



2016年度通訊博物館電子裝置製作比賽

Museu das Comunicações – Concurso de Construção de Dispositivos Electrónicos, 2016
Communications Museum - Electronic Device Construction Competition, 2016

Supplementary Rules – Junior and Senior Categories

Specifications:

There is no restriction on material used, but **ready-made device** is not allowed.

Device should consist of two parts which are the “Controlling module” and “Gaming module”.

Operational function of the device:

“Gaming module” should be able to take, transport and place objects at specified areas with the use of a non-wired “Controlling unit”

Size:

“Gaming module” should not exceed $15cm \times 21cm \times 15cm$ (height), while there is no restriction on “Controlling module”.

Weight:

“Gaming module” ,including operational batteries, should not exceed $2kg$, while there is no restriction on the “Controlling module”.

Gaming Module:

“Gaming module” can only use $3V$ direct current motor (2 leads)., “Stepper motor” and “Servo motor” are not allowed.

Source of power:

“Gaming module” should be and only be driven by a pre-registered single Group of batteries which consists a maximum of 6 AA alkaline batteries. The Group of batteries cannot be replaced before the end of the “Group Stage”. After the “Group Stage”, each team can register another Group of batteries for use until the Semi-Final. After Semi-Final, a last Group of batteries can be registered for use until the end. For teams entering the “Repechage” phrase, a new group of batteries can be registered for use till the start of the final game in “Repechage” phrase. Then teams can register another Group of batteries for use until the Semi-Final. There is no restriction on the “Controlling module”.

Competition format:

Competition will be divided into junior and senior sections, each with three phases - “Group stage”, “Knockout stage” and “Repechage”.

In the “Group stage”, each group will consist of 4~6 teams. In each group, 3 teams will be selected based on the result of the game. The 3 selected teams of each group will continue to compete with the selected teams of the other groups until the 12 finalists are selected for the “Knockout stage”. In the “Knockout stage”, the 12 finalists will compete on a one-to-one single-elimination basis. The remaining 6 finalists from the “Knockout stage”, plus the 2 teams selected from the “Repechage”, will enter the quarter final till the end.

The Pitch:

The Pitch is a hexagon area, with a width of $400cm$. Each team will be assigned his/her own “Sector”. Based on the vertical height ($0cm, 2cm, 10cm$) , the “Sector” is divided into three steps with different scoring :



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Vertical height ($0cm$), α : Targets put inside this area with have a score $\times 1$.

Vertical height ($2cm$), β : Targets put inside this area with have a score $\times 2$.

Vertical height ($10cm$), γ : **Senior** - Targets put inside this area with have a score $\times (-3)$, but each team's score cannot be less than 0.

Junior - Targets put inside that area with have a score $\times 0$.

At the centre of the pitch, there is a hexagonal middle area of width $60cm$ used for placing targets. It is not counted as the teams' "Sectors". A schematic diagram of the Pitch is shown in Fig 1 and Fig 2.

Targets:

Targets of unknown quantities and weight will be put inside the middle area at the centre of the pitch. There are two types of targets, with 2 and 3 scores respectively. Details of the targets are shown in Fig 3.

During the competition, if targets are broken into several pieces by accident, each collected broken piece is still valid as a whole piece and will be counted for score calculation. If targets are placed on more than one sector at the same time, all the sectors that the target touches will also be calculated. Participants shall not intentionally damage the targets or penalty will be applied.

Scoring System:

Each game will consist of 3 rounds. The result of each round is determined by the sum of all targets' scores for each team's Sector. The team having the **lowest score** will be ranked the first, and so on. If two or more teams have the same score, the team with a lighter "Gaming module" (**including the batteries and targets on the module**) will get a higher ranking. Each round's result will not be carried to the next round. The final result of each game is obtained by adding the rank in any 2 rounds out of 3 rounds for each team. The team with the lowest sum will be the final winner. If two or more teams have the same sum, the order of winning positions will be determined based on the ranks of the two rounds chosen for calculation (Example: The two rounds with ranks [1,4] will get a higher position than the two rounds with ranks [2,3]). After this, if two or more teams still hold the same position, an additional round of game will be held to decide the winner.

"Shooting the Moon":

At the end of one round, if a team can successfully put all of the same kind of targets on the pitch (**referring only to targets on the pitch, but not including those on γ and on the module**) into his/her own Sector, the team will automatically **win that round, regardless of other teams' scores**. However, if two or more teams successfully use this "Shooting the Moon", the team with a lighter "Gaming module" (**including the batteries and targets on the module**) will be the winner of that round.

Sequence of competition:

The grouping for the teams of "Group Stage" will be determined by drawing before the competition day. The starting positions of the teams in each game will be determined by drawing before the start of each game. After each game, the advancing teams will draw again to determine the grouping in the next "Group Stage" round. After the last round of "Group Stage", the 12 finalists will enter the "Knockout Stage" and draw together to determine their positions at the



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“Knockout stage”. Then they will join with the teams selected from the “Repechage” to continue the match according to their positions in the dendrogram.

Flow of competition:

Each game will consist of 3 rounds, each round with a competition time of 3 minutes. Before each round starts, each group can put their “Gaming module” at any position in their own Sector¹. Once all teams are ready at their positions, the judge will signify the start of the game. During the game, teams can use their “Controlling module” to control the “Gaming module” to move the targets to or from their own Sectors. During the game, if any targets are moved outside of the pitch and touch the ground, the staff will confiscate these targets and they cannot be re-used throughout that round. After completing the game, the staff will calculate and record the score for each Sector, and then come up with the teams’ ranking for that round. The judge will make a final decision on the winning teams. After that, the pitch will be reset and for the next round.

Repechage:

Teams which are able to enter the second game of “Group Stage” but fail to proceed to “Knockout stage” will be divided into several groups² by drawing to participate in the “Repechage” phase. Two teams will be finally selected and they will directly enter the quarter-final of the “Knockout stage”. Further details of the “Repechage” phase will be announced separately after the registration deadline.

Timeout and Maintenance:

No timeout is allowed during the game. Teams can repair their device **outside the pitch** at any time. Before the repair, any targets on the module have to be cleared and discarded outside the pitch. The discarded targets cannot be re-used. During the competition, if any repair work is required for device, the “Gaming module” needs to wholly or partially touch its own γ Sector (include the vertical step) and obtaining the judge’s consent before any repair work can be done. During the maintenance, competition will continue. **The targets put on the Sector will be kept and counted.** After the maintenance, the teams have to put their empty devices back to a starting point³ and touch their own γ Sector (include the vertical step) in order to resume the game, without interfering other teams,. (For the starting point positions, see Fig 1). During competition, all participants cannot enter the pitch.

Entanglement:

If two or more devices are entangled in the pitch, the judge can ask the teams involved in the entanglement to separate and continue the competition⁴. However, if entanglement cannot be resolved, the judge can enter the pitch during the game and separate the involved devices manually. During the separation, competition will continue. Stoppage time will apply at the end of that round depending on the time of entanglement.

¹ If the device put in a starting position does not touch its own γ Sector, then after starting the competition, if device is unable to move, it cannot be repaired.

² If the number of teams is in odd number, one team will get a bye and proceed to the next game.

³ In “Repechage” phase, each group will only have one starting point. Therefore, if multiple teams need to re-enter the pitch, they have to wait in line.

⁴ The separation of the entanglement will be decided only by the judge, not by any team. Judge has the authority to inquire about each team’s entanglement situation.



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Violation of rules:

Teams will be disqualified depending on the severity of violations, as regulated below:

1. Intentionally cause damage to the pitch or targets during the competition.
2. Participants touch the device or targets during the competition without consent from the staff.
3. The dimensions of the device do not meet the specifications listed in the rules and regulations.
4. Participants maliciously block other teams and their devices into the pitch to continue the competition.
5. Participants use devices that have not been inspected by the organizer of the competition.
6. Participants use batteries that are non-registered and have not been inspected by the organizer of the competition.
7. Without permission from the staff, participants enter the restricted pitch area during competition.
8. Participants do not follow the instruction of the staff, interfere or stall the competition.
9. Participants make violations, insulting or abusive words.
10. Participants violate the principles of fair play.

Others:

1. All participants should pay attention to electrical safety.
2. Tools shall not be provided by the Organizer.
3. Before competition, all participants are welcome to use the testing pitch at the museum during opening hours.
4. Organizer reserves the right of final decision in case of disputes.
5. Final judgment and decision will be made by organizer if emergency situation happened during the competition.
6. In case of any discrepancy in the different language versions of the regulation, the Chinese version shall prevail.

Fig 1 - Schematic diagram of the Pitch (Bird view):

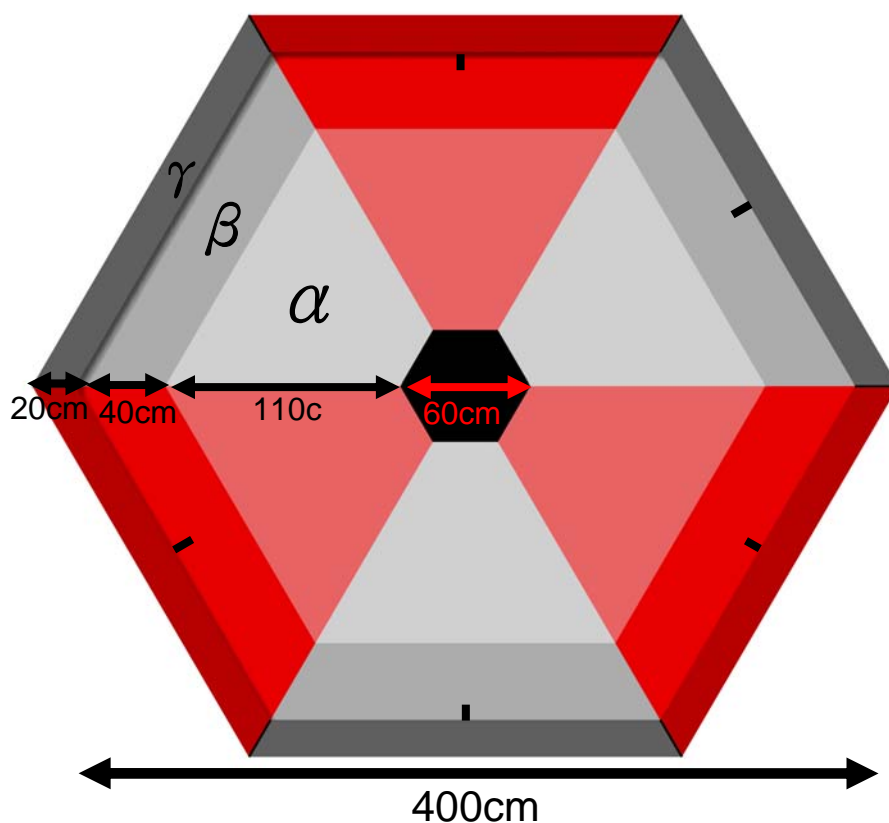




Fig 2 - Schematic diagram of the Pitch (Side view):

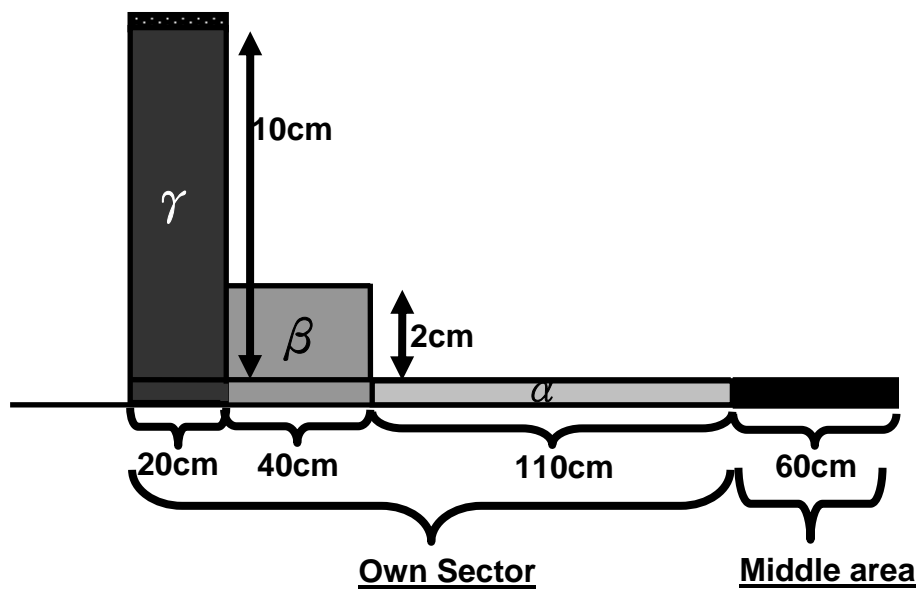
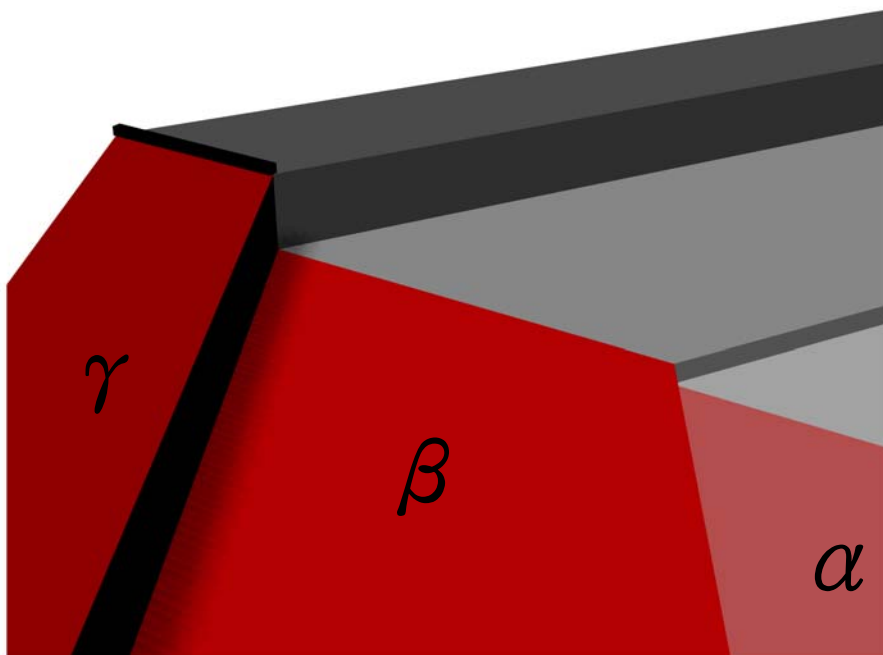




Fig 3 - Diagram of the Targets:

