MSL changes in the rules for 2015 regarding 2014

Changes are identified in blue, while replaced or removed text is represented [within brackets in 10pt]. NOTES are shown in brown.

RC-1.1:
Dimensions
RoboCup Matches
Length: minimum [8m]12m, maximum 18m.
Width: minimum [6m]8m, maximum 12m.
The official field size for this year is 18m × 12m.

RC-Decision 5:
FIFA Decision 5 applies with 2m and 3m distances in RoboCup.
Organization will provide a 3m long light wooden bar, with a visible mark at 2m from one of the extremities. This can used by the referees to check the above distances.

RC-3.1:
Players
A match is played by two teams, each consisting of not more than five players, one of whom is the goalkeeper.
A match may not start if either team consists of fewer than two players. If the number of players of a team falls [under 2] down to two during a match, then the match will still continue. However, if the number of players of a team falls to [zero] less than two, the match will be ended and competition rule 3.7 will be applied.

RC-Decision 2.1:
High level human coaching is allowed. For that purpose each team may use hand gestures or voice. [a set of paper boards with QR Codes to be directly interpreted by the robots]. High level coaching has to comply the following rules:

- gesture coaching can be provided by the use of single colored gloves used by one of the team members;
- voice coaching can only be provided through dedicated headpiece microphones provided by the organization. These microphones (one per team) are connected to the refbox computer;
- voice commands will be send to the team base station during 'dead time' (i.e., the 10 seconds between a stop and a start by the assistant referee);
- specification of the voice commands data format is provided in an independent document;
- only robots that are in the field can be coached;
- coaching is only allowed from the team leader position, in front of their base station pc;
- the robot(s) that is/are being coached should remain within the field of play, and cannot be touched by human team members;
- the human that is coaching should stay always outside of the field of play;
- no electronic device, other than electronic devices that are mounted on the robot itself, can be used to transfer coaching instructions to the robot.
- any type of coaching can take place only during 'dead time' (i.e., the 10 seconds between a stop and a start by the assistant referee)

NOTE: Voice coaching may or not may be available for the 2015 competition. Information regarding this mode of high level coaching may be released until February 28, 2015.

RC-4.1.2:
External Boundary

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A robot is considered to have crashed against the field Safety Boundary if its speed is high enough to potentially damage this boundary (even if the boundary is strong enough to hold the robot). In any case, if it is clear that the robot is not making an attempt to stop, and hits the Safety Boundary even at low speed, this is considered to be a crash.
It is up to the referee to judge those situations and call a free kick against the offending team whenever he considers a crash has occurred. Based on the strength of the crash, the referee may also decide to show the robot that crashed against the boundary a yellow or even a red card.
It is [advisable] **required** that whenever a robot, or set of robots, are chasing the ball, they stop their movement as soon as they have detected that the ball is outside the field of game.

RC-4.2.0:
Robot Size

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1. Each robot must possess a configuration of itself and its actuators, where the projection of the robot's shape onto the floor fits into a square of size at least 30cm × 30cm and at most 52cm × 52cm.
2. The usual field player has to keep at any time the size limit of 52cm × 52cm.5. The field players may never exceed the 80 cm height limit.
3. Above a virtual horizontal plane 60cm above the ground, all the elements of the robots (with the exception of the goalie) must fit within a cylinder with a diameter of 25cm.

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RC-10:
Valid methods of scoring

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In bold > **Regaining the ball implies that the ball was previously in possession of the opponent team (that is, the ball was previously being played by the opponent or the opponent had the faculty to play in a restart situation). If a ball simply bounces of an opponent and is retaken by the team that was previously playing, then this is not considered to be "*regaining the ball*".**

If a robot makes a lob shot from its own half towards the opponent side of the field without the intention to make a pass, a free kick at the mid line is awarded to the opponent team. This rule only applies under the following joint conditions:

- The team has three or more robots on the field;
- No team mate is within a radius of 3 meters measured from the point where the ball hits the ground;
- The ball reaches its highest point in the lob above a height of 60cm. Furthermore, if the ball is kicked by a robot from its own side of the field and goes out through the opponent's goal line (the line that unites the two corners and goes through the goal) after bouncing off an opponent player, a goal kick is called for the opponent team.

RC-12.0.1:
Ball Manipulation

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The robot may exert a force onto the ball only by direct physical contact between robot and ball. Forces exerted onto the ball that hinder the ball from rotating in its natural direction of rotation are allowed for no more than one second and a maximum distance of movement of [fifty] 30cm. Exerting this kind of forces repeatedly is allowed only either after a waiting time of at least four seconds or if the robot has previously completely released the ball. Natural direction of rotation means that the ball is rotating in the direction of its movement.

RC-12.3:
Indirect Free Kick

Manual interference: An indirect free kick is awarded to the opposing team, if a human member of a team, in the opinion of the referee, commits any of the following offences:

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- deliberately delay the removal of a robot from the field during a game stoppage. It is up to the referee decision to evaluate such situations
- behaving otherwise in an unsportsmanlike manner

The referee may stop the game and give a yellow card to the player and/or the human member of the team that has committed one of those offences.

RC-12.3.1:
Ball Holding

If a player commits any violation of the clauses on stopping, dribbling, or kicking the ball, a **ball holding foul** will be called. Ball holding or hindering the ball from rolling in its natural direction is only allowed for at most one second and at most [one meter] 30cm of movement. This kind of action can only be repeated after a waiting time of, at least, four seconds.

RC-12.3.2:
Pushing

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While two robots from opponent teams are actively disputing the ball, if the robot from one of the teams keep pushing the opponent by continuously exerting a force over the ball forcing the opponent to move back, a **pushing foul** will be called.

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It is up to the referee to evaluate the number and level of seriousness of pushing fouls. The referee can and should, at is own discretion, show the offending robot a yellow card whenever a serious pushing foul occurs.

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RC-12.3.9:
Unsportsmanlike Behavior

- At least the following behaviors are considered unsportsmanlike:
  - not following instructions of the referee and the assistant referees

– yelling at or insulting the referees, or the opponent, or the audience
– deliberately delay the removal of a robot from the field during a game stoppage.

RC-12.5:

Cautionable Offences

In RoboCup, a robot player or human team member is cautioned **and shown the yellow card** if he commits any of the following offences:

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RC-12.6.1:

Temporary Sent-Off

A player is temporarily sent off the field after [receiving its] any of its team members or robots receives a second yellow card. If the second yellow card is given to a player, this player must be removed. If the second yellow card is given to a team member, the team may choose which player is to be removed. The player may return to the game on the next game interrupt, but no less than 2 minutes after being temporarily sent off. The counting of the yellow cards is reset after a player is given a 2 minutes off penalty.

RC-12.6.2:
Sending-Off Offences

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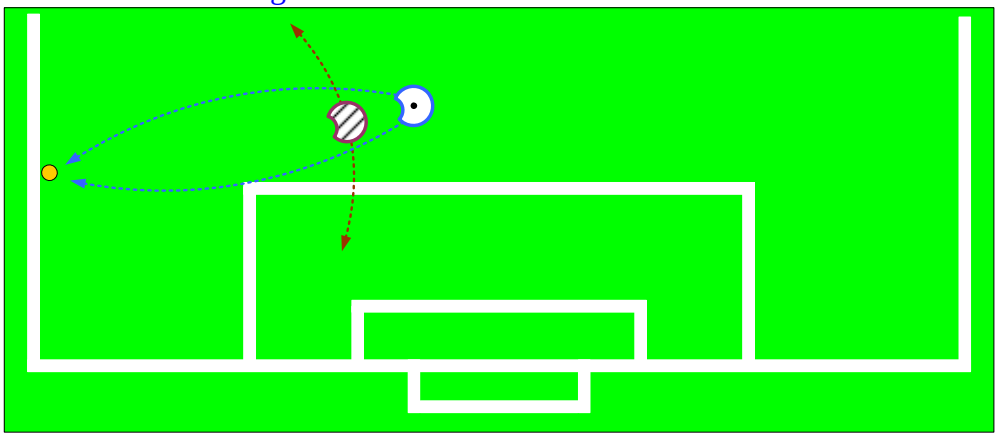
- [receives the third yellow card in the same match]its team is punished with a third ”2 minutes off” penalty.

(This a new rule)
RC-13.1.3:
Obstruction during repositioning

- During a stoppage time and right after the referee indicates the nature of the foul and the restart situation, robots from the defending team are not allowed to deliberately block the movement and/or access of the robots from the opponent team to the ball position.
- During this period and until a Start Signal is given, robots from the defending team may not place themselves directly over the virtual line that connects the ball and any of the opponents.
- If such situation happens and is judged by the referee as deliberate, a yellow card is shown to the offending robot.



RC-13.4.1:, 15.1, 16.1, 17.1
Procedure
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It is forbidden to reposition robots by hand or by any other means with the only exception of the use of high level coaching of the robots (see FL 3.10, RC- Decision 2.1). The referee may show a yellow card to the robot that doesn't stay at least 2m (for the attacking team) or 3m (for the defending team) from the ball, following the referee's instructions. [more than twice consecutively](removed). After that, if the robot doesn't follow the position restrictions of the procedure, the referee will [instruct the team to remove the robot from the field] show a second yellow card and the robot that received this card must be removed from the field for two minutes.
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CR 1.2 Evaluation of the Qualification Material
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Teams also may send their qualification material only once as one mixed team.
Note that the qualification material points obtained by each team will also contribute to the scientific challenge final results (see scientific challenge in chapter F2000 Challenges).
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Scientific results
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Performance in Past Events
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Team Description Paper/Innovations
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Qualification Video
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Contribution to the RoboCup MSL community
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Mechanical and electrical description of the robot and software flow chart
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(This is new) Minimum qualification criteria
For being able to participate in the RoboCup competition, teams have to ensure, at least, the minimum cumulative following criteria:

- Demonstrate in de video that they are able to perform the basic actions to be able to play;
- Produce a team description paper according to the above definition;
- Obtain a minimum of thirty points in the overall qualification procedure.

CR 3.6 Appearance at game start: forfeiting
According to trustees recommendations, the concept of forfeit is introduced in the rules. Forfeiting is defined as refusing to make a good faith effort to participate in a scheduled game.

A team that forfeits can be disqualified from the competition. It is up to the OC and EXEC together to assess if a team is forfeiting.

If a team does not show up at the beginning of a game for valid reasons, or is in no technical conditions to play the game, a victory will be awarded to the opponent team with a score of 3-0.

CR 3.7 Withdrawal from game

If a team withdraws from a game after it started for any reason that is considered valid by the OC and EXEC, a victory will be awarded to the opponent team, either by adding three goals to its current score, or by adding the necessary number of goals to ensure a minimum difference of three goals.

Technical Challenge

MAKING PASSES WITHOUT WIRELESS IN AN ARTIFICIAL GRASS FIELD

The aim of this challenge is to encourage teams to improve their ability to play in surfaces with different dynamic behavior and to make passes without wireless communications. This challenge is carried out by two active robots, uses the official tournament ball and is disputed in a single run.

The challenge will be played in a 12m x 8m MSL field made of artificial grass. The length of the grass leaves may be between 3mm and 7mm. The lines will be white and will be downsized from the original measures to fit the field size.

PRESET:

- Wireless communications must be disconnected in all the robots. Field APs will also be disconnected.
- Wireless communications will be monitored through out the challenge. Any attempt by a team to use wireless communications will be punished with disqualification from the challenge.
- Two black obstacles (one on each side of the field), similar in size to a MSL robot, will be placed at random positions.

PROCEDURE:

1. The team will manually place the two robots, one on each side of the field.
2. The ball is placed on the penalty spot on either side of the field.
3. Robots are started manually after the referee whistle.
4. The robot on the side where the ball stands have to detect it and grab it.
5. After getting the ball, the robot has to dribble it for at least 1 meter.
6. The robot that holds the ball has then to make a pass to the robot placed on the opponent side.
7. After the second robot receives the ball, or after it grabs the ball within its half field limits, it has to dribble it to the opponent side.
8. The robot that made the pass has also to move to the opponent side, swapping therefore both robot positions.
9. The procedure is repeated from point 6, except if the ball goes out of the field or does not leave the side of the field from which the pass was taken, in which case the procedure restarts from point 1.
10. This procedure will continue for a total time of 5 minutes.

RULES:

- Whenever the ball leaves the field teams are allowed to manually turn off the robots.
- Robots should never go outside the external delimiting line of the field.
- If, for any reason, the team wants to restart the procedure, it can ask the referee, and restart from point 1 after getting authorization.
- A pass is only considered valid if the following cumulative rules apply:

- The ball has to be shot by the passing robot at least 1.5m away from the mid-center line.
- The receiving robot has to get the passed ball at least 1.5m away from the mid-center line (these distances refer to the ball position).
- The ball has to be grabbed by the receiving robot directly, that is, this robot has to be standing in the line of the moving ball when it gets it or, at least, tries to stop it. If the ball moves pasted the receiving robot by either side, and without touching it, then the pass will not be considered a valid pass.
- The robots have correctly swapped their positions in the field previously to performing the pass.

SCORING:

- One point is awarded if for each valid pass.
- One point is awarded if both robots correctly swap their positions on the field after trying to make a pass.

PENALTIES:

- Every contact of any of the active robots with an obstacle will be punished with a point, which is subtracted from the amount of points in the current run. A continuous contact with an obstacle (even if it moves the obstacle) will count as a single contact.
- If the ball goes out the field delimiting lines at any time, or if it stays on the same half after a pass attempt, the team will be punished with a point which is subtracted from the amount of points. Furthermore, the procedure must be interrupted and restarted from point 1.
- If any of the robots moves out of the field delimiting lines, the team attempt will be terminated, and one point will be subtracted from the amount of points.
- The minimum number of points in the technical challenge will be zero.
- If teams end up with the same amount of points, the relative placement is decided by the total number of pass attempts regardless of the fact that they failed or succeeded.

Challenge 2 - Scientific/Engineering Challenge

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- The resulting ratings will then be added up for obtaining the final local score.
- The final score will be obtained by adding the final local score to 20% of the points obtained by each team during the qualification process (CR 1.1).
