MSL changes in the rules for 2014 regarding 2013

Changes for the 2104 MSL Rules has been moderate. However you should pay particular attention to some of them, The following list presents a short resume of these changes (changes are identified in blue):

RC-1.2:
Field Markings
The width of touch and goal lines is 12.5cm. The radius of the center circle is 2m. For RoboCup, the width of all internal lines, like center circle, goal area, and penalty area, is also 12.5cm. Lines are part of the areas they delimit. Therefore measurements are to be taken from the outside of the lines regarding each of these areas.

RC-1.2.1:
Safety Boundary
The field is surrounded by a black safety boundary, the height of which is between 8cm and 15cm above he field. It is placed 1.5m outside of each field border. The purpose for this boundary is to ensure safety and preventing robots from running into the audience. Further implementation details are defined in the MSL competition construction book. All teams are expected to make no assumptions about this boundary, namely about its mechanical resistance. Thus the above height constraints might be changed by the organizer within their limits without prior notice.

RC-1.2.2:
Ad Panels
The organizers may place ad panels. The length of a panel may not exceed 150 cm and the height may not exceed 50 cm. Panels must be placed outside of the safety boundary. The ad panels are not intended for localization.

RC-1.2.3:
Restart Spots
The RoboCup field defines 9 places used for game restart. In addition to the white center marking and the white penalty marks, there are 6 extra virtual spots on the field which will be used for this purpose. The positions of these extra virtual spots (see field drawing above) are specified as follows:
- 2 spots on the center line, one each halfway between touch line and center mark.
- 2 spots each on a line parallel to the goal line through each penalty mark, one each halfway between touch line and the penalty mark.

The penalty marks are not used for game restarts, unless a penalty was called by the referee. The diameter of the center mark is 15cm, while the diameter of the white penalty marks is 10cm.

RC-1.7:
Goals

For RoboCup, replace "7.32m" with "2m" and "2.44m" with "1m". A net is spawn between the crossbar and goal posts to the safety boundary of the field. To avoid direct contact of the net with parts of the robots (wheels, kicking device, etc.), the lower part of the net must be covered over a height between 30 and 40cm as a safety zone. This safety zone has to be done by the local organizer and may vary in each tournament. The inside depth of the goal is at least 0.5m (see image bellow). The goalposts, the crossbar and the lower inside covered part are painted white. See also COMPETITION RULE 4 for color samples.

FL 3.10 (**This is a new Decision**)

High level human coaching is allowed. For that purpose each team may use a set of paper boards with QR Codes to be directly interpreted by the robots. High level coaching has to comply the following rules:

- boards can not be larger than 30 x 30 cm;
- only robots that are in the field can be coached;
- each team will designate a member to perform coaching;
- coaching is only allowed from the team leader position, in front of the teams' 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;
- coaching can take place only during 'dead time' (i.e., the 10 seconds between a stop and a start by the assistant referee).

QR Codes can only be of the version 1 or 2. Any level of Error Correction can be used and any type of data can be encoded. In the figure below a summary of version 1 and 2 of QR Codes can be seen. Use of other higher versions of the QR Codes as well as Micro QR Code, iQr Code, SQR Code or LogoQ is strictly forbidden.

Version	Modules	ECC Level	Data bits (mixed)	Numeric	Alphanumeric	Binary	Kanji
1	21x21	L	152	41	25	17	10
		M	128	34	20	14	8
		Q	104	27	16	11	7
		H	72	17	10	7	4
2	25x25	L	272	77	47	32	20
		M	224	63	38	26	16
		Q	176	48	29	20	12
		H	128	34	20	14	8

NOTE: Complementary information regarding high level coaching may be released until February 28, 2014.

RC-4.2.5:
Communications

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Network settings, during the competition, will be as follows:

- Password for connecting to the APs may be turned on. If that's the case it will be disclosed to the teams at the beginning of the tournament.
- WEP encryption is turned off. Technical verifications and sanctions

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Technical verifications and sanctions

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Power emitted by any of the team's robots wireless equipment must be limited in order to ensure that all teams have the same conditions for wireless communications. To ensure that, during technical verifications, a Fluke Wi-Fi AirCheck(Trade Mark) with and external directional antenna will be used to measure the RSSI (expressed in dBm) in the following conditions:

- team robots will be placed along the mid line and connected to the field router;
- the measurement equipment will be placed over the goal line with the antenna pointed towards the robots (9 meter distance);
- the maximum received power may not exceed -40dBm.

Teams failing to comply with this limit will be requested to re-adjust the power of their WiFi equipment. Only after that they will be considered able to enter the competition.

RC-8.4.1:
Kicking Directly to the goal

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NOTE: Rules regarding the validation of scored goals, namely those established in TC 10 and RC-12, overrules or complements all others, including the above one and those defined for every other game restart situations.

RC-8.6; RC-13.4.1; RC-15.1; RC-16.1 and RC-17.1;

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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 audio high level coaching of the robots (see FL 3.10, RC-Decision 2.1).

RC-10:
Valid methods of scoring

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Furthermore, whenever the ball is regained by one of the teams within its own half of the field (either in game restart situations or during play on) a valid goal can only be scored after the ball has been received or touched by a team mate within the opponent side of the field and assuming that the ball has rolled freely for at least one meter before being received or touched. This rule does not apply if the ball is regained in the opponent side of the field during play on. In this particular case the robot regaining the ball may score directly as long as the kick is taken from within the opponent side. 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).

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 centimeters . 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.

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- For any kind of ball dribbling, direct contact between the robot and the ball can only be maintained within a circle with a radius of three meters, centered on the point where the robot last caught the ball. To move past that circle, the robot has to completely release the ball so that this ball release can be directly observable by any of the referees. After that, the robot can capture the ball again and the center of the circle moves to the new catch position. It is up to the referees to determine if the ball has actually been completely released from the robot. Dribbling with direct contact between the robot and the ball outside this circle will be considered ball holding. It is up to the referee to decide if the robot dribbling the ball has complied with the above rule, namely in what concerns the three meters radius. The referee decision on this is final and non disputable.

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RC-12.0.2:
RC-12.0.2 HAS BEEN REMOVED FROM THE RULES

RC-12.3.7:
Remote Interference
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• The only exception to the above rules is high level coaching of the robots (see FL 3.10, RC-Decision 2.1)

RC-14.3:
Procedure
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• The penalty starts 5 min. after the end of the game
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CR 1.1 Team Qualification for RoboCup-2014

For RoboCup-2014, the team qualification procedure requires teams to submit the following material:

- A list of 5 scientific papers published during the last 5 years of the team which are related to RoboCup. Abstracts of these papers must also be submitted.

CR 3.4 Preliminary Rounds

For the preliminary rounds, teams will be assigned to groups. The number of groups will be determined by the League Organizing Committee, which takes into account the number of qualified teams as well as site and schedule constraints of the tournament. The ranking for the initial organization of the groups that will participate in the competition will be done according to the following rules:

- For teams that have participated in the 2013 RoboCup edition, the final classification will be used;
- Teams that did not participate in the 2013 RoboCup edition will be ranked, after the previous ones, according to pre-qualification results.
- If a tie persists among one or more teams a draw will be performed. Team leaders must be present during the draw procedure. Each group will play a single round of round-robin matches, i.e. each team will play once against every other team in its group.

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COMPETITION RULE 6 - Normalized data structure

Beginning in 2014 an effort will be made to standardize several aspects of the teams world model and data representation in order to make it easier in the future to play with ad-hoc mixed teams. With this in mind the referee box will be updated with a new command. This command will be issued ten times per second and requests each team's base station to send a data structure filled with the most relevant data regarding the world state perception of each robot and of the team base station itself. These data will be recorded during the games and made available to the teams after the end of the game.

The exact format of the data structure will be released to the competing teams right after the pre-selection procedure.

Challenge 1 - Technical Challenge
PLAYING IN AN ARTIFICIAL GRASS FIELD

The aim of this challenge is to encourage teams to improve their ability to play in a less even floor and tackle with surfaces with different dynamic behaviour. This challenge is carried out by one (or optionally two) active robots and one passive robot, uses the official tournament ball and is disputed in three runs.

The challenge will be played in a 12m x 9m MSL field made of artificial grass. The length of the grass leaves may be between 8mm and 10mm. The lines will be white and will be downsized from the original measures to fit the field size. The goals will be the official ones.

PRESET:

- The team's goal keeper is placed in the middle of the predefined opponent defending goal. It must be disconnected or static (this is the passive robot).
- The active robot is placed in the middle of its own penalty area.
- Three black obstacles (one on the own side and two on the opponent side), similar in size to a MSL robot, will be placed at random positions on the field.
- The ball is placed at a random position on the own side of the field.

PROCEDURE:

- After receiving a start command from the Referee Box, the active robot has to find the ball and start dribbling it.
- After getting the ball, the robot has to dribble it, avoiding the obstacles, enter the opponent field and then shoot it into the predetermined goal where the goalkeeper is standing.
- For the goal to be valid the shoot must be taken from a distance to the target goal less than 2m. For this purpose, the ball must be completely within the 2 meter distance limit.
- The robot has 90 seconds to complete each run of the challenge.

SCORING:

- One point is awarded if the active robot correctly identifies the ball, (i.e. the robot touches the ball for the first time and is able to dribble it afterwards for at least 1 meter).
- A second point is awarded if this robot is able to dribble the ball to the opponent side of the field.
- A third point is awarded if the robot, handling the ball, successfully enters a zone of the field where the ball is closer than 2m to the opponent goal.
- A fourth point is awarded if the robot successfully scores a goal in the predetermined goal.

EXTRA POINTS:

Any team my choose to use two robots instead of one robot to perform the challenge. The second robot can be placed anywhere in the opponent side of the field. In this case:
- One extra point is awarded if the first robot, after crossing the mid line dribbling the ball makes a valid pass to the second robot (i.e. the ball rolls freely for at least 2 meters and is touched by the second robot). In this case, the second robot assumes the place of the first one for the remainder of the challenge.
- Another two extra points are awarded if the pass is done with a lob shot over one of the obstacles in the field and if the receiving robot is able to control the ball before it goes out of the field.

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, the attempt is terminated and a point will be subtracted from the amount of points in the current run. This does not apply

if the ball goes out of the field after bouncing off from the goalkeeper or from the goal posts.

- If a shot at the goal is taken from a distance greater than 2m, a point will be subtracted from the amount of points in the current run.

The minimum number of points in one run will be zero. In total this challenge is repeated three times with different ball start positions, but always with the same robots, which means that a team can be awarded with up to a maximum of twenty one points for this challenge. If teams end up with the same amount of points, the relative placement is decided by the sum of the time spent in each of the three trials (smaller time beats higher time). The total time available for a team to execute its challenge is ten minutes.