e-Drone Racing World Cup Rules

1st March 2024

RIGHTS TO FAI INTERNATIONAL SPORTING EVENTS

All international sporting events organized wholly or partly under the rules of the Fédération Aéronautique Internationale (FAI) Sporting Code[1] are termed *FAI International Sporting Events*[2]. Under the FAI Statutes[3], FAI owns and controls all rights relating to FAI International Sporting Events. FAI Members[4] shall, within their national territories[5], enforce FAI ownership of FAI International Sporting Events and require them to be registered in the FAI Sporting Calendar[6].

An event organiser who wishes to exploit rights to any commercial activity at such events shall seek prior agreement with FAI. The rights owned by FAI which may, by agreement, be transferred to event organisers include, but are not limited to advertising at or for FAI events, use of the event name or logo for merchandising purposes and use of any sound, image, program and/or data, whether recorded electronically or otherwise or transmitted in real time. This includes specifically all rights to the use of any material, electronic or other, including software that forms part of any method or system for judging, scoring, performance evaluation or information utilised in any FAI International Sporting Event[7].

Each FAI Air Sport Commission[8] may negotiate agreements, with FAI Members or other entities authorized by the appropriate FAI Member, for the transfer of all or parts of the rights to any FAI International Sporting Event (except World Air Games events[9]) in the discipline[10], for which it is responsible[11] or waive the rights. Any such agreement or waiver, after approval by the appropriate Air Sport Commission President, shall be signed by FAI Officers[12].

Any person or legal entity that accepts responsibility for organising an FAI Sporting Event, whether or not by written agreement, in doing so also accepts the proprietary rights of FAI as stated above. Where no transfer of rights has been agreed in writing, FAI shall retain all rights to the event. Regardless of any agreement or transfer of rights, FAI shall have, free of charge for its own archival and/or promotional use, full access to any sound and/or visual images of any FAI Sporting Event. The FAI also reserves the right to arrange at its own expense for any and all parts of any event to be recorded.

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1 .... FAI Statutes, ...	Chapter 1, ...	para. 1.6
2 .... FAI Sporting Code, Gen. Section, ...	Chapter 4, ...	para 4.1.2
3 .... FAI Statutes, ...	Chapter 1, ...	para 1.8.1
4 .... FAI Statutes, ...	Chapter 2, ...	para 2.1.1; 2.4.2; 2.5.2 and 2.7.2
5 .... FAI By-Laws, ...	Chapter 1, ...	para 1.2.1
6 .... FAI Statutes, ...	Chapter 2, ...	para 2.4.2.2.5
7 .... FAI By-Laws, ...	Chapter 1, ...	paras 1.2.2 to 1.2.5
8 .... FAI Statutes, ...	Chapter 5, ...	paras 5.1.1, 5.2, 5.2.3 and 5..2.3.3
9 .... FAI Sporting Code, Gen. Section, ...	Chapter 4, ...	para 4.1.5
10 .... FAI Sporting Code, Gen. Section, ...	Chapter 2, ...	para 2.2.
11 .... FAI Statutes, ...	Chapter 5, ...	para 5.2.3.3.7
12 .... FAI Statutes, ...	Chapter 6, ...	para 6.1.2.1.3

TABLE OF CONTENT

E-Drone Racing is an eSport which consists of races with remotely piloted drones flying on a virtual circuit with obstacles to overcome.

FAI Aeromodelling Air Sport Commission (CIAM) decided to establish an e-Drone Racing World Cup based on a series of virtual international events run on different racing circuits.

For 2024, the World Cup events will be run by using the EreaDrone 2023 multiplayer drone racing simulator (See https://ereadrone.com) available on the Steam platform for PC. Those events will be organised by considering the event management system (EMS) developed by EreaDrone.

For the future, CIAM may be able to consider other simulators and platforms, as long as their owners would like to cooperate with CIAM and discuss the technical aspects of their solution.

All pilots may fly from home ('Remote' piloting) with their own computer just taking care to be aware for the schedule of the time zone differences, and to have an internet connection stable enough.

1. PILOT EQUIPMENT

The equipment required to participate is as follows:

- Game controller (e.g. Xbox), or radio transmitter which may be identified as a controller by Windows (FrSky, RadioMaster, Taranis, BetaFPV, etc.).

  Note - FPV google headset is not used due to the difficulty of setting up properly such a device on a computer.

- Windows computer with a video monitor and an internet connection.

  Note - The requirements for the computer are available at https://ereadrone.com/play#specs.

2. DRONE RACER

The characteristics of the drone racer that will be available in the simulator may depend on the racing circuit.

The characteristics concern, but not only, the mass, dimensions, motorisation (KV, latency), propeller (diameter, pitch), battery voltage, air drag, rotation inertia, and ground effect. It will be possible for the pilots to edit some characteristics to better fit their style of flying.

The characteristics of the drone racer will be announced before the beginning of the event.

3. RACING CIRCUIT

The racing circuit is defined with a 3D flight path including a start line, obstacles to be crossed or avoided, and a Start-Finish line. It may be an open circuit to be flown once or a closed circuit with several laps to be completed.

The racing circuit can be set up in every environment: urban, mountain, woodland, park, stadium, carpark, harbour, castle, etc.

The recommended total distance to complete in a race is 2 to 3 km representing a flight time between 60 to 90 seconds for the fastest pilots. In case of a closed circuit, the number of laps to complete will be determined consequently.

The length of the circuit will be measured along the centerline of the optimum 3D flight path.

The pilots will not be informed before the event about the circuit used for the event.

4. REGISTRATION TO THE EVENT

A period of time before the beginning of the event will be defined for the registration to participate in the event. The registration will be done on the EreaDrone website.

All information regarding dates for the event (practice flight period, qualification stage period, days planned for the competition) will be published before the beginning of the registration period.

Mandatory data for the registration:

- First name and last name (Family name) - Nickname

  Note: Use of Latin (Roman) alphabet is mandatory.

- Gender
- Date of birth
- Nationality - Country of residence

An EreaDrone license is necessary to access the simulator.

The organiser may request payment of an entry fee to participate in the event.

5. WORLD CUP EVENT ORGANISATION

5.1. Practice flight session

Before the beginning of each event, a practice flight session will be planned.

Only the pilots registered to participate in the event may participate to the practice flight session.

The possibility for each pilot to practice will be limited to a predefined cumulative time (e.g. 30 minutes), or to a maximum number of laps of the circuit that can be completed (e.g. 10 or 20 depending on the circuit).

Information for the practice flight session will be available at the registration for the event.

5.2. Qualification stage

The event will begin with a qualification stage to select the pilots for the competition itself.

Flights for the qualification stage are called 'asynchronous' considering every pilot will fly alone without being impacted by the other pilots flying at the same moment.

A period of time (e.g.7 days) will be defined for the qualification stage. During that period, each pilot will be authorised a maximum number of attempts (e.g. 12) to register times to complete a predefined number of consecutive laps. The pilots may do their attempts whenever during the allocated period, on different days, and at any time of each day.

The ranking for the qualification stage will be calculated by considering for each pilot their fastest registered time. In case of a tie between pilots concerned by the selection for the competition, the second fastest registered time will be considered to break the tie, and then if necessary, the third one, and so on until the tie will be broken.

The qualification current ranking will be accessible once the qualification stage will start. The registered qualification times will be published when the qualification stage period of time will be finished. Every pilot will get possibility to access the qualification times registered for the other pilots after he/she will have proceeded with at least half of the maximum number of attempts defined.

5.3. Competition

In each race, the pilots will fly together at the same time with the possibility to see the other drones.

All races will be run on the number of laps corresponding to the predefined number of laps stated for the qualification stage.

In each race, first crossing the finish line will be first placed, and so on. Pilot(s) who did not finish (DNF) will be placed after those who finish, and considering if necessary, the distance completed (number of laps and part of the last lap completed). If applicable, disqualified pilot(s) will be placed at the end before pilot(s) who did not start (DNS).

5.3.1 First part of the competition

The first part of the competition concerns the preliminary rounds for which all races will be run with 8 pilots per race.

Depending the number of pilots ranked in the qualification stage, two scenarios will be considered for this first part of the competition:

a) **Scenario A =** 128 pilots selected from the qualification stage - First part with two rounds (24 races in total)

b) **Scenario B =** 64 pilots selected from the qualification stage - First part with one round (8 races in total)

For both scenarios, the 4 best placed in each race will be qualified for the next round, and the other pilots will be eliminated.

The composition of the races for the first round is defined by considering the qualification stage ranking.

For each scenario, see the Annex for the composition of the races for the first round and the bracket for the first part of the competition.

5.3.2 Second part of the competition

The second part of the competition concerns the 32 pilots qualified from the first part of the competition.

Note: *Second part of every e-Drone Racing World Cup competition will stand on a different day from the first part, and will be livestreamed with an English language commentator.*

All races will be run with 4 pilots per race. So, this part will include 1/8th finals, quarter-finals, semi-finals and finals (16 races in total).

The 2 best-placed pilots will be qualified for the next round, and the other pilots will be eliminated.

Regarding the finals, the 2 best-placed pilots in each of the two semi-final races are selected for the final race to determine their final ranking from 1st to 4th places. In addition, a small final race will be organised for the pilots placed 3rd and 4th in the two semi-finals to determine their final ranking from 5th to 8th places.

See the Annex for the bracket for the second part of the competition.

5.4. Final classification

The final classification for the event will be calculated as follows:

- 1st to 4th places according to the final race results.
- 5th to 8th places according to the small final race results.
- After each round, the eliminated pilots will be placed according to the qualifying stage ranking. Nevertheless, the pilots who managed to get a scoring time will be placed in front of those who did not finish (DNF), those eventually disqualified (DISQ) being placed after, and those who did not start (DNS) placed at the end.
- The pilots not selected for the competition will be placed according to their ranking in the qualifying stage.

5.5. Other topics

5.5.1 Start of the race

After all drones are placed in the start area, a countdown 5, 4, 3, 2, 1 will be done before the start signal.

The drone cannot be armed before the start signal. At the start signal, the drone is automatically armed once the pilot sets the throttle to zero.

Note - *Setting the throttle at its maximum before the start signal does not permit getting the maximum power right after the start signal.*

5.5.2 Safety zone

Around and above the circuit a safety zone is defined in the simulator. Flying outside this zone is not allowed. It is a non-flying zone. When a drone gets out of this flying zone, a popup window shows up informing the pilot concerned he/she has seven (7) seconds to go back inside. If the drone is still outside the safety zone after this period, the pilot concerned will be disqualified from the race.

5.5.3 Case of an obstacle not crossed correctly

Each obstacle to be crossed is marked and each pilot may see an indicator marking the next obstacle to be crossed.

As long as an obstacle is not validated as being crossed, the following obstacles cannot be validated for the pilot concerned.

A lap is valid only when the obstacles have been crossed in the right order.

5.5.4 Crash - Collision between drones

In case a pilot crashes his/her drone, he/she can take-off again immediately.

It is not possible to have a crash due to a collision with another drone because the pilots can see the other drones but cannot be in touch with them.

5.5.5 Reflight

Reflights are not allowed because video issues and collisions between two drones cannot occur with a simulator.

Note - *An insufficient performance or stability of the internet connection may generate a problem during a race for the pilot concerned. Each pilot will be considered responsible for the quality of his/her internet connection. Complaints based on a disconnection during the race will not be accepted.*

5.5.6 Colours

A colour will be allocated to each drone to better identify it during the race.

6. E-DRONE RACING WORLD CUP

6.1. Events

The events recognised for the World Cup must be published on the FAI Calendar and run according to

the following rules.

6.2. Points allocation

Points allocated to each pilot depend on the placing in the event of the concerned pilot.

In the situation of a tie for any placing in an event, the pilots with that placing will share the points that would have been awarded to the places covered had the tie been resolved (round up the score to the nearest whole number of points).

The points allocated to pilots will depend on the number (N) of pilots who have effectively flown in the qualification stage.

a) N > 80

Placing	1	2	3	4	5	6	.....	80 and after
Points	80	79	78	77	76	75	.....	1

b) N < or = 80

Placing	1	2	3	4	5	6	.....	N-1	N
Points	N	N-1	N-2	N-3	N-4	N-5	.....	2	1

In addition, a bonus in points will be awarded as follows to the eight (8) best-placed pilots in the event:

- 1st place = N/2,5 rounded up to the nearest whole number with a maximum of 32 points.
- 2nd place = N/3 rounded up to the nearest whole number with a maximum of 27 points.
- 3rd place = N/3,5 rounded up to the nearest whole number with a maximum of 23 points.
- 4th place = N/4 rounded up to the nearest whole number with a maximum of 20 points.
- 5th place = N/5 rounded up to the nearest whole number with a maximum of 16 points.
- 6th place = N/7 rounded up to the nearest whole number with a maximum of 12 points.
- 7th place = N/10 rounded up to the nearest whole number with a maximum of 8 points.
- 8th place = N/20 rounded up to the nearest whole number with a maximum of 4 points.

6.3. Classification

The World Cup ranking will be determined by considering the points obtained by each pilot in the World Cup events in which he/she participated.

The total World Cup score of the pilot is the sum of its best three event results (numbers of points).

The winner of the World Cup is the pilot with the greatest total score for the concerned year, and so on for the ranking.

In the situation of a tie for first, second or third place of the World Cup ranking, placing will be determined by taking into account for the pilots in question, their best fourth result. If this does not break the tied pilots, then the placing will be determined by considering the sum of the points that they obtained in each of the three events considered for their World Cup score multiplied by the number of pilots who have flown in the event concerned; the winner is the one with the greatest total thus calculated.

6.4. Awards

The winner is awarded the title of e-Drone Racing World Cup winner for the concerned calendar year.

CIAM medals and diplomas will be awarded to the three best placed.

Other prizes may also be awarded as available.

- ANNEX -

SCENARIO A *(128 pilots selected from the elimination stage)*

8 pilots per race for the 1st and 2nd rounds - 4 pilots per race from 1/8th finals to finals

Composition of the races for the 1st round

Race 1	Placed 1	Placed 32	Placed 48	Placed 64	Placed 80	Placed 96	Placed 112	Placed 128
Race 2	Placed 16	Placed 17	Placed 33	Placed 49	Placed 65	Placed 81	Placed 97	Placed 113
Race 3	Placed 8	Placed 25	Placed 41	Placed 57	Placed 73	Placed 89	Placed 105	Placed 121
Race 4	Placed 14	Placed 19	Placed 35	Placed 51	Placed 67	Placed 83	Placed 99	Placed 115
Race 5	Placed 4	Placed 29	Placed 45	Placed 61	Placed 77	Placed 93	Placed 109	Placed 125
Race 6	Placed 12	Placed 21	Placed 37	Placed 53	Placed 69	Placed 85	Placed 101	Placed 117
Race 7	Placed 6	Placed 27	Placed 43	Placed 59	Placed 75	Placed 91	Placed 107	Placed 123
Race 8	Placed 10	Placed 23	Placed 39	Placed 55	Placed 71	Placed 87	Placed 103	Placed 119
Race 9	Placed 9	Placed 24	Placed 40	Placed 56	Placed 72	Placed 88	Placed 104	Placed 120
Race 10	Placed 5	Placed 28	Placed 44	Placed 60	Placed 76	Placed 92	Placed 108	Placed 124
Race 11	Placed 11	Placed 22	Placed 38	Placed 54	Placed 70	Placed 86	Placed 102	Placed 118
Race 12	Placed 3	Placed 30	Placed 46	Placed 62	Placed 78	Placed 94	Placed 110	Placed 126
Race 13	Placed 13	Placed 20	Placed 36	Placed 52	Placed 68	Placed 84	Placed 100	Placed 116
Race 14	Placed 7	Placed 26	Placed 42	Placed 58	Placed 74	Placed 90	Placed 106	Placed 122
Race 15	Placed 15	Placed 18	Placed 34	Placed 50	Placed 66	Placed 82	Placed 98	Placed 114
Race 16	Placed 2	Placed 31	Placed 47	Placed 63	Placed 79	Placed 95	Placed 111	Placed 127

Bracket for the competition

1st ROUND (8 pilots per race)	2nd ROUND (8 pilots per race)	1/8th FINALS (4 pilots per race)	QUARTER FINALS (4 pilots per race)	SEMI-FINALS (4 pilots per race)

Race 1
Race 2

Race 17 — Pilots placed 1 to 4 in races 1 & 2
Race 25 — Pilots placed 1 & 2 in race 17

Race 3
Race 4

Race 18 — Pilots placed 1 to 4 in races 3 & 4
Race 26 — Pilots placed 1 & 2 in race 18

Race 33 — Pilots placed 1 & 2 in races 25 & 26

Race 5
Race 6

Race 19 — Pilots placed 1 to 4 in races 5 & 6
Race 27 — Pilots placed 1 & 2 9in race 18

Race 7
Race 8

Race 20 — Pilots placed 1 to 4 in races 7 & 8
Race 28 — Pilots placed 1 & 2 in race 20

Race 34 — Pilots placed 1 & 2 in races 27 & 28

Semi 1 — Pilots placed 1 & 2 in races 33 & 34

Race 9
Race 10

Race 21 — Pilots placed 1 to 4 in races 9 & 10
Race 29 — Pilots placed 1 & 2 in race 21

Race 11
Race 12

Race 22 — Pilots placed 1 to 4 in races 11 & 12
Race 30 — Pilots placed 1 & 2 in race 22

Race 35 — Pilots placed 1 & 2 in races 29 & 30

Race 13
Race 14

Race 23 — Pilots placed 1 to 4 in races 13 & 14
Race 31 — Pilots placed 1 & 2 in race 23

Race 15
Race 16

Race 24 — Pilots placed 1 to 4 in races 15 & 16
Race 32 — Pilots placed 1 & 2 in race 24

Race 36 — Pilots placed 1 & 2 in races 31 & 32

Semi 2 — Pilots placed 1 & 2 in races 35 & 36

Final — Pilots placed 1 & 2 in semis 1 & 2
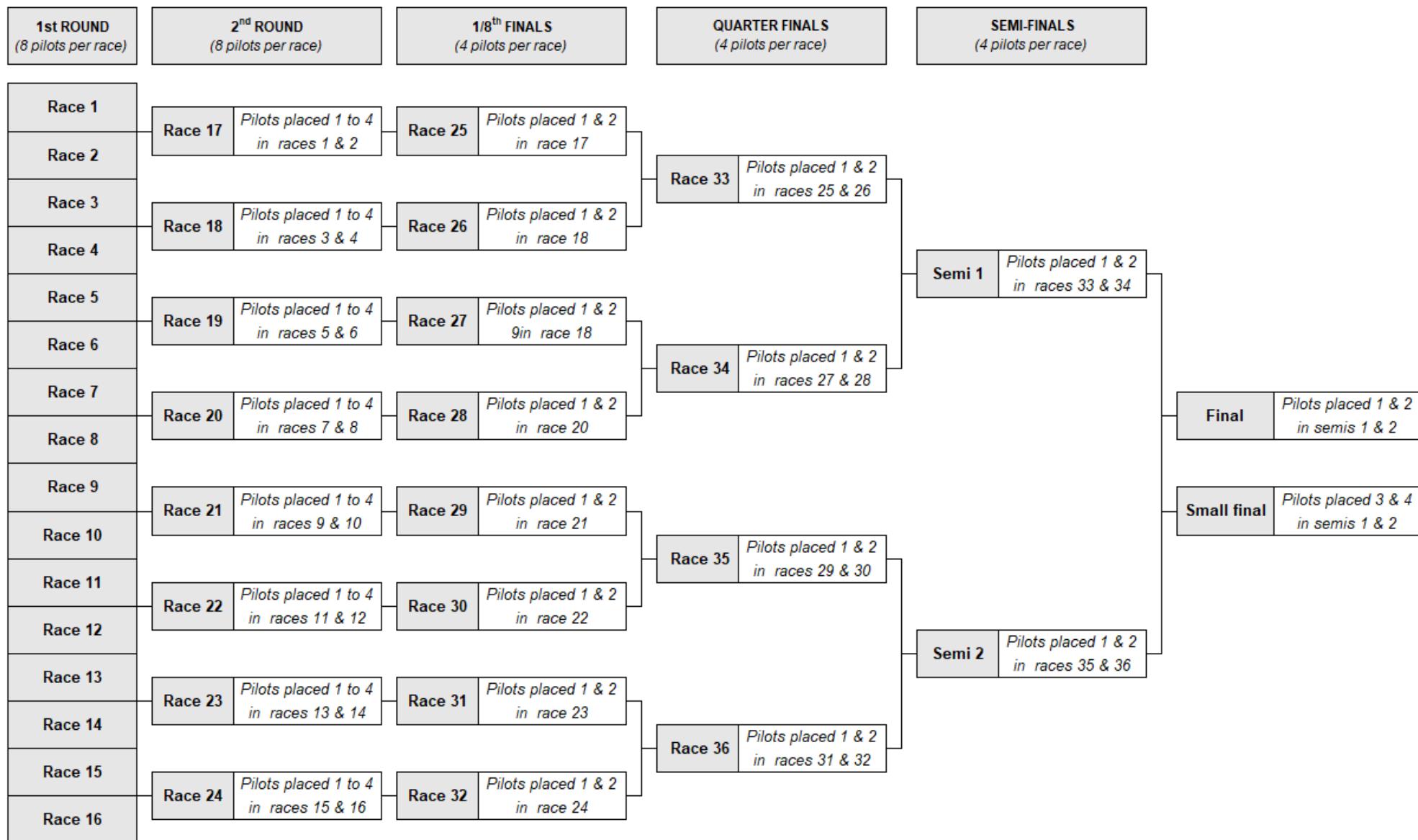
Small final — Pilots placed 3 & 4 in semis 1 & 2

SCENARIO B *(64 pilots selected from the qualification stage)*

8 pilots per race for the 1st round - 4 pilots per race from 1/8th finals to finals

Composition of the races for the 1st round

Race 1	Placed 1	Placed 16	Placed 24	Placed 32	Placed 40	Placed 48	Placed 56	Placed 64
Race 2	Placed 8	Placed 9	Placed 17	Placed 25	Placed 33	Placed 41	Placed 49	Placed 57
Race 3	Placed 6	Placed 11	Placed 19	Placed 27	Placed 35	Placed 43	Placed 51	Placed 59
Race 4	Placed 4	Placed 13	Placed 21	Placed 29	Placed 37	Placed 45	Placed 53	Placed 61
Race 5	Placed 3	Placed 14	Placed 22	Placed 30	Placed 38	Placed 46	Placed 54	Placed 62
Race 6	Placed 5	Placed 12	Placed 20	Placed 28	Placed 36	Placed 44	Placed 52	Placed 60
Race 7	Placed 7	Placed 10	Placed 18	Placed 26	Placed 34	Placed 42	Placed 50	Placed 58
Race 8	Placed 2	Placed 15	Placed 23	Placed 31	Placed 39	Placed 47	Placed 55	Placed 63

Bracket for the competition

1st ROUND (8 pilots per race)	1/8th FINALS (4 pilots per race)		QUARTER FINALS (4 pilots per race)		SEMI-FINALS (4 pilots per race)			
Race 1	Race 9	Pilots placed 1 to 4 in race 1	Race 17	Pilots placed 1 & 2 in races 9 & 10	Semi 1	Pilots placed 1 & 2 in races 17 & 18	Final	Pilots placed 1 & 2 in semis 1 & 2
Race 2	Race 10	Pilots placed 1 to 4 in race 2						
Race 3	Race 11	Pilots placed 1 to 4 in race 3	Race 18	Pilots placed 1 & 2 in races 11 & 12				
Race 4	Race 12	Pilots placed 1 to 4 in race 4						
Race 5	Race 13	Pilots placed 1 to 4 in race 5	Race 19	Pilots placed 1 & 2 in races 13 & 14			Small final	Pilots placed 3 & 4 in semis 1 & 2
Race 6	Race 14	Pilots placed 1 to 4 in race 6			Semi 2	Pilots placed 1 & 2 in races 19 & 20		
Race 7	Race 15	Pilots placed 1 to 4 in race 7	Race 20	Pilots placed 1 & 2 in races 15 & 16				
Race 8	Race 16	Pilots placed 1 to 4 in race 8						