on the competition theme and individual project. The contestants are encouraged to prepare and decorate their display board with clothes, badges and other design elements, so as to fully display the team culture. Please refer to "**5.2 Onsite Creation Rules**" for the specifications.

Previous Onsite Competition-Display Board Design

Onsite Assessment

The judging panel will consist of invited excellent judges and experts from education sector or robotics competition sector. The number of judges is generally 3-5. Onsite assessment will be conducted in the form of rotating assessment and road show. The drawing of lots will determine the sequence of the team roadshow before the competition starts. Before the project construction, each team should assign one member to the roadshow stage area to draw the lots. The assessment time for each team is 10 minutes. In this process, the contestants will be required to introduce and demonstrate their projects and answer questions from the judges, while displaying the team's culture and expressing their own thoughts. The number of judges and the judging process will depend on actual situation of single competition. The assessment process is arranged as follows.

Content	Duration
Enter the stage: Team should bring their project, display board and all necessities enter the stage area. Depending on the actual conditions, contestants may be require to conduct their presentation on their spot in the pits area.	1 minute
Equipment debugging: the team needs to debug	1 minute

the project to the best display state within this time. If the team need to use the PC to display the relevant content, the team need to prepare your own laptop.	
Presentation time: the team shall introduce and demonstrate their projects, as well as displaying the team's culture and expressing their own thoughts.	5 minutes
Q&A: The team are required to answer the question from the judges, and might be required to display the project's programming	2 minute
Scoring time: The judges will score the team's presentation, performance, and the content of their project and display board. The team will then sign to confirm their scores and leave the presentation area in an orderly manner, carrying their relevant items.	1 minute

If the team completes their roadshows within 10 minutes, they can end the roadshow in advance and leave the stage in an orderly manner; if the 10-minute roadshow time runs out, the judges will take the initiative to issue the "end of the roadshow" command and the team need to stop the

roadshow immediately and leave the stage in an orderly manner with all the belongings.

Previous Onsite Competition-Onsite Assessment

Results Announcement

The awarding results will be announced onsite or online.

5.2 Onsite Creation Rules

1. Before the formal competition, contestants are advised to collect related information and prepare materials. Besides, they can search and learn the contents related to the annual theme, prepare project ideas, the materials including mechanic parts, electronic components,

blank KT board, kits, wooden boards, cardboard, coloured pens, crayons, marker pens, any decorative materials, and recycling materials in advance.

2. The contestants are required to bring their laptops and install mBlock in advance.

3. There is no access to a network in the competition venue, therefore, please prepare your own Wi-Fi equipment if have any network demand for debugging your project.

4. Usually, the organizers may provide some tools such as a laser cutting machine, basswood board, corrugated paper, printing paper, painting brush, children's scissors, screwdriver, etc. Whether these tools are available will depend on the actual situation and shall be used safely under the guidance of staff.

5. Before the start of the competition, the staff will inspect the equipment and tools carried by the participating teams. All equipment must be spare parts that have not been assembled, and complete projects or semi-finished projects are forbidden. If the equipment is the exception to the rules, it must be disassembled on-site, and the competition cannot be started until you finish it.

6. Display boards may be provided at the competition site, and the size may be adjusted according to the actual competition venue. Please pay

attention to the relevant instructions in the competition guide to understand the specific requirements in time. If there is no KT board, it can be replaced by other materials. The contents of the display board should include basic information such as the title of the project, the name of the contestant, the function of the project, etc. It can introduce your inspiration, record the creation process, and be accompanied by manuscript drawings such as the design drafts, structure and codes, etc. Please list the main hardware materials on the poster. If a large number of non-quantifiable material such as paper shell or metal beam is used, just fill in the name of the material without marking the quantity. For example: CyberPi x1, Paper shell several, ultrasonic sensor x1.

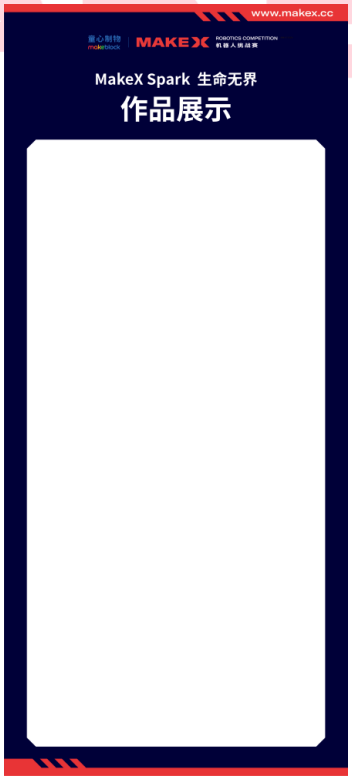


Fig. Project Display Board

7. During the competition, projects or equipment shall not be taken away from the competition area. When entering the competition area, contestants are not allowed to bring complete projects or semi-finished projects. If the above circumstance occurs for the first time, the team will be cautioned. If a serious offence occurs, the team will be disqualified.

8. During the competition, no one other than the contestants, including but not limited to parents or mentors, shall enter the competition area by any means or act as a substitute or mentor. If the above circumstance occurs for the first time, the team will be cautioned. If a serious offence occurs, the team will be disqualified.

9. All cheating is prohibited in the competition. Contestants shall report to staff in advance if they carry mobile phones, phone watches and other electronic communication devices. Contestants are not allowed to use electronic communication devices (except laptops) without permission. If it is found that communication devices are used by contestants to communicate with the person outside the competition area during the competition, contestants will be cautioned.

10. During the competition, contestants should not leave the competition area and should keep silence while creating projects. No food or drinks are allowed in the competition area.

11. After the construction, contestants should take the initiative to clean up their own construction area and keep a clean environment.

6. Assessment

6.1 Grades

After the assessment of MakeX Spark, the teams and their projects will be assessed in five dimensions, including innovative thinking, design ability, electronic technology, programming ability, and communication skills. Each dimension consists of 1 or 2 sub-dimensions. In this competition, the score result of each dimension and sub-dimension will be closely related to the contestants' performance and their projects. Please refer to **Appendix 1: Assessment Criteria Details**.

1. **Innovative Thinking:** It includes 2 sub-dimensions of innovation and theme research, and the score range of each sub-dimension is 0-5;

2. **Electronic Technology:** It includes 1 dimension of electronic technology, which scores 0-5;

3. **Programming Ability:** It includes 1 dimension of programming ability, which scores 0-5;

4. **Design Ability:** It includes 2 sub-dimensions of structural application and exterior design, and the score range of each sub-dimension is 0-5;

5. **Communication Skill:** It includes 2 sub-dimensions of oral expression and process presentation, and the score range of each sub-dimension is 0-5;

Fig. 6.1 Radar Chart of Capability Assessment Report

All the contestants who obey the competition rules can get a STEAM Assessment Report (Scores for each dimension in the report will be specified to one decimal place). The competition encourages original ideas. Contestants are encouraged to think independently and incorporate insights, experiences, and thoughts into their projects. It is believed that each contestant may have a different understanding of the theme, and we wish to see distinct elaborate designs, rather than copies of the same products.

6.2 Awards

To truly guide the contestants to experience and reap the fruits of the MakeX spirit: creativity, teamwork, fun and sharing, a series of awards will be set

up to show recognition and encouragement for the outstanding abilities and performance of the contestants. The types of the award may be updated during the season. The award list is as follows:

Young All-Rounder—In each competition, teams that rank top three will win the "Young All-Rounder" award. (This award cannot be received together with special awards.)

Young Innovator—The project is creative and very attractive with clear positioning. Contestants show their unique theme exploration and innovation ability in the competition. Those who perform well in the dimension of "Innovative Thinking" will have the opportunity to win the "Young Innovator " award.

Young Engineer—Contestants show the potential to become future engineers with excellent capabilities in electronic technology and programming. Those who perform well in the two dimensions of "Electronic Technology" and "Programming Ability" will have the opportunity to win the "Young Engineer" award.

Young Designer—Contestants present the potential to become future designers with excellent design and aesthetic capabilities. Those who perform well in the dimension of "Design Ability" will have the opportunity to win the "Young Designer" award.

Best Demonstration—Contestants show excellent communication skills in

the competition. Those who perform well in the dimension of "Communication Skills" will have the opportunity to win the "Best Demonstration" award.

Award Rules:

Young All-Rounder Award—The ranking for this award is based on the total score of each team (the sum of scores across all dimensions). Teams that win the " Young All-Rounder Award " are not eligible to compete for special awards. If multiple teams achieve the same total score, the following dimension scores will be compared in order until the ranking is determined:

a) Innovative Thinking;

b) Electronic Technology and Programming Ability;

c) Design Ability;

d) Communication Skills.

In each competition, if the teams' total scores (i.e. the sum of all dimension scores) are the same, then the teams will be ranked according to their sub-dimension scores in the order of Innovative Thinking, Design Ability, Electronic Technology and Programming Ability, and Communication Skill;

Example: When the total scores of two teams are the same, then

(1) Compare the scores of the teams in the "Innovative Thinking" dimension; the team with the higher score in this dimension will be

ranked higher.

(2) If the scores of "Innovative Thinking" are the same, then compare the scores of the teams in the "Design Ability" dimension, and the team with the higher score in this dimension will be ranked higher.

(3) If the score of "Innovative Thinking" is the same, then the "Design Ability" score will be compared with the team's score, and the one with the higher score in this dimension will be ranked higher.

(4) By analogy with this method, until we select the winner.

(5) If the score of every dimension is the same, the expert judges will reassess the projects and give the score.

In the selection of special awards, if the teams has the same score in one dimension, then compare the teams' total score, and the one with the higher total score will be ranked higher; if the total score is the same, then compare the scores of the other sub-dimensions until the ranking is determined, and the order of the sub-dimensions will be as follows: Innovative Thinking, Design Ability, Electronic Technology and Programming Ability, and Communication Skill;

Example: When selecting the "Young Innovator" award, firstly compare the scores of the team's "Innovative Thinking" dimension; if the scores of this dimension are the same, then

(1) Compare the team's total score: the team with the higher total

score will rank higher.

(2) If the total score is the same, then we will compare the team's "Design Ability" dimension score; the team with the higher score in this dimension will rank higher.

(3) By analogy with this method, until we select the winner.

(4) If the score of every dimension is the same, the expert judges will reassess the projects and give the score.

On the premise of complying with the rules, awards are given according to the corresponding dimension ranking in the sequence of Young Innovator, Young Designer, Young Engineer, and Best Demonstration. The quota for each special award is 15%. Each team can only obtain one special award.

Each contestant can obtain a certificate of participation by submitting a written application to the committee.

In addition, the competition specially sets up the following awards for schools or educational organizations that actively arrange students to participate in MakeX Spark: Excellent Mentor and Excellent Organization. The awards will be comprehensively issued based on the number of participating teams and the number of awarding projects guided by the same mentor or organization.

7. Safety Rules

1. Contestants must follow the instructions of mentors or staff in the preparation process of the competition. Do not carry out dangerous operations without authorization.
2. Pay attention to safety when assembling various parts and using various tools (such as screwdrivers, sharp knives and other dangerous materials) in the construction process, and use them under the guidance of mentors or staff.
3. The use of hazardous materials such as contaminated and unstable chemicals is prohibited.
4. The use of high-power equipment and dangerous materials that may cause personal injury is prohibited.
5. The judging panel has the right to disqualify the teams based on the safety problems of the projects.
6. During the entire competition (including preparation and presentation time), it is strictly forbidden to damage or sabotage other teams' projects in any form. If the panel of judges or the event organizing committee confirms, through on-site observation, video review, or post-event inspection, that a team has damaged another team's project or equipment, that team will be disqualified from the entire competition.

In particularly serious cases, the organizing committee reserves the right to officially record such behavior, which may affect the team's eligibility to participate in future events organized by MakeX.

8. Statement

MakeX Robotics Competition Committee reserves the final interpretation right of the 2026 MakeX Spark Smart Terra Rules Guide.

8.1 Rules Explanations

To ensure fair competition and high-quality competition experience, the MakeX Robotics Competition Committee has the right to update and complement this Rules Guide regularly, and then issue and implement the latest version before the competition.

During the competition, all matters not stated in the Rules Guide shall be decided by the judging panel.

This Rules Guide is the basis for assessment, and the judging panel has the final right of adjudication during the competition.

8.2 Disclaimer

All contestants in the MakeX Robotics Competition shall fully understand that safety is the most important factor for the sustainable development of the MakeX Robotics Competition. To protect the rights and interests of all

contestants and organizers, according to relevant laws and regulations, all contestants registered for MakeX Spark shall acknowledge and abide by the following safety provisions:

(1) Contestants shall take adequate safety precautions when constructing the projects, and all parts used for construction shall be purchased from legal manufacturers.

(2) During the competition, the contestants should ensure that all the actions such as constructing, testing and demonstration will not harm other contestants, audiences, equipment and venues.

(3) In the process of construction and competition, if any action that may violate the national laws, regulations or safety standards occurs, all consequences will be borne by the contestants themselves.

The competition kits and parts sold and provided by the supporter, Shenzhen Makeblock Co., Ltd., should be used according to the instructions. Shenzhen Makeblock Co., Ltd. and MakeX Robotics Competition Committee will not be responsible for any injury or loss of property by improper use.

8.3 Copyright Declaration

Appendix 1. Assessment Criteria Details

Assessment Dimension 1: Innovative Thinking		
Sub-dimension	Grade	Assessment Criteria
Innovation	5	The project solution is very unique and innovative, no other simulated projects or products on the market reflect unique creativity.
	4	The project solution is relatively innovative, combined with functions from other projects or products on the market, has some improvements, and reflects certain creativity.
	3	The project solution is innovative, improves the single function from other projects or products on the market, and reflects certain creativity.
	2	The project solution is common, repeating the functions of other projects or products on the market, but no improvement.
	1	The project solution is ordinary, only repeating a single function of other projects or products

		on the market.
	0	The project solution does not have any personal creativity, highly similar to other projects or products.
Theme Research	5	The target user and orientation of the project are clear; Reflect the collection of information from 3 or more typical sources; The project is related to the theme.
	4	The target user and orientation of the project are clear; Reflect the collection of information from 1-2 typical sources, such as experts, related industries or organizations; The project is related to the theme.
	3	The target user and orientation of the project are blurred; Reflect the collection of information from 3 or more typical or ordinary sources; The project is related to the theme.
	2	The target user and the orientation of the project are blurred; Reflect the collection of information from 1-2 typical or ordinary sources, such as internet search, media news,

		and daily life observation; The project is related to the theme.
	1	The target user and the orientation of the project are blurred; The core of the project is barely related to the theme.
	0	The project has nothing to do with the theme.

Assessment Dimension 2: Electronic Technology		
Sub-dimension	Grade	Assessment Criteria
Electronic Technology	5	Use electronic modules that enable vision sensing, voice recognition or techniques with the same difficulty in combination with various input and output modules; Electronic modules are connected correctly and achieve the functions of the project.
	4	Use wireless communications technologies such as Wi-Fi and Bluetooth in combination with various input and output modules; Electronic modules are connected correctly and achieve the functions of the project.
	3	Use servo, LED panel, speaker or other

		electronic output modules in combination with various sensors; Electronic modules are connected correctly and achieve the functions of the project.
	2	Use 3 or more kinds of sensors. Electronic modules are connected correctly and achieve the functions of the project.
	1	Only use 1-2 kind/s of sensors. Electronic modules are connected correctly and achieve the functions of the project.
	0	No electronic module, or use the techniques listed above but no function is achieved, or the functions are irrelative to the theme of each match.

Assessment Dimension 3: Programming Ability		
Sub-dimension	Grade	Assessment Criteria
Programming Ability	5	Use block-based programming languages combining various program structures and algorithms, and adopt AI algorithms to achieve voice and image recognition or functions with the same difficulty.

		Or use text-based programming languages like Arduino C and Python to realize PID control, voice and image recognition or functions with the same difficulty;
	4	Use block-based programming languages combining various program structures and algorithms, to realize PID control in the program or functions with the same difficulty.
	3	Use block-based programming languages, choose data structure and algorithm logically, and comprehensively use “event”, “variable” and “function” in the program.
	2	Use block-based programming languages, including 3 kinds of programming structures: “order”, “loop”, and “select”. Use 1-2 type/s of blocks from "event”, “variable” and “function” in the program.
	1	Use block-based programming languages, including 0-2 kind/s of programming structures from “order”, “loop”, and “select”. No block from "event”, “variable” and “function” in the program.

	0	No program is provided, or the program is completely irrelevant to the project.

Assessment Dimension 4: Design Ability		
Sub-dimension	Grade	Assessment Criteria
Structure Application	5	Design and construct at least 3 kinds of simple or difficult mechanical structures. Combine various structures reasonably.
	4	Design and construct 1-2 kind/s of difficult mechanical structures, such as robot claws and robot arms, etc.
	3	Design and construct 1-2 kind/s of relatively difficult mechanical structures, such as the combination of crank, connecting rod parallelogram structure, etc.
	2	Design and construct 1-2 kind/s of simple mechanical structures, such as pulleys, gear sets, belt drives chain drives, etc.
	1	Use the simplest building block bricks for stacking without any other mechanical connection or any mechanical transmission

		method.
	0	The project has no structure with only electronic parts connected. Or the structures have nothing to do with the function of the project. Or the structure cannot work at all.
Exterior Design	5	Use various art or other environmentally-friendly processing materials; Use materials of both 3D printing and laser cutting; The project and poster are attractive in design, and the project is equipped with an interactive device.
	4	Use various art materials or environmentally-friendly processing materials; Use 3D printing or laser cutting to design; The overall project and poster are very beautiful.
	3	Use 3 or more kinds of art materials or other art processing materials to design the project exterior; The project and poster are relatively beautiful.
	2	Use 1-2 kind/s of art materials or other art processing materials to design the project exterior; The project and poster are ordinary.

	1	Use ready-made products or tools for decoration; The project is simple without posters.
	0	The project has no exterior design with only mechanical structure and electronic parts connected. Or the designed exterior has nothing to do with the theme of the project.

Assessment Dimension 5：Communication Skill		
Sub-dimension	Grade	Assessment Criteria
Oral Expression	5	Fluent and well-organized expression, rich vocabulary, clear pronunciation, accurate use of words and idioms to describe the project, including all required information.
	4	Fluent expression, lack of organization, rich vocabulary, clear pronunciation, can accurately describe the project, lack of some required information.
	3	Fluent expression, lack of organization, moderate vocabulary, clear pronunciation, lack of some required information, with a lot

		of irrelevant information.
	2	Some pauses, limited vocabulary, clear pronunciation, and a lack of required information.
	1	Multiple pauses, poor vocabulary, slurred pronunciation, and no required information.
	0	No oral expression in the video.
Process Presentation	5	Present a complete problem-solving process, including problem definition, problem analysis, generation of possible solutions, selection and testing of solutions, and analysis and evaluation of results.
	4	Shows the key steps in the problem-solving process, including problem definition, solution testing and results analysis.
	3	Shows the whole problem-solving process, but some steps are irrelevant to the final project. Lack of interpretable logic.
	2	Shows 3 steps of the problem-solving process, but not all of the key steps (problem definition, solution testing, and results

		analysis). Lacks interpretable logic.
	1	Only shows 1-2 steps of the problem process. Lack of thinking process. Making people confused about why the problem exists, what problems have been solved, how the final project solves the problem, etc.
	0	The problem-solving process is completely absent, or the presentation is completely unrelated to the project.

Appendix 2. Competition Resources

Competition resources include but are not limited to official resources provided by the committee, such as Competition Guide, Equipment Instructions, Rules Videos, etc.

The contestants are obliged to keep abreast of the update of competition resources before the competition, and any problems caused by the contestants' failure to keep abreast of the updates shall be borne by the contestants themselves. All official competition resources will be updated in the MakeX Website.

MakeX Robotics Competition Committee will revise and improve the Rules Guide with the progress of the competition and the new version will be announced in

MakeX Website. The contestants and mentors can download the latest version in MakeX Website.

MakeX Website Download

https://www.makex.cc/en/information/download.

MakeX Official Website: https://www.makex.cc/en.

Any Feedback & Questions Please Sent to:

makex_overseas@makeblock.com

MAKEX

Official Website：https://www.makex.cc/en
Official Email：makex_overseas@makeblock.com