



## Supplementary Rules – Junior and Senior Categories

### **Treasure Hunt**

According to the myth, dwarfs possessed great craftsmanship and passion for precious gems. They would hold a contest every year on the night of the very first new moon. With some luck and great skill, they'd try to get as many gems as they could from others, and the one with the most gems would be named the champion. Now, we can use these ancient rules handed down from ancient dwarfs' scrolls, with the improvements allowed for by the new technology, to reintroduce this exciting game in the form of the electronic device construction competition. Let's see who can take the most gems and become the ultimate champion?

**Construction requirements:** There is no restriction on the materials used, but ready-made device is not allowed. The device should consist of two parts: the “**controller**” and “**gaming module**”.

**Functions:** The “controller” is used to control the “gaming module” to distribute objects into specific areas.

**Dimensions:** The “gaming module” should not exceed  $15\text{cm} \times 21\text{cm} \times 21\text{cm}$  (height). There is no restriction on the “controller”.

**Weight:** The weight of the device, including both the “controller” and “gaming module” (with batteries), should not exceed  $3\text{kg}$ .

**Restriction:** The “gaming module” can only use direct current motors (2 leads). Stepper motors and servo motors are not allowed. The device can only be driven by a maximum of 8 AA dry batteries.

**Competition System:** The competition will be divided into junior and senior sections, each with 2 phases – The “Knock-out” and “Repechage”.

**Knock-out:** Before the “Knock-out” begins, random drawing will be done to decide the qualified teams' positions in the first stage of the knock-out. According to the drawing rule, if the total number of participating teams cannot fulfill the allocation requirements in the first stage, one or more teams may be arranged to enter the second stage directly. The knock-out will be using **one-to-one, best of three game elimination systems** and the match will carry on according to the teams' positions in the dendrogram. In the end, 6 teams will be qualified for the next stage. The remaining 18 teams out of the total 24 teams will join the repechage, from which 2 teams will be qualified for the next stage, forming the final 8. The 8 finalists will draw again and continue the match until the champion is decided.

**For the Senior Category, when the competition enters the stage of the final 8, the starting zone will have a “special usage”. Its rules and functions will be announced before the start of that stage.**

### **Repechage**

The 2 winning teams from the “repechage” will join the 6 winning teams from the “knock-out” phase to become the 8 finalists entering the final stage of competition.

The “repechage” will be using **one group-to-one group, single elimination system** and the match will



carry on according to the teams' positions in the dendrogram, The 18 teams joining the repechage will be divided into 9 groups by drawing, i.e. each group will consist of 2 teams in the repechage. The final winning group (2 teams) will get the last 2 seats of the final 8.

The 2 groups (4 teams) will play the game in their own pitch and are not allowed to enter the pitch of other teams. (Fig. 3). "Repechage" has similar rules as the "knock-out". The only difference is that the scores in the "repechage" are calculated by combining the quantities of "gems" and "bombs" in the same colour zones of the two teams in the same group.

### **Pitch:**

For the Junior Category, the pitch is not fenced. For the Senior Category, the pitch is surrounded by 2cm high fences. The pitch is a square of approximately 140cm on each side. Five different areas are set in the pitch, namely "red zone", "yellow zone", "green zone", "starting zone" and "material zone". (Fig.1).

The two pitches for the two opposing teams will be set opposite to each other. A screen with a height of approximately 1m will be set in between the two pitches. A "control zone" and a "scout zone" are set beside the pitch of each team (Fig. 2). Only a **maximum of one** member from each team is allowed to enter the "scout zone" without interrupting the matches of other teams. During the competition, all team members are forbidden to enter zones and surrounding areas which do not belong to their own teams.

\* Note: During the competition, the one-man team is not allowed to be both controller and scout at the same time. Therefore, participation teams are suggested to consider their number of members.

### **Competition items**

In each pitch, 2 kinds of items are placed: "gem" and "bomb". Each has 3 different colours: red, yellow and green. The colours of the bombs correspond to those of the gems. The detail size and shape of the gems and bombs will be announced during the explanation session.

### **Scoring System:**

Each pitch consists of 3 colour zones (red, yellow and green). The colour zones in the pitches of the opposing teams correspond to each other. The gems are of three different colours, each colour representing a different value: red = +1, yellow = +3 and green = +5. During the game, the two competing teams can freely distribute any number and kind of gems into their own colour zones. When over the time is up, the total value of the gems in each zone will be counted, and the team that has got the highest value will acquire that specific colour zone. If the total values of gems of the two opposing teams for a specific colour zone result in a tie, none of those two teams can acquire that colour zone. The team that can acquire the largest number of colour zones will win.

The purpose of the "bomb" is to "**deduct the number of colour gems which has the same colour as the bombs in the same colour zone of the opposite team's pitch.**" The bombs are of three colours that correspond to those of the gems. When the teams placed the bombs in their own colour zones, each bomb will deduct 3 gems that are of the same colour as the bomb in the corresponding colour zone of the opposing



2018年度通訊博物館電子裝置製作比賽  
Museu das Comunicações – Concurso de Construção de Dispositivos Electrónicos, 2018  
Communications Museum - Electronic Device Construction Competition, 2018

team's pitch. **If the number of existing gems in a particular colour is less than the quantity supposed to be deducted by the opposing team's bombs, only the existing number of gems will be deducted and no extra scores will be deducted for that colour zone.**

In the knock-out stage, if the two opposing teams have acquired the same amount of colour zones at the end of the match, the team with a lighter device (including all batteries) will win.

In the "repechage", if the two opposing groups have acquired the same amount of colour zones at the end of the match, a single extra round of game will be held once for 2 minutes, continuing with the gems left on the pitches from the previous round. If two opposing groups still hold the same amount of colour zones at the end of the extra game, the group (2 teams) with a less combined weight of the two teams' devices **(including all batteries)** will win.

**Flow of competition :**

**Knock-out: Each round of game is limited to 3 minutes.** The pitches of the teams in each game will be determined by drawing before the start of each game. Each team will appoint one person to station at the "scout zone" of the opposing team, and he/she is not allowed to leave the "scout zone" until the end of the game. Other team members are not allowed to enter the opposing team's pitch and surrounding area. Items will be placed in the "material zone" by the staff, and the teams should place their "gaming module" in the "start zone" of their own pitch. The judges will signify the start of the competition. Then the teams will station at their own "control zones" and use their "controllers" to operate the "gaming module" to move and distribute the items. The team member at the "scout zone" can observe the opposing team's movements and communicate with his/her own team members without leaving the "scout zone". After the game has finished, the judge will calculate the scores to determine the winner of that round.

**Repechage: Each game is limited to 5 minutes.** The pitches of the groups in each game will be determined by drawing before the start of each game. The two teams of each group will agree between themselves on the allocation of pitches within the group. After that, each group will appoint two members to station at the "scout zone" of the opposing group, and they are not allowed to leave the "scout zone" until the end of the game. Other team members are not allowed to enter the opposing group's pitches and surrounding area. Items will be placed in the "material zone" by the staff, and the teams should place their "gaming module" in the "start zone" of their own pitches. The judges will signify the start of the competition. Then the teams will station at their own "control zones" and use the "controllers" to control their "gaming modules" to move and distribute the items. The team members at the "scout zones" can observe the opposing team's movements and communicate with their own team members without leaving the "scout zone". After the game has finished, the judge will calculate and sum up the scores for both teams in the same group and determine the winning group (2 teams) of the game.

**Judgment Standard:**

Items must meet both of the following conditions in order to be counted into the specific zones:

1. The item touches on the pitch floors or other items that have already been on the pitch floor.



2018年度通訊博物館電子裝置製作比賽  
Museu das Comunicações – Concurso de Construção de Dispositivos Electrónicos, 2018  
Communications Museum - Electronic Device Construction Competition, 2018

2. The item is within the three-dimensional space of the specific zone.

Incomplete items will lose their values and usage. In any item is damaged by accident, the teams can inform the judge to replace it. The replaced items will be repositioned in the “material zone”.

**Timeout and Maintenance:** No timeout is allowed during the game. Teams can repair their devices at any time with permission from the judge. During the maintenance, the competition will continue. Items collected on the device before the maintenance should be empty and placed back in the “material zone”. After the maintenance, teams should put back their devices in the “starting zone” before continuing the game.

**Other violation of rule**

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

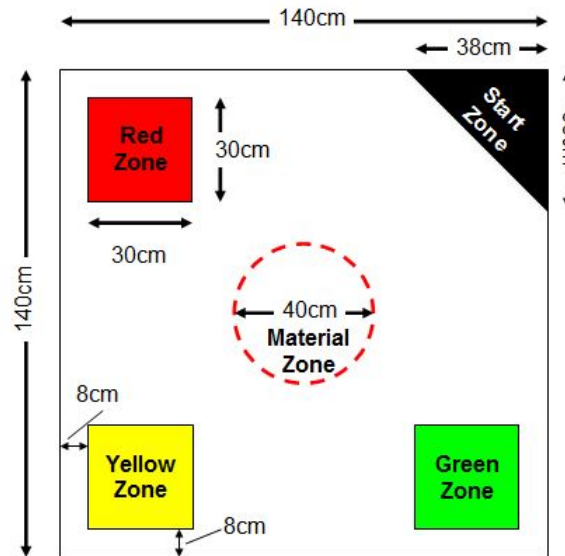
1. Intentionally causing damage to the pitch or items during the competition.
2. Touching the device or items during the competition without pre-approval.
3. Dimensions of the device do not meet the specifications listed in the rules and regulations.
4. Maliciously blocking other teams and their devices from entering the competition.
5. Using devices that have not been inspected by the organizer.
6. Using motors or batteries that do not meet the specifications listed in the rules and regulations.
7. Team members enter the restricted pitch area during competition without permission.
8. Team members use communication tools of any kind to communicate with non-participants during the competition without pre-approval.
9. Use of filming and recording of any kind to assist participants in observing the opponent during the competition.
10. Disobeying the instruction of the staff, interfering or stalling the competition.
11. Violations, insulting or abusive words of participating teams.
12. Violation of the principles of fair play.

**Others**

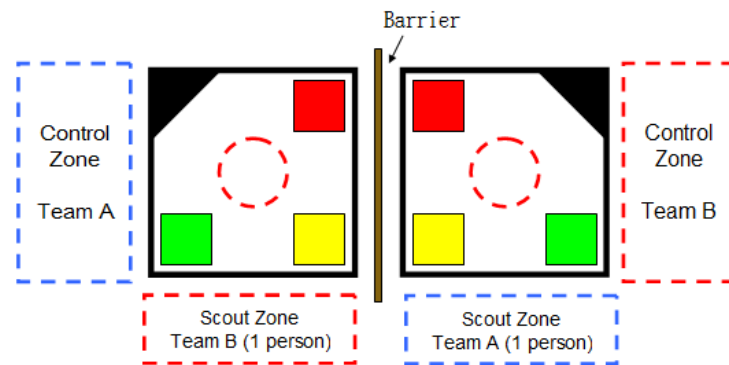
1. All teams should pay attention to electrical safety.
2. Maintenance tools shall not be provided by the organizer.
3. Participants are allowed to use the test pitch at the museum during opening hours before the competition.
4. Should any dispute arise, the decision of the organizer shall be final.
5. Final decisions shall be made by organizer should any unexpected situations happen during the competition.
6. In case of any discrepancy in the different language versions of the regulation, the Chinese version shall prevail.



**Fig 1: Bird's eye view of competition pitch**



**Fig 2: Pitch setting for “knock-out”**



**Fig 3: Pitch setting for “repechage”**

