

RoboCup MSL – 2023 Rule Changes

Disclaimer: This document contains an overview of the Rulebook changes introduced for the 2023 RoboCup competitions. It was created to facilitate the integration with new rules, but it does not replace the reading of the official rulebook in any way.

The Executive and Technical Committees would like to thank all the contributions of the teams with proposals for rule changes. Rules are adapted with the league roadmap in mind, making sure that the evolution goes towards the RoboCup 2050 goal, along with a steady scientific progress.

The Technical Committee can create a rule roadmap, independent of the rulebook. This will contain rule proposals and the projected year of implementation, allowing teams to prepare further in advance for larger steps forward of the league.

The actual implementation of the roadmap (both the exact specification of the rules, and exact year of introduction) is handled by the Technical Committee at the time of introduction.

Any questions or issues regarding the rules should be addressed to the MSL Technical Committee mailing list: rc-msl-tc@lists.robocup.org

The 2023 Middle-Size League Exec/Technical Committees members,

Seyed Ehsan Marjani Bajestani, Polytechnique Montreal, Canada

Jorrit Olthuis, Eindhoven University of Technology, The Netherlands

Valentin Gies, Toulon University, France

Bin Lin, Beijing Information Science & Technology University, China

Ruben Beumer, Eindhoven University of Technology, The Netherlands

Bhre Satriavi, Institut Teknologi Sepuluh Nopember, Indonesia

Gameplay

Game delays (RC-8.1.1)

Teams now get at least 5 minutes to prepare for a match, before they are penalized.

Repair procedure (RC-4.5.1)

It is now explicitly stated that the robot taken out for repair, may be replaced by a different robot after the 20 second timer.

Compensation for lost time (RC-7.3)

Previously, the referee had to ask permission from the OC to compensate for lost time (i.e., the difference between ‘clean’ playing time, and actual time). In practice this was never done.

The rule has been updated such that the OC must indicate in advance when compensation is possible. For example, the time compensation can be limited in order to follow the schedule.

Pass before goal

There was an exception where a defending team can score a goal without a pass. This exception has been removed.

Now, the defending team can still obtain the ball after 7 seconds if the attacking team has not kicked the ball during a (re)start (e.g., kick-off, free kick, goal kick, corner kick), but has to give a pass before they can score a valid goal.

Delay of game (RC-12.3.8)

Some additional examples of what is considered to be “delay of game” have been given. Also, it is now explicitly mentioned that defending the ball from an opponent (if that opponent is within 1 meter) is **not** considered delay of the game.

Goalkeeper designs

It is now possible to design different types of goalkeeper extensions (old designs are still valid).

The maximum extension of a goalkeeper is now set to a convex hull area of at most 920 cm², which is roughly equal to the current maximum extension to one side. This allows teams to design goalkeepers with, for example, more human-like arms.

Voice coaching (Decision-2.1)

The requirements for voice coaching have been updated. It is now no longer required to perform voice coaching through the RefBox.

Human players

In order to increase safety for human players, several changes have been made. These are based on the “Risk Evaluation of Robot Soccer with Humans in RoboCup MSL”, available on the MSL website: <https://msl.robocup.org/requirements>.

Markers (RC-4.2.4.1)

It is now explicitly required for humans to wear markers, visible from every side, according to RC-4.2.4.1. They must be in the same color as the robots in their team.

Footwear

An additional requirement of the footwear is that it is solid, such that it can protect the wearer from the impact of a robot.

Robot safety

- The safety border of RC-4.1 has to be made larger in order to play with humans.
- Teams need to remove or protect sharp corners and edges when playing with humans.

Speed

Humans can still only move at walking speed but are allowed to move faster to, for example, jump out of the way of a robot.

Field

Small field size (RC-1.1)

Local competitions are allowed to use a smaller field. The dimensions of this smaller field have been made explicit.

Center circle size

There was conflicting information in the rules about the size of the center circle. The diameter of the circle is 4 meters.

Goal width (RC-1.7)

The goal width for a small field (18x12m) is 2 meters. By accident, the rules mentioned a 1 meter wide goal.

Qualification and Challenges

Team Description Paper

- Parts of a TDP longer than 8 pages are explicitly ignored.
- When large parts of a TDP have been reused, the final score is reduced: Between 1/3 and 2/3 reuse leads to a reduction by a factor of 0.5. More than 2/3 reuse leads to a reduction by a factor of 0.75.

Scientific Challenge

- One team can take at most 10 minutes to present their scientific challenge. This was already done in practice but is now officially in the rules.
- The presentation score is normalized for the numbers of teams. This ensures that the qualification and presentation score each contribute for 50% to the final score.
- The qualification score was made up of the Team Description Paper and scientific results. Now, it is additionally influenced by the score for sharing hardware / electronic / software designs with others.

Sharing designs

The scoring for sharing mechanical, electrical, and software designs is now specified in more detail.

Ambition Challenge

A challenge for new MSL teams has been introduced with simplified rules. This allows teams to play matches in RoboCup while the robots do not yet satisfy all MSL rules.