WORLD ROBOT OLYMPIAD ™

ROBO
MISSION

BUILD AND PROGRAM
A ROBOT THAT SOLVES
TASKS ON A FIELD

AGE GROUPS:
8-12 / 11-15 / 14-19

WRO® 2026
ROBOTS MEET CULTURE

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LEARNING FUTURE

Table of Contents

Important: Updates on the general rules for 2026

We made smaller adjustment to the rules for 2026 after the complete redesign for 2025. All changes are marked in yellow. The biggest change is an adjustment of the robot limitations in rule 5.

In addition, please note that during the season there might be clarifications or additions to the rules by the official WRO Questions & Answers. The answers are seen as addition to the rules. You can find the Q&A here: **https://wro-association.org/competition/questions-answers/**

> **IMPORTANT: Use of this document in national tournaments**
> The rules in this document are used for the judging at international events. All teams participating in a national WRO competition should use the General Rules as provided by their National Organizer. The National Organizer can adjust the rules to local needs.

1. General information

Introduction

In the WRO RoboMission category teams design robots that solve challenges on a competition field. The robots are fully autonomous. For each age group a new field and mission are developed each year. The competition consists of different element like surprise rules or extra challenges on the competition day.

Focus Areas

Every WRO category and game has a special focus on learning with robots. In the WRO RoboMission category, students will focus on developing in the following areas:

- General coding skills & basic robotics concepts (perception of environment, control, navigation).
- General engineering skills (building a robot that can push/lift objects of certain sizes).
- Developing optimal strategies to solve concrete missions.
- Computational Thinking (e.g., tinkering, debugging, collaboration etc.).
- Teamwork, communication, problem solving, creativity.

Age appropriate missions: The fields and missions are designed with a growing difficulty and complexity from Elementary to Senior age group. The rising complexity is seen in the:

- Route on the field (e.g., line following or only markers).
- Technical complexity of the missions (e.g., pushing, lifting, grabbing game objects).
- Randomness of the game elements (e.g., one or multiple random situations).
- Variety of game elements (e.g., number of different coloured and/or shaped objects).
- Required accuracy of the solutions to the missions (e.g., a big target area or a small spot).
- Overall complexity in the combination of the elements mentioned before.

All these aspects lead to different requirements for the mechanical design of the robot and the complexity of the code. When participating in WRO for multiple seasons, the teams can grow and develop with the program, solving increasingly complex missions as they get older.

Learning is most important

WRO wants to inspire students around the world for STEM related subjects and we want the students to develop their skills through playful learning in our competitions. This is why the following aspects are key for all our competition programs:

- ❖ Teachers, parents or other adults can help, guide and inspire the team, but are not allow to build or code/program the robot.
- ❖ Teams, coaches and judges accept our WRO Guiding Principles and WRO Ethics Code that should make all of us aware of a fair and learning full competition.
- ❖ On a competition day, Teams and Coaches respect the final decision judges take and work with other teams and judges on a fair competition.

More information on the WRO Ethics Code you find here: https://link.wro-association.org/Ethics-Code

2. Team and Age Groups definitions

2.1.   A team consists of 2 or 3 students.

2.2.   A team is guided by a coach.

2.3.   1 team member and 1 coach are not considered a team and cannot participate.

2.4.   A team may only participate in one of the WRO categories in a season.

2.5.   Any student may participate in one team only.

2.6.   The minimum age of a coach at an international event is 18 years old.

2.7.   Coaches may work with more than one team.

2.8.   The age groups in RoboMission competitions are:

2.8.1.   Elementary: students 8-12 years old (in season 2026: born years 2014 - 2018)

2.8.2.   Junior: students 11-15 years old (in season 2026: born years 2011 - 2015)

2.8.3.   Senior: students 14-19 years old (in season 2026: born years 2007 - 2012)

2.9.   The maximum age reflects the age that the participant turns in the calendar year of the competition, **not** his/her age at the competition day. **Always check the year of birth.**

3. Responsibilities and team's own work

3.1.   A team should play fair and be respectful towards teams, coaches, judges and competition organizers. By competing in WRO, teams and coaches accept the WRO Guiding Principles that can be found at: https://link.wro-association.org/Ethics-Code.

3.2.   Every team and coach need to sign the WRO Ethics Code. The organizer of the competition will define how the Ethics Code is collected and signed.

3.3.   The construction and coding of the robot may be done only by the team members. The task of the coach is to accompany the team organizationally and to support them in advance in case of questions or problems, but **not** to do the construction and programming of the robot themselves. This applies to both the day of the competition and the preparation.

3.4.   A team is not allowed to communicate in any way with people outside of the competition area while the competition is running. If communication is necessary, a judge may allow team members to communicate with others under supervision of a judge.

3.5.   Team members are not allowed to bring and use mobile phones, smart watches or any other communication device into the competition area.

3.6.   It is not allowed to use a solution (hardware and / or software) that is (a.) the same or too similar to solutions sold or posted online or (b.) the same or too similar to another solution at the competition or (c.) clearly not the own work of the team. This includes solutions from teams of the same institution and/or country. Teams must develop their robots autonomously and independently of other teams. Robots that are very similar and give rise to the suspicion that they have been jointly developed but partially adapted to bypass this rule will be classified as identical robots. This rule will be applied to the entire competition. General purpose models of commercial robotic kits might be used.

3.7.   If there is a suspicion in relation to rules 3.3 to 3.6, the team may be subjection for investigation and any consequences as mentioned in 3.8 can apply. Especially in these

cases rule 3.8.5 may be used to not allow this team to progress to the next competition, even if the team would win the competition with the solution that is likely not their own. Investigations may occur at any point during or even after the competition.

3.8.   If any of the rules mentioned in this document are broken or violated, the judges can decide on one or more of the following consequences. Before, a team or individual team members may be interviewed to find out more about the possible violation of the rules. This can include questions about the robot or the program. Team members must be able to explain the robot and software in its entirety including subprograms and reusable blocks.

3.8.1.   A team may be given a time penalty of max. 15 minutes. In this time, teams are not allowed to do any changes on their robot and program.

3.8.2.   A team may not be allowed to participate in one or more rounds. Then, see 10.11.

3.8.3.   A team may get up to a 50% reduced score in one or more runs.

3.8.4.   A team may not qualify for the next round of the tournament
(e.g. in case you have a tournament format with TOP 16, TOP 8 etc.).

3.8.5.   A team may not qualify for the national / international final.

3.8.6.   A team may be disqualified completely from the tournament immediately.

4. Game documents and rule hierarchy

4.1.   Every year, WRO publishes new game documents for the specific age group field missions and a new version of the general rules for this category. These rules are the base for all international WRO events.

4.2.   During a season, WRO may publish additional Question & Answers (Q&A) that can clarify, extend or re-define rules in game and general rule documents. Teams should read these Q&A before the competition. International Q&A are published here: https://wro-association.org/competition/questions-answers/

4.3.   Game documents, the general rule document and Q&A may be different in a country due to local adaptations through the National Organizer. Teams need to inform themselves about the rules that apply in their country. To get clarification on local rules, only the local Q&A apply. Clarifications on the international level do not apply automatically in the national competitions. For any international WRO event, only the information WRO has published is relevant. Teams that qualified for any international WRO event should inform themselves about possible differences to their local rules.

4.4.   At the competition day, the following rule hierarchy applies:

4.4.1.   General rule document builds the base for rules in this category.

4.4.2.   Game documents of the age group clarify the missions on the field and may add special game definitions (e.g. the orientation of the mat or starting position of the robot).

4.4.3.   Questions & Answers (Q&A) can overwrite rules in game and general rule documents. Make sure to check Q&As frequently.

4.4.4.   The judging team on the competition day has the final word in any decision. Decisions might be revisited if new facts or insights come up.

5. Robot material & regulations

Introduction: With the season 2025 we opened up RoboMission for any robots on the international level. <mark>The National Organizers are free to make changes to these rules for their national competition and are allowed to add further limitations regarding the robots. But it is not allowed anymore to limit the competition to specific robot brands only.</mark>

5.1.   Every team builds one robot to solve the challenges on the field. The maximum robot dimensions before the robot starts a run are 250 mm x 250 mm x 250 mm. Cables must be included in these dimensions. After the robot has started, the dimensions of the robot are not restricted.

5.2.   Teams are allowed to use any materials and components to build the robot, as long as the following criteria are fulfilled.

<mark>*Note: The following limits define the maximum limits permitted in WRO. It is the responsibility of the teams to build a safe robot based on these rules that cannot cause harm to people (teams, judges, etc.). Damage caused by the robot is the responsibility of the team and the team coach.*</mark>

5.2.1.	Total weight	<= 1,5 kg
5.2.2.	Battery	<mark><= 6.000 mAh</mark> When using batteries, teams must comply with the manufacturer's instructions for use and must not use the batteries outside the manufacturer's specifications.
5.2.3.	Voltage of electric components	<mark><= 14 V</mark>
5.2.4.	Current / Amperage	<mark><= 4 A</mark>
<mark>5.2.5.</mark>	<mark>Microcontroller</mark>	<mark>There is no limitation regarding the type and number of microcontrollers as long as all other requirements are matched. Especially wireless connection between different components is not allowed.</mark>
5.2.6.	Start- and Stop-Button	One (1) obviously recognizable button is needed to start and stop the robot. This means the same button, that is used to start the robot, stops the robot as well. The button has to be placed on the outer side of the robot (not below) and needs to be easily identifiable and accessible. A physical button is preferred over a button on a touch screen. When the button is pressed during the run, every movement has to stop immediately.

	Exception: The separate stop button of the EV3 can be used to stop a program as well.
5.2.7. Sensors	There are no limitations on the type or number of sensors in general, but some components are limited to specific age groups. The usage of **cameras** is limited to the age groups Junior and Senior. The usage of **LIDAR and other 3D Scanners** is limited to the Senior age group.
5.2.8. Motors	There are no limitations on the type of motors. Motors within other components like sensors (e.g. a 2D LIDAR), fans, pumps or compressors are counted as motors. The number of motors has different limits in the different age groups. Elementary: 4 motors Junior: 5 motors Senior: 6 motors Pullback motors: The usage of pull back motors is allowed, but they have to be wound up by the robot. A pull back motor does not count as motor as long as it does not contain electronic controls. It can be left on the field like normal pieces / bricks, if it is not considered a motor.
5.2.9. Wheels and tracks	Any kind of wheels (including omni wheels) or tracks can be used. Contact with the mat must be such that the mat is not damaged. In particular, pointed and metallic contact surfaces must be avoided. Wheels are not allowed to leave sticky material on the field.
5.2.10. Electro magnets & solenoids	Electro magnets can be used. If they are only used to attach parts via magnetism, they are not counted a motor. They might be counted as a motor in case they are used as linear motors. Solenoids with a maximum force of 20N and a maximum motion range of 20mm (both according to the manufacturer description) can be used and will be counted as motor. Solenoids above those limits are not allowed.
5.2.11. Mechanical components (risk of injury)	Mechanical components must be designed in such a way that they do not pose a risk of injury. Robots that pose a risk of injury have to be modified on the request of Judges without discussion

	or will be excluded from the competition.
5.2.12. Electric and electronic components (risk of injury)	Electric and electronic components must be designed in such a way that they do not pose a risk of injury. Robots that pose a risk of injury will be excluded from the competition. Modification is only permitted if there is no risk of injury to the team.
5.2.13. Gasses	Only normal air from the atmosphere may be used. All other gasses are not permitted.
5.2.14. Liquids	No liquids may be used for the robot. This also applies to oil or other lubricants.
5.2.15. Spray bottles / Aerosol bottles	It is not permitted to use any spray bottles with liquids or gasses. This applies in particular to cooling spray / ice spray and lubricants.
5.2.16. Pneumatic systems	Pneumatic systems may be used. They can be filled by the robot itself after the start or by hand before the start. The maximum pressure must not exceed 3 bar. If the system is specified for a lower pressure, the specification is the upper limit. The maximum volume for tanks in the system is 150 ml. Only the compressor of the pneumatic system is counted as a motor.
5.2.17. Hydraulic systems	Hydraulic systems are not allowed.
5.2.18. Breakable materials	It is not allowed to use any materials that can easily break in many pieces or that leave dangerous edges after breaking, like glass.
5.2.19. 3D printed materials	3D printed materials and parts can be used. 3D printing during the competition is not allowed.
5.2.20. Laser	The usage of lasers is limited to lasers that do not provide a safety risk. A certificate is needed, that the laser is safe for eyes.
5.2.21. Teleportation	Only allowed if the team has got a Scotty on standby to beam them back in one piece! Otherwise, we'd rather not risk turning the robot into a jumbled mess of bolts and wires.
5.2.22. Important note and Q&A	The open rules are new. If a team has great ideas, that differ much from the old way RoboMission worked, they should check

	with their National Organizer and the National Organizer with WRO, if that is ok. There will be updates and additions to this table in the Q&A. Check them regularly. https://wro-association.org/competition/questions-answers/

5.3. Robots are not allowed to fly.

5.4. A team is allowed to bring and use only one full robot containing their controller(s) during the whole competition. The team can bring spare controllers and spare parts to the competition area. It is not allowed to bring a full spare chassis. A chassis is defined as an assembly with motorized mechanisms, sensors and a drivetrain axis ready to be powered by controller(s). As a rule of thumb: A team **can bring** all parts that are needed **to repair their robot** if something breaks, but it is not allowed to bring anything that gives the possibility to replace the (full) robot.

5.5. Teams can bring tools to repair or modify their robot. The tools must be safe, must not pose a major risk of injury, have to fit on the table of the team and must be battery operated. Especially the following items are not permitted: 3D printer, saws, soldering irons, knives.

5.6. A robot must be autonomous and finish the missions by itself. Any radio communication, remote control and wired control systems are not allowed while the robot is running. No wireless communication is allowed between components within the robot.

5.7. A team is not allowed to perform any actions or movements to interfere or assist the robot after randomization of the game objects.

5.8. Any software to code the robot is allowed and teams can prepare the code before the competition day. If a team uses a software that requires an online connection (e.g. a browser-based tool), the team should check if there is an offline version for the competition day. The competition organizer is not responsible for providing an online infrastructure (e.g. WiFi for everyone). The online connection can only be used for coding. No communication or anything else is allowed.

5.9. Bluetooth, Wi-Fi or any remote connection must be switched off during check time and robot runs. If there is any doubt about this, the team must be able to show that wireless transmission has been deactivated and how this is done. If the team cannot do this, it is assumed that the wireless transmission has not been deactivated. In case the feature cannot be turned off for technical reasons, it may remain activated, but it is strictly not allowed to use it.
However, it is strongly recommended to transfer code via cable to avoid transfer problems (e.g. multiple devices with the same name) on the competition day. It is not allowed to interfere or obstruct any other team or robot with the remote connections a team uses.

5.10. Use of hardware (like SD cards or USB sticks) to store programs is allowed. The hardware must be inserted before the end of practice time and may not be removed until the next practice time starts.

5.11. A team should prepare and bring all the equipment, enough spare parts, software and **portable computers (or other programming devices)** that are needed during the tournament. Teams are not allowed to share a laptop and / or the program for a robot on

the competition day. The competition organizer is not responsible for the maintenance or replacement of any material, not even in case of any accidents or malfunctions.

5.12. The robot and components can be marked (label, ribbons, mini-flags, etc.).

5.13. Teams can bring supportive materials such as measuring tape (to check the robot size) or pens and paper (to make notes). Documentation about the robot and games and rules is allowed as well.

6. Technical summary of the robot

6.1. Teams should bring a filled technical summary of their robot (see attachment B) on paper. The summary must reflect the actual robot. In addition, teams can be asked to upload it shortly before the competition.

6.2. The summary may not be longer than two (2) DIN A4 page or US LETTER.

6.3. Points can be awarded for bringing the filled summary or the summary can be a mandatory part of the competition. Points should not exceed more than 5 points. Points should be awarded primarily for whether the summary has been completed in full. There is no assessment of content.

7. Game table and equipment

7.1. In this category, the robot solves missions on a field. Every field consists of a game table (an even ground with borders) and a printed mat that is put into the game table. Every age group has its own mat because in every age group there are different missions to solve.

7.2. The dimensions of a WRO mat are 2362 mm x 1143 mm. Game tables have the same size or max. +/- 5mm in each dimension. The official height of the borders of a game table is 50mm, higher borders can be used as well.

7.3. The game mat must be printed with a matt finish/overlay (without reflecting colors!). The preferred printing material is a PVC tarp with around 510 g/m² (Frontlit). The material of the game mat should not be too soft (e.g. no mesh banner material).

7.4. The game elements for 2026 are built from the WRO Brick Set (no. 45811) & WRO Expansion Brick Set (no. 45819) or from the KKITC Creative Element Set. Other materials, e.g. bricks from robotic sets or wood, paper or plastic or 3d-printed objects, may be used to a limited extent to make the games more interesting.

7.5. If a game element is placed in the starting area at the beginning of the run, the object has to fit within the 250 mm x 250 mm x 250 mm (rule 5.1) together with the robot and the object cannot be taken off the mat (if not defined otherwise in the game document).

7.6. If game objects must be fixed on the game field, the organizers decide on the material to fix the objects unless the game rules specify it differently. For example, double sided tape or hook-and-loop tape.

7.7. It is not allowed to damage any objects on the field or the game mat itself. If an object is damaged, a potential score of the object does not count (unless the game document states it differently). If the robot damages any objects on purpose, the team can be disqualified

from the round. This includes objects that do not score points.

7.8.   The start area of the robot is exclusively the white area within a coloured border. The projection of the robot must be completely within the start area when starting.

7.9.   If there is a different setup at a local / national / international competition (table size, borders, material of game mat etc.), the organizers of the competition should inform the teams upfront.

7.10.   As you build and program, keep in mind that organizers make every effort to ensure that all fields are correct and identical, but you should always expect some variability, such as:

7.10.1. Flaws on the fields

7.10.2. Variety in colour brightness on the game mat, from table to table

7.10.3. Variety in lighting conditions, from hour to hour, and/or table to table

7.10.4. Judges' shadow on the field

7.10.5. Judges will walk around the field during judging

7.10.6. Texture / bumps under the mat

7.10.7. Waviness in the mat itself. Location and severity of waviness varies.

7.10.8. Table not perfectly levelled.

8. Potential elements of a competition day

Introduction: This chapter outlines elements that can be used during a competition day. ***It is the responsibility of the National Organizer to choose the elements they want to use in their country.*** *The attachment* **Error! Reference source not found.** *contains example of how the different elements could look like.*

8.1. Season Challenge (obligatory)
The Season Challenge is the normal challenge that is published on 15th of January. Each age group has a separate game document that contains the challenges. The points for the technical summary (chapter 6) will be part of this. The Season Challenge has to be a part of every RoboMission competition. It could be used on its own or in combination with one or multiple other elements

8.2. Surprise Task / Surprise Rule
The Surprise Task and Surprise Rule are two slightly different concepts but often referred to under the same name. A Surprise Task is an additional task that teams can solve while solving the Season Challenge (e.g. an additional object that needs to be transported). In many cases the additional object is required to stay on the field but it is optional to transport it. A Surprise Rule is a small change to the existing Season Challenge that requires teams to solve it (e.g. switching the colour of objects). This enforces the teams to re-program their robot.

In both cases, these changes will be presented at the opening on the day of the competition and must be solved throughout the day as part of the Season Challenge. Additional points might be awarded.

8.3. Extra Task (NOT IN CANADA)
An Extra Task is an additional task similar to a Surprise Task but it is communicated to the teams some time before the competition with the intention that teams can prepare before the event. This gives an interesting new challenge to the teams after they already worked on the Season Challenge for multiple weeks or months.

This concept could be used in every competition level but it fits better to 2nd round competitions like national finals after teams already went through locals or regionals. This concept has been used for the International Final 2024. An additional task was communicated to the participating teams in October.

8.4. Extra-Day-Challenge (aka 2nd-Day-Challenge) (NOT IN REGIONALS CANADA – COULD BE INCLUDED AT NATIONAL FINAL)
The Extra-Day-Challenge (in the past 2nd-Day-Challenge) is held on a separate competition day. The already known game objects are mixed up with some new ones and will be relocated on the game field. This leads to new challenges that teams have to solve. Normally the new tasks contain little or no randomization. The separate day gives the teams more time (compared to an On-Day-Challenge - see next sub-chapter) to work on

these more extensively changed challenges. This concept has been used for the International Final during the last few years.

For the ranking the best result from the Season Challenge is combined with the best result of the Extra-Day-Challenge. It could be a requirement that teams score points in both challenges to qualify for the next round.

8.5. **On-Day-Challenge (aka Afternoon-Challenge)** **(NOT IN REGIONALS CANADA – COULD BE INCLUDED AT NATIONAL FINAL)**

The On-Day-Challenge is similar to the Extra-Day-Challenge. The only difference is that it is held on the same day as the Season Challenge. The challenges should be a bit easier (compared to an Extra-Day-Challenge) to make it possible to solve them on the same day with likely limited time.

For the ranking the best result from the Season Challenge is combined with the best result of the On-Day-Challenge. It could be a requirement that teams score points in both challenges to qualify for the next round.

8.6. **Skill Test** **(NOT IN CANADA, EXCEPT IF JUDGES HAVE REASONABLE DOUBT THAT A TEAM DID NOT CODE THEIR ROBOT ITSELF)**

Another option is to add a Skill Test to the competition day. This can be any check that is not directly related to the Season Challenge. For example, a technical judging of the robot could be an option. But it can be a separate task on a different mat that needs to be solved in a short period of time. A team interview is possible as well. It is up to the National Organizer to find a creative task for the teams and decide on how to include it in the ranking.

9. Tournament Format and Procedure

Introduction: This chapter explains different parts of the competition day. The format for an event is decided by the National Organizer or competition organizer. Chapter 8 explains different competition elements that can be used to assemble a competition day. Chapter 10.14 explains how the international final works.

9.1. The tournament in this category must consist of the following elements:

 9.1.1. A number of **practice times**. Every tournament should start with a practice time to align for local circumstances (e.g. light conditions in the venue). Normally, there is no longer any assembly from individual parts, as this can no longer be done fairly with different robot systems.

 9.1.2. A number of **robot rounds**. The robot rounds can consist of the Season Challenge only or can use different elements as listed in chapter 8.

9.2. Additional elements - listed or not listed in this rule document - can be added by the National Organizer.

9.3. Teams work in designated team areas and are only allowed to modify the construction or

code of their own robot during practice times. If teams want to make test runs, they need to queue with their robot (controller included) in hand. No laptops should be brought to the competition table and no own mats should be brought to the team area. Teams need to calibrate their robots during practice time, not directly before an attempt. If there are different tables for practice and official robot attempts, the team may ask the judges to calibrate the sensors on the official game tables.

9.4.   Coaches are not allowed to enter team areas to provide any instructions and guidance during the competition. Specified coaching times, where teams and coaches meet, can be defined. During such coaching times, coaches could bring notes to talk to the team but are not allowed to hand any materials to the team.

9.5.   Before practice time is over, the teams must place their robots in the quarantine area. A robot that is not handed in on time cannot participate in the following round.

9.6.   Once the practice time is over, the judges check the robots. After that they prepare the competition tables for the next round (including possible randomization of game objects).

9.7.   Before the robot is placed in quarantine, the robot must be ready to go. Only one further push on the start button is allowed to start a run. Any wireless communication has to be turned off.

9.8.   During check-time, the judges will inspect the robot and check all regulations. If a violation is found at the inspection, the judge will give the team three minutes to convert the violation. It is not allowed to transfer new programs during these three minutes. If the violation cannot be solved during the time, the team is disqualified for this attempt (see 10.11).

9.9.   In the case of a competition lasting several days, the organizers can define that the robots remain in the quarantine areas overnight. If charging at the robot parking is not possible, the battery may be removed and charged overnight.

9.10. It is suggested that every participant receives a participation, bronze, silver and gold certificate based on the robot performance based on the following table (see below). Competition organizers can decide to only do a ranking based on these criteria (without a ranking of placements 1st, 2nd, 3rd) or to award these certificates additional.

% of total points (in age group) in best robot attempt	Certificate
< 50%	Bronze
50-75%	Silver
> 75%	Gold

Example: If the best robot attempt of team on a competition day results in 130 of 200 points in total, then the team will get a silver certificate (130/200 => 65% of the points).

10.   Robot attempt

10.1. Each robot attempt is 2 minutes. Time begins when the judge gives the signal to start.

10.2. The robot must be placed in the starting area so the projection of the robot on the game mat is completely within the start area. The participants are allowed to make physical adjustments to the robot in the starting area. However, it is not allowed to enter data to a program by changing positions or orientation of the robot parts or to make any sensor calibrations of the robot. For example, adjusting an arm of the robot to a specific degree, to input information, is not allowed. Entering data in any way is not allowed. If entering data is suspected, the team will be investigated by the Judges.

10.3. A start module / start frame can be used to adjust the starting position of the robot. The module needs to fit into the size requirements together with the robot. It can be used within or outside the start area, but has to be removed before the start of the run.

10.4. If the robot loses any parts on the field, these parts are considered free and do not belong to the robot anymore, but stay on the field. It is not allowed to lose the controller, motors or sensors. In that case the attempt will be scored with 0 points and 120 seconds.

10.5. Only one press of the start button is allowed to set the robot in motion. If further preparation is needed, this needs to be done before the quarantine.

10.6. If there is any uncertainty during the robot attempt, the judge makes the final decision. The judge should decide in favour of the team if no clear decision is possible.

10.7. A robot attempt will end if…

10.7.1. the robot attempt time (2 minutes) has ended.

10.7.2. any team member touches the robot or any mission objects on the table during the run.

10.7.3. the robot has completely left the game table.

10.7.4. the robot or the team violated rules or regulations.

10.7.5. a team member shouts "STOP" and the robot does not move anymore. If the robot is still moving, the robot attempt will only end once the robot stops by itself or is stopped by the team or judge.

10.8. Once the robot attempt has ended, time is stopped and the judge scores the attempt based on the situation on the field at this point of time. Time is recorded in full seconds only. The points are awarded based on the randomization at the beginning of the run. The scores are noted on a scoring sheet (on paper or digital), the team needs to sign off the scores (on paper or digital signature/checkbox). Once the score is signed off no further complaint from the team is possible.

10.9. If a team does not want to sign off after a certain period of time, the judge can decide to disqualify the team for this round. It is not allowed that a team coach joins the discussion with judges on the scoring of the run. Video or photo proofs will not be accepted.

10.10. If a team touches or changes the task objects on the playing field during the attempt, the team will be disqualified for this round.

10.11. A disqualification of a team in a round will result in a robot attempt with the worst possible score (usually 0) and maximum time (120 seconds).

10.12. If a team finishes an attempt without having solved a (partial) task (of the normal season challenge) that yields positive points, the time of that run will be set at 120 seconds.

10.13. The ranking of teams depends on the overall tournament format. For example, the best

attempt out of three rounds could be used and if competing teams have the same points, the ranking is decided by the record of time.

10.14. Mulligan (optional element): The organizer of a competition may allow that teams can retake a round right on the spot after the run. If a team decides to redo the run the new score will be used for the ranking no matter what. This concept is optional and has to be announced by the organizer of an event upfront.

11. Format and ranking at WRO International Final

Introduction: This chapter shows the potential tournament mode of the International Final. There might be adjustments to this format. It is our goal to give the best experience and fairest competition to all teams and we will make necessary adjustments to achieve this goal.

11.1. The WRO International Final is a three-day event:
- Day 1: This day is used for practice. Teams have plenty of time (multiple hours) to test their robot at the competition tables. There will be a test round in the afternoon, that is scored by the Judges. The round has no influence on the ranking and is only used to test all processes. This is very important for everyone including teams, coaches and judges.
- Day 2: Season Challenge with at least three runs per team. The practice time will at least be 90 min, 60 min and 60 min.
- Day 3: Extra-Day-Challenge with at least two scored runs per team.
- The time of practice can be extended pending on the overall schedule.

11.2. For this tournament format, the following ranking criteria would apply:
- Sum of points from best run from Season Challenge and best run from Extra-Day-Challenge
- Sum of time from best run from Season Challenge and best run from Extra-Day-Challenge
- Points of best run from Extra-Day-Challenge
- Time of best run from Extra-Day-Challenge
- Points of 2. best run from Season Challenge
- Time of 2. best run from Season Challenge
- Points of 2. best run from Extra-Day-Challenge
- Time of 2. best run from Extra-Day-Challenge
- After that, teams are ranked in the same place.

11.3. Teams have to provide a technical summary. The summary is mandatory but will not score points. The digital version has to be submitted one (1) week before the event. Not submitting the technical summary in time results in 10%-point deduction per run.

11.4. The Host Country and WRO can decide together on a different format (e.g. different time/number of practice time/rounds), but need to inform all teams in time before the event on the competition schedule.

11.5. Every team/participant at the international final will receive a participation, bronze, silver or

gold certificate based on the sum of points from best run from Season Challenge and best run from Extra-Day-Challenge. The exact procedure for awarding these certificates will be shared with teams before the International Final.

A. Glossary

Check Time	During the check time, the judge will take a look at the robot and check the measurements (e.g. with a cube or a folding rule) and other technical requirements (e.g. Bluetooth off etc.). A check needs to be done before every official robot attempt, not during practice time.
Coach	A person assisting a team in the process to learn different robotics aspects, teamwork, problem solving, time management, etc. The role of the coach is not to win the competition for the team, but to teach them and guide them through the problem identification and in discovering ways to solve the competition challenge.
Competition organizer	The competition organizer is the entity that hosts the competition a team is visiting. This can be a local school, the National Organizer of a country that runs the National Final or a WRO Host Country together with WRO Association running the International WRO Final.
Practice Time	During the practice time, the team can test the robot on the field and the team can change mechanical aspects or the coding of the robot. In case of an event where teams need to assemble the robot, the teams will do that at the start of the first practice time.
(Robot) Attempt	A robot attempt is the official try to solve the missions on the field. A robot attempt will be scored by judges and is maximum 2 minutes long. Teams usually do multiple attempts during practice time to test the robot before the official attempts.
Robot Round	During one robot round, every team will run their robot on the game field. Every round contains a Check-Time before the actual runs start. Before the round starts with the first team but after all robots are placed on the robot parking, randomizations to game fields (if any) are done.
Quarantine Area / Robot Parking	Quarantine area or robot parking is the place where all teams must place their robot before the practice time is over.
Coaching time	This is an optional time the competition organizer can schedule. The coaches are allowed to talk with the team and discuss the strategy for the competition. It is not allowed that any programs or robot parts are handed over or that the coach helps coding or building during this time.
Technical summary	A document that shows the key facts of the robot on one page.
Team	In this document the word team includes the 2-3 participants (students)

	of a team, not the coach who should only support the team.
WRO	In this document, WRO stands for World Robot Olympiad Association Ltd., the non-profit organization running WRO world-wide and that prepares all the game and rule documents.

B. Template Technical Summary

Team name	*Name of the team*
Team number	*If every team has a number, enter the number here.*
Team members	*Name of team members (first names only)*
Team coach	*Full name*
Robotic set	*e.g. LEGO, fischertechnik or self-assembled set*
Weight	*1,1 kg*
Size	*20 cm X 15 cm X 15 cm*
Building materials	*e.g. LEGO technic, fischertechnik building system, 3D printed material, Wood…*
Controllers	*e.g. LEGO SPIKE Prime, VEX IQ, Arduino nano*
Battery	*e.g. 7,5 V / 2.200 mAh*
Sensors	*List the type and number of sensors, e.g.:* *2x color sensors, 1x distance sensor, 3x rotation sensors (one in each motor), 1x gyro sensor…*
Motors	*List the type and number of motors, e.g.:* *2x LEGO Medium Angular Motor, 1x VEX IQ Smart Motor*
Pneumatic system	*Not used // Yes, LEGO Pneumatic system, max. pressure around 2 bar, 140 ml tanks*
Spare parts	*E.g. 2x motors, 2x sensor, 2x (Micro-)controller*
Programming Environment & language	*LEGO SPIKE Prime App / Block programming* *Python*

| **Picture of robot with start- and stop-button marked** | |
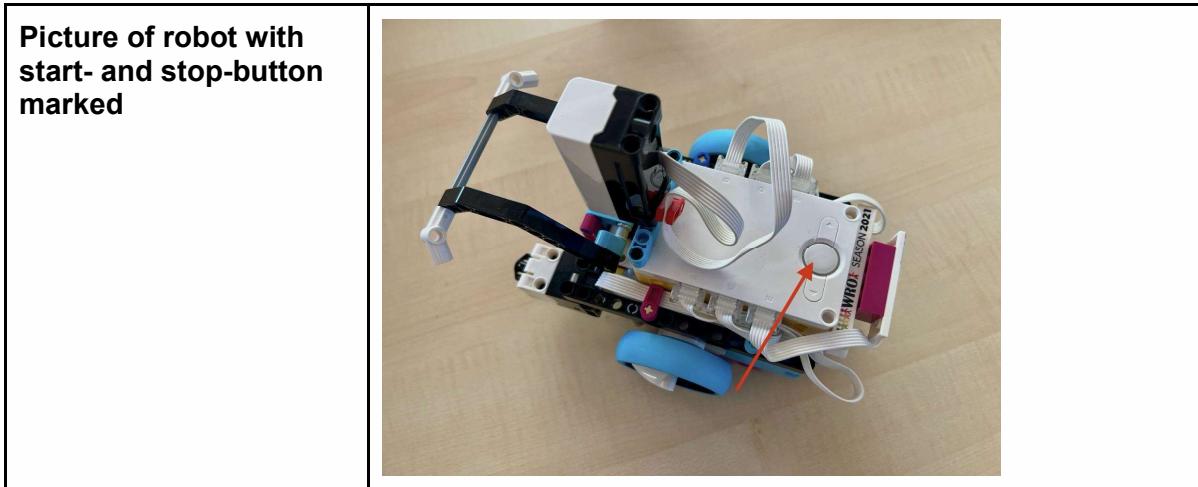
C. List of potential robotic sets

Introduction: This is a list of potential robotic sets for the RoboMission competition. The category is __*not*__ *limited to this list.*

Partners, Sponsors and supporters of WRO

fischertechnik STEM Coding RoboMission	ELECFREAKS Nezha Pro Sports Kit

ROBOROBO
AIKIRO PRO

ZMROBO
Innovation Storm
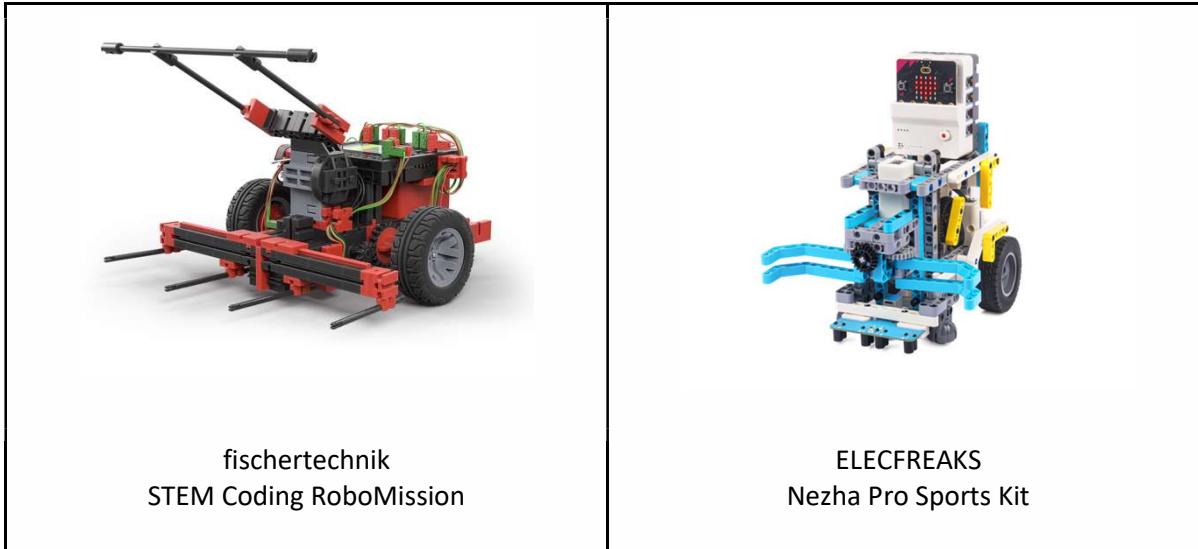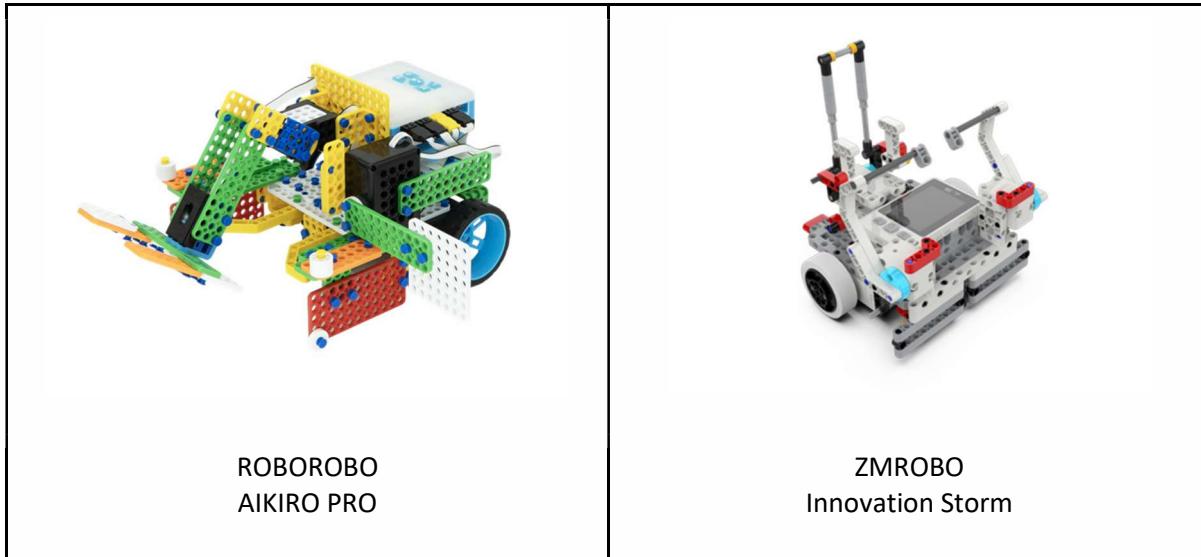
LEGO SETS

LEGO SPIKE Prime	LEGO MINDSTORMS EV3