

**MAKE X**

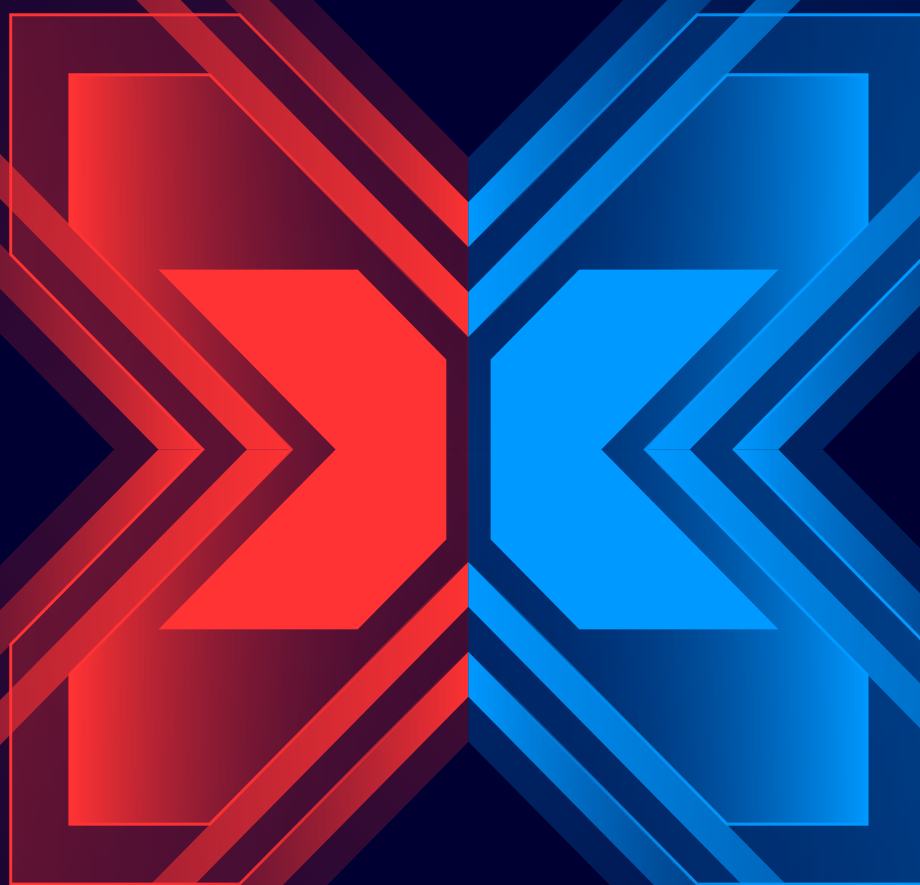
**V 1.0**

2020 MAKEX ROBOTICS COMPETITION

# COMPETITION GUIDE

**MAKE X STARTER**

**SMART LINKS**



Edited By MakeX Robotics Competition Committee

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# MAKE X



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# MAKE X

# 1. Introduction

## 1.1 About MakeX

MakeX is a platform of robotic competitions for guiding the growth of young people. It aims at inspiring people's enthusiasm for creativity, sharing, and collaboration through Robotics Competition, STEAM Carnival, etc.

MakeX Robotics Competition is hosted by the MakeX Robotics Competition Committee, organized by Shenzhen Hulu Maker Co., Ltd. and supported by Shenzhen Makeblock Co., Ltd. As the core activity of MakeX; it aims that through the competition, young people will discover the spirit of creativity, teamwork, fun, and sharing. It is committed to promoting innovation in science, technology and education through high-level competition events, guiding young people to learn Science (S), Technology (T), Engineering (E), Art (A) and Mathematics (M) and applying such knowledge in solving practical problems through the exciting and challenging competitions.

## 1.2 MakeX Spirit

**Creativity:** we advocate curiousness and innovation, encourage all contestants to create unique high-tech works with their talent, and challenge themselves for continuous progress!

**Teamwork:** we advocate solidarity and friendship, encourage all contestants to develop a sense of responsibility and 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 with the society their knowledge and responsibility, and work hard to achieve their grand aspiration of changing the world and creating



the future !

### 1.3 About 2020 Season

In 2020 Season, the theme of MakeX Starter is “Smart Links”, which mainly tests contestants’ logical thinking, strategic teamwork, and problem-solving abilities.

In daily life, there will always be annoying moments, for example traffic congestion during off-duty hours and the parking difficulties. Urban garbage contributes to traffic inconvenience. In the AI era, we expect smart transportation to make full use of technologies such as the Internet of Things, cloud computing, the Internet, automatic control, and mobile Internet to create a mobile transportation scene where everything is interconnected through signals and energy. Let us enter the AI era together in 2020 to facilitate people's lives!

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## 2. Participation Requirements

### 2.1 Contestants

The number of contestants in each team is 1 or 2. The groups in Smart Links include Elementary Group and Intermediate Group. Intermediate Group will only be set up for international teams.

The age requirement of the Smart Links contestants is between 6 and 13 years (birthday between 2/1/2006 and 31/12/2014) for Elementary Group, between 12 and 16 years (birthday between 2/1/2003 and 31/12/2008) for Intermediate Group.

At the start of the season, contestants should be enrolled students in the compulsory education stage (students from different education systems should meet the age requirement).

### 2.2 Mentors

Each team must have 1 or 2 mentors. The mentor shall be over 18 years old.

### 2.3 Team Number

Team number will be regarded as the only identification of the team during the whole competition.

Each team will automatically obtain the team number after creating the team on MakeX official website.

### 2.4 Identification Symbols

Each team must have a team logo, team name, and team slogan. Teams are encouraged to use uniforms, flags, posters, badges, base decorations, etc. to show the team culture

### 2.5 Team Roles

Participation in MakeX Robotics Competition means more than just a few minutes competing. MakeX encourages young people to participate in team building. Everyone



in the team can play their respective roles as operator, observer, engineer, project manager, publicity manager and so on. By participating in MakeX, the contestants will not only learn professional knowledge requested in the project but also master the necessary skills such as public relations, publicity, project management, and so on.

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## 3. Registration and Application

### 3.1 Account Registration

Contestants and mentors can use mobile phone numbers (E-mail for the international team) to register MakeX official website accounts. Please fill in personal information and choose the corresponding identity. Identity for the account cannot be modified once created.

### 3.2 Team Creation

Mentors can create teams in the "My Team" list on the profile page on MakeX official website. To create a team, members need to prepare the name, the logo, the slogan, and the introduction of the team and select school (or organization) and the country. Once the team name is filled in, it cannot be modified.

### 3.3 Team Management

On MakeX official website, mentors can find teams successfully created in the "My Team" list on the profile page and modify the necessary information of the team, but the team name and team number automatically generated by the system cannot be altered. The team's historic achievements will be shown in the "Record Data" list, which can be public or private in the privacy setting. Mentors can add the registered contestants through E-mail address on the team management page. Contestants of the same team can be replaced in different seasons.

### 3.4 Competition Application

Mentors can access the registration page from the "Competition List" on the profile page or the home page of the MakeX official website. The application will be completed after filling in the registration information.

More details about the application, please check the "MakeX Official Registration & Competition Application Guide" published on MakeX official website.



### 3.5 Competition Management

In the "My Competition" list on the profile page, mentors can also manage the competitions or cancel the competition applications.

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## 4. Competition Procedure

MakeX Committee reserves the rights as well as final interpretation to modify the competition rules, annual points, competition system according to the practical situation in each competition. All teams shall pay close attention to the notices and announcements published before each competition.

### 4.1 Pre-competition Notice

Missions will be selected 10 days before the competition, published in the "Notes" part of the Competition specific page on the MakeX official website.

Please pay attention to the notice and the "Program Brochure" published before each competition. If some rules are updated in the "Program Brochure", the updated rules in the "Program Brochure" shall prevail.

### 4.2 Agenda

The agenda of each competition will be determined according to the actual situation. Teams need to complete the onsite registration and inspection before the start of the competition.

### 4.3 Onsite Registration

When a team arrives at the venue, the mentor should show the ID cards (or passport) to the staff on onsite registration and get the competition materials. The mentor should inform the team members about the fire evacuation passage, match schedule, arena, practice field, and Pits Area, etc.

If teams need to replace team member after online registration success, but before the competition, please inform the MakeX Committee in advance and apply again on the website.

Onsite registration and robot inspection will be closed once the match schedule is generated.

### 4.4 Engineering Notebook Submission

Paper engineering notebook: There is no presentation for the Smart Links, so each

team should submit one paper engineering notebook to the staff at Inspection Area. Engineering notebook will not be returned. Please prepare one copy if you need to keep the original.

For details of the engineering notebook writing, please refer to "Appendix: Engineering Notebook Guideline".

## 4.5 Inspection

Robots can participate in the practice match and formal competition only after passing the inspection. The inspectors will strictly check the safety of robots according to the inspection requirements. Teams can use the "MakeX Starter Robot Self-Check List" to check robots in advance. If the inspection fails, the team needs to adjust their robots and check again until they pass the inspection.

## 4.6 Pits Area Decoration

Each team has its own space in the Pits Area. Teams can make a decoration, publicize, and canvas their teams for Culture Sharing Award.

Besides, teams can rest and debug robots at the Pits Area, please keep the area clean and tidy.

## 4.7 Pre-competition Communication Meeting

Before the start of the competition, the committee will convene a meeting with all teams to specify matters needing attention and explain situations when teams will get a penalty.

Only the captain needs to attend the meeting without the robot.

## 4.8 Schedule Announcement

The Committee will announce the match schedule at least 30 minutes ahead of the start of formal competition through the official online website and offline channels such as bulletin boards, screens, and other channels onsite.

## 4.9 Practice Match

Teams can participate in the practice match after completing onsite registration and inspection. The specific arrangement of the practice match is based on the announcement on site. Teams need to queue up for the practice match.

## 4.10 Qualification Round

Normally, each team will participate in 4 matches during Qualification Round in a regular competition, during which alliances teammate will be allocated randomly. The number of matches for teams to participate in may vary between different competitions, which is decided by the MakeX Committee according to the practical situation. Teams will be ranked according to the total competition points of all single matches during Qualification Round.

If the total competition points of all single matches are the same in Qualification Round, teams with higher total independent mission points of all single matches rank higher.

If the above conditions are the same, teams with higher total alliance mission points of all single matches rank higher.

If the above conditions are still the same, teams with shorter total competition time of all single matches rank higher.

If the above conditions are all the same, two teams who rank the same will have an additional match (only for the independent mission). The winner will be the team with higher independent mission points. The additional match will continue if the independent mission points are still the same.

## 4.11 Alliance Selection

Promoted teams select the alliance in turn according to the ranking of the Qualification Round. When being chosen by other teams, promoted teams ranking top 50% can refuse for only once, promoted teams ranking bottom 50% cannot refuse. If the team is refused by other team, he can continue to choose another until the alliance is formed.

The alliance selection rule above is only for Points Race or regional competition. For other competition type such as intercontinental or national one please check the Notices or Program Brochure published before each competition.

The promoted teams who are not present before the start of Alliance Selection are



deemed as voluntary giving up the right to choose, and the promoted teams who are not present before the end of the Alliance Selection are considered to be as voluntary quitting the Championship Round.

If it occurs that the promoted teams quit the Championship Round, the promotion places will be extended to the following teams according to the ranking of the Qualification Round.

In the 2020 season, the promotion proportion for each competition shows as below. The promotion quota may vary according to the practical situation.

**Promotion quota:**

Teams in Qualification Round	Number of promoted teams
121 or more	64
65-120	32
32-64	16
25-31	8

## 4.12 Championship Round

Normally, each team will participate in 3 matches during Championship Round in a regular competition. The red and blue sides in the alliance are decided by the team themselves. The number of matches for teams to participate in may vary between different competitions, which is decided by the MakeX Committee according to the practical situation. It will take the highest alliance total points from all single matches as the final alliance total points of the Championship Round, alliances with higher final alliance total points in Championship Round rank higher.

If the final alliance total points are the same in Championship Round, alliances with higher final alliance mission points rank higher.

If the above conditions are all the same, alliances with shorter completion time rank higher.

If the above conditions are all the same, two alliances who rank the same will have an additional match. The winner will be the alliance with higher alliance total points.

## 5. Annual Points Plan

In the 2020 season, the competitions will be classified into Points Race, District Competition, National Competition, Intercontinental Competition, and World Championship. Teams can participate in different competitions to obtain annual points.

In each competition, the annual points that one team can obtain are competition grade coefficient multiply sum of total points of Qualification Round and Best points of Championship Round.

Champion alliance, runner up alliance, and second runner up alliance in each competition can obtain additional annual points.

Competition	Grade Coefficient	Champion	Runner up	Second Runner up
Points Race	*0.01	15	10	5
District Competition National Competition	*0.02	30	20	10
Intercontinental Competition	*0.03	45	30	15

Take a 4+3 Points Race as an example(4 rounds in Qualification, 3 rounds in Championship), Team X10000 win the champion place, and all the match results show as below:

Qualification Round 1	Qualification Round 2	Qualification Round 3	Qualification Round 4	Qualification Round Total Points
300	280	400	360	= 1340
Championship Round 1	Championship Round 2	Championship Round 3	Best Points = 510	
460	510	480		

\*Annual points that team X10000 can obtain from this competition = (1340+510)

\*0.01+10 =28.5

## 6. Arbitration and Appeal

### 6.1 Results Confirmation

- E1. **Results confirmation:** When a single match ends, captains of both teams need to confirm the results with the referees and then sign the results form. Both teams shall not have any objection to the results of this single match after their signatures.
- E2. **Dispute settlement:** If the captains do not accept the results presented by the referee, they can reject to sign the results form. Instead, they need to write clearly about the situation on the remarks part of the results form and sign there.

### 6.2 Appeal Procedure

- E3. **Appeal requirements:** Appeals should be lodged within the 'valid appeal period' by the prescribed procedure and the civil participation spirit.
- E4. **Appeal procedure:** The captain of the team needs to fill in the Appeal Form, then cooperate with the Arbitration Commission to investigate the real situation. Both sides will be required to arrive at the designated place if the Arbitration Commission requires. During the investigation, the captain of the appeal team must be present, and only captains or contestants of both sides can be present. The Arbitration Commission has the right to communicate with the appellant contestant alone, avoiding the mentor, the parents of the contestants, their relatives or friends. The appellant, contestant, should express facts clearly and objectively, not being over-emotionally.

### 6.3 Valid Appeal Period

- E5. **Valid appeal period:** Normally, the appeal should be lodged within 30 minutes after the end of the competition. Please check the Program Brochure for a specific effective appeal period before the competition.
- E6. **The validity of presence:** The appellant and the respondent must be present at the designated place on time.



- E7. **Appeal response:** Normally, the Arbitration Commission responds to the appeal after the end of the competition on the same day or before the start of the competition on the next day.

## 6.4 Appeals Out of the Stipulation

- E8. **Overdue appeal:** Appeals that are not lodged within the "valid appeal period" will be considered invalid and inadmissible.
- E9. **Appeals for overtime presence:** If the appellant fails to be present on time or leaves without any reason during the investigation, the appeal will be considered invalid. If the respondent fails to be present on time, the Arbitration Commission will directly determine the arbitration result and render it as a final result.
- R1. **Presence of extra persons out of the stipulation:** In case such persons as the parents, mentors of the appellants participate in the arbitration process without permission from the Arbitration Commission, the Arbitration Commission will warn the team in violation.
- ⊗ In case multiple warnings fail, there will be a disqualification.
- R2. **Appeal's requests are not clear:** If the Arbitration Commission cannot understand the appeal or conduct the normal investigation due to the emotion factor, the Arbitration Commission will warn the team.
- ⊗ In case multiple warnings fail, there will be a disqualification.
- R3. **Uncivil appeals:** Neither side shall make uncivil acts nor offensive behavior and words.
- ⊗ In case multiple warnings fail, there will be a disqualification.
- R4. **Appeals from other persons:** The appellants must be the contestant of the team, and the appeals from other persons will not be accepted.
- ⊗ In case multiple warnings fail, there will be a disqualification.

## 6.5 Arbitration Procedure

- E10. **Arbitration Procedure:** The Arbitration Commission consists of the chief referee, the arbitration consultant, and the technically responsible person of the competition. The Arbitration Commission is responsible for accepting the appeals and conducting arbitration investigations, to ensure



the smooth progress of the competition and the fairness and justness. The playback videos and photographs of any competition may be inaccurate due to the shooting angle, which is only used as reference but not arbitration evidence.

- E11. **The arbitration results :** The arbitration results can be divided into “maintaining the original result of the competition” or “re-match” between the two teams and the two teams shall not appeal again.
- E12. **Additional remarks:** The Arbitration Commission determines the final arbitration result, and neither side shall dispute the result of the appeal anymore.
- E13. **Implementation of the arbitration result:** If the arbitration result is a “re-match” between the two teams, the two sides shall have a re-match according to the time and arena stipulated in the Appeal Form. If either team fails to reach the arena within 5 minutes after the start of the match, the team shall be deemed to quit the match.

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## 7. Competition Statement

### 7.1 Update of Competition Documents

The official documents and files are including but not limited to the Competition Guide, Equipment Guide Book, Rule Video provided by the MakeX Committee. Contestants are obliged to pay attention to the updates of these documents and files before the competition. Any problem caused by the contestants not keeping up with updates of the materials and data is borne by the contestants themselves. All the official documents and files will be updated on the MakeX official website [www.makex.io](http://www.makex.io).

#### Competition Guide

The MakeX Robotics Competition Committee reserves the right to revise and improve the Competition Guide during the whole season. Contestants and mentors can download the latest version from the MakeX official website.

#### Q&A and Sharing

All contestants, mentors, and any robot enthusiast can raise questions or share their experiences on social media platforms. Anyone posting messages and replying should abide by the network ethics. Online speeches that are out of the stipulation will be banned or deleted.

### 7.2 Qualification Statement

The MakeX Committee reserves the right to disqualify any contestant for any reason, including but not limited to failing to meet safety or technical requirements, seriously violating the spirit or fairness of the competition.

### 7.3 Copyright Declaration

Shenzhen Hulu Maker Co., Ltd. reserves the copyright of this Competition Guide. Without the written consent or authorization from Shenzhen Hulu Maker Co., Ltd, any entity or individual may not reproduce, including but not limited to any network media, electronic media or written media.

## 7.4 Disclaimer

All contestants in the 2020 MakeX Robotics Competition shall fully understand that safety is the most critical issue 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 the 2020 MakeX Starter-Smart Links, shall acknowledge and abide by the following safety provisions:

Contestants shall take adequate safety precautions when constructing the robots, and all parts used for creating the robots shall be purchased from legal manufacturers. Contestants shall ensure that the structural design of the robots takes into account the convenience of the inspection and actively cooperate with the host of the competition. When modifying and using the parts with potential safety hazards for the robots, it must conform to the national laws, regulations, and quality & safety standards. Those operations shall be manufactured and operated by persons with relevant professional qualifications.

During the competition, the teams shall ensure that all the actions such as construction, testing, and preparation will not harm their team and other teams, referees, staff, audiences, equipment, and arenas.

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

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

## 7.5 Competition Guide Statement

The official language for MakeX is Chinese. English or other language translations are prepared to facilitate the team's preparation process. All documents translated to English are for reference only.

The MakeX Robotics Competition Committee reserves the final interpretation of the MakeX Robotics Competition – Competition Guide for Smart Links.

# Appendix: Engineering Notebook Guideline

## 2020 MakeX Robotics Competition Engineering Notebook Guideline

### \*Instruction:

**1.The value of engineering notebook:** It helps the team establish files and record the whole learning process. Therefore, the record of an engineering notebook should run through the entire preparation process for the competition.

**2.Engineering notebook submission:** Teams can use online documents or handwriting. No matter which way to use, each team must submit a paper version onsite.

**Paper version of the engineering notebook:** As the competition programs (Intelligent Innovator&Ultimate Warrior) require the presentation process, 2 copies of the paper version shall be submitted by each team to the judges at the presentation site.

If there is no presentation process (Smart Links), teams will need to submit 1 copy of the paper version to the staff at the inspection area.

**3. An engineering notebook will be required for the evaluation of all technical awards. Please refer to the Competition Guide for the evaluation criteria of each award.**

### Basic Requirements of Cover

The team name, team number, and competition program must appear on the outside cover of the engineering notebook.

### Basic Requirements of Content

#### 1. Directory content

Creating directory content brings convenience for the presentation judges to review and quickly find the corresponding section.

#### 2. Process records

Every improvement of the robots should be recorded from prototype design, building a robot, to the debugging. **Keep pictures of all manuscripts, design drawings, calculation processes, circuit diagrams, etc., and insert them into an engineering notebook.**

- 1) Schedule of robot building progress
- 2) Design inspiration/sketch
- 3) Technical principle (it can be disassembled into different parts)
- 4) Production step by step (with clear pictures)
- 5) Problems encountered and solutions

**Examples of problems:**

- What technical failures did you encounter? Why did you fail? How did you solve the problems finally?
- What efforts have you made for the robots? What improvements have been achieved?
- Does your project progress schedule go as planned? What accidents or delays have occurred? How to fix it?
- Has there been any dispute among the team members? How to settle it?

**3. Projects summary**

- 1) The structure and function of the project (with pictures and text enclosed)
- 2) The technical innovations of the project
- 3) Competition strategies for scoring and defense

**4. Team introduction**

- 1) A brief biography of each team member and their role on the team.
- 2) Culture displaying (logo, team flag, slogan, posters, T-shirt, etc.)
- 3) Excellent achievements sharing (Stories)

**5. Feelings and other things you want to share (optional)**

- 1) Achievement in the competition (Technical)
- 2) Growth in the competition (Spiritual)
- 3) Suggestions for competition



MakeX Robotics Competition Committee

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**Official Website:**

(CN): [www.makex.cc](http://www.makex.cc)

(EN): [www.makex.io](http://www.makex.io)

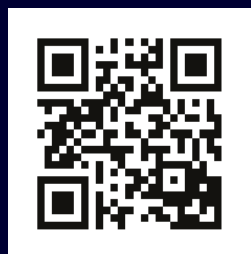
**Instagram:**

[makexofficial](https://www.instagram.com/makexofficial)

**Facebook:**

[MakeX](https://www.facebook.com/MakeX)

**Facebook Official Account**



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