

## Algorithm to Determine initial spots

1. Let NGB be the sets of all developing or full member  $ngb = (\text{number of teams, performance points, EQC D1 spots, EQC D2 spots})$  where  $ngb[3]=0$  and  $ngb[4]=0$  for all  $ngbs$ ,  $ngb[1]$  according to the number the  $ngb$  gave and  $ngb[2]$  according to their performance and  
<https://docs.google.com/spreadsheets/d/1qO4KqJmN6W7NfKsMjYbSb2pimS0mk6L3k2VPIQHrD80/edit?usp=sharing>
2. Let total be the number of all teams in europe
3. For all  $ngb$  in NGB set  $ngb[3] = \max(\text{round}(ngb[2]), 12)$
4. If  $\text{Sum}(ngb[3]) > 32$  then
  - a. sort the list of  $ngbs$  by the value of  $ngb[2]-ngb[3]$
  - b. delete all  $ngbs$  with  $ngb[3]=0$
  - c. decrease for the  $\text{Sum}(ngb[3])-32$  lowest NGBs the value  $ngb[3]$  by 1
  - d. if  $|NGB| < \text{Sum}(ngb[3])-32$  do a. again
5. If  $\text{Sum}(ngb[3]) < 32$  then
  - a. sort the list of  $ngbs$  by the value of  $ngb[2]-ngb[3]$
  - b. delete all  $ngbs$  with  $ngb[2]=0$
  - c. increase for the  $32-\text{Sum}(ngb[3])$  highest NGBs the value  $ngb[3]$  by 1
  - d. if  $|NGB| < 32 - \text{Sum}(ngb[3])$  do a. again
6. Create the List NextD1a
  - a. sort the list of  $ngbs$  by the value of  $ngb[2]-ngb[3]$
  - b. delete all NGBs with  $ngb[2]=0$  or  $ngb[3]=12$
7. Create the List NextD1b
  - a. Add NGBs with  $ngb[3]=12$  sorted by  $ngb[2]-ngb[3]$
8. Let EA be the number of emerging Area Spots
9. Set  $k := 64 - EA$
10. Set  $ngb[4] = \min(\max(\text{round}(ngb[1]*k/\text{total})-ngb[3], 0), 12-ngb[3])$
11. If there is an  $ngb$  with  $ngb[3]+ngb[4]=0$  increase NGBs the value  $ngb[4]$  by 1
12. If  $\text{Sum}(ngb[4]) > 32-EA$  then
  - a. sort the list of  $ngbs$  by the value of  $ngb[1]*61/\text{total}-ngb[3]-ngb[4]$
  - b. erase all  $ngbs$  with  $ngb[4] = 0$
  - c. erase all  $ngbs$  with  $ngb[3]+ngb[4]=1$
  - d. decrease for the  $\text{Sum}(ngb[4])-32$  lowest NGBs the value  $ngb[4]$  by 1
  - e. if there are less than  $\text{Sum}(ngb[4])-32$   $ngb$  do a. again
13. If  $\text{Sum}(ngb[3]) < 32-EA$  then
  - a. sort the list of  $ngbs$  by the value of  $ngb[1]*k/\text{total}-ngb[3]-ngb[4]$
  - b. delete all NGB's with  $ngb[3]+ngb[4]=12$
  - c. increase for the  $\text{Sum}(ngb[4])-32$  highest  $ngb[4]$  by 1
  - d. if  $\text{Sum}(ngb[3]) < 32-EA$  then do a. again
14. Create List NextD2a
  - a. sort the list of  $ngbs$  by the value of  $ngb[1]*k/\text{total}-ngb[3]-ngb[4]$
  - b. delete all NGBs with  $ngb[3]+ngb[4]=12$
15. Create List NextD2b

- a. Add all NGBs with  $\text{ngb}[3] + \text{ngb}[4] = 12$  sorted by the value of  $\text{ngb}[1] * k / \text{total} - \text{ngb}[3] - \text{ngb}[4]$
16. Create the empty list NextD2c

## Algorithms to determine who gets the next spot due to a ngb forfeiting their spot

### Division 1

1. Delete the forfeiting NGB from the lists NextD1a and NextD1b
2.  $\text{ngb}[3] = \text{ngb}[3] - 1$  for the forfeiting ngb
3. Add the forfeiting ngb to the bottom of NextD2c
4. If NextD1a is not empty
  - a.  $\text{ngb}[3] = \text{ngb}[3] + 1$  for the first ngb on NextD1a
  - b. if  $\text{ngb}[4] > 0$ 
    - i.  $\text{ngb}[4] = \text{ngb}[4] - 1$
    - ii. Do the Division 2 Algorithm, starting at 3.
  - c. if  $\text{ngb}[3] < 12$  for the first ngb on NextD1a
    - i. move the first ngb on NextD1a to the bottom
  - d. Else
    - i. add the first ngb on NextD1a to the bottom of NextD1b
    - ii. remove the first ngb on NextD1a
5. Else
  - a.  $\text{ngb}[3] = \text{ngb}[3] + 1$  for the first ngb on NextD1b
  - b. move the first ngb on NextD1b to the bottom

### Division 2

1. Delete the forfeiting NGB from the lists NextD2a, NextD2b and NextD2c
2.  $\text{ngb}[4] = \text{ngb}[4] - 1$  for the forfeiting ngb
3. If NextD2c is not empty
  - a.  $\text{ngb}[4] = \text{ngb}[4] + 1$  for the first ngb on NextD1c
  - b. delete the first entry in NextD2c
4. Else If NextD2a is not empty
  - a.  $\text{ngb}[4] = \text{ngb}[4] + 1$  for the first ngb on NextD1a
  - b. move the first ngb on NextD2a to the bottom
5. Else
  - a.  $\text{ngb}[4] = \text{ngb}[4] + 1$  for the first ngb on NextD2b
  - b. move the first ngb on NextD1b to the bottom