DRONE ODYSSEY CHALLENGE 2018

ADVISORY NOTE

DATED 27 APRIL 2018

Main Organiser:

Co-Organiser:

With Support by:

Partners:

1. PURPOSE

This Advisory Note is to be read on top of the existing Challenge Manual dated 2 March 2018 and will provide information relevant to the Preliminaries to be held on 22 & 23 May 2018 at ITE College Central. Information explicitly stated within this Advisory Note will also supersede that found in the Challenge Manual.

2. REGISTRATION

- **The deadline for registration has been extended to 11 May 2018. Teams can register online at the following URL: http://goo.gl/YxDNmY. A registration fee of $25 applies per team.**
- All information pertaining to the competition may be found at the event website: www.droneodyssey.sg. For any specific queries regarding the competition, please send an email with the title addressed to the relevant category (e.g. <CAT A> Clarification about General Rules & Regulations) to the following email address: drone_odyssey@science.edu.sg

3. DAILY PROCEEDINGS FOR PRELIMINARIES

The Preliminaries will be held on 22 & 23 May 2018 for Cat A (Primary) & Cat B (Secondary) respectively. Teams will be assigned to either the AM (morning) or PM (afternoon) session and is thus expected to report at the stipulated timings in the table below for their respective sessions. Teams will be advised of the sessions assigned to them no later than one week after registration closes.

The tentative schedule for 22 & 23 May are as follows:

Time	Activity
0800H	Registration Begins - AM Session
0830H	Mission Briefing – AM Session
0845H	Commencement of AM Trial Session
1000H	Mission Run 1 – AM Session
1100H	Mission Run 2 – AM Session
1200H	Mission Run 3 – AM Session
1300H	End of AM Session

1230H	Registration Begins - PM Session
1300H	Mission Briefing – PM Session
1315H	Commencement of PM Trial Session
1430H	Mission Run 1 – PM Session
1530H	Mission Run 2 – PM Session
1630H	Mission Run 3 – PM Session
1730H	End of PM Session

All participating teams should expect the following during the course of the preliminaries on that day:

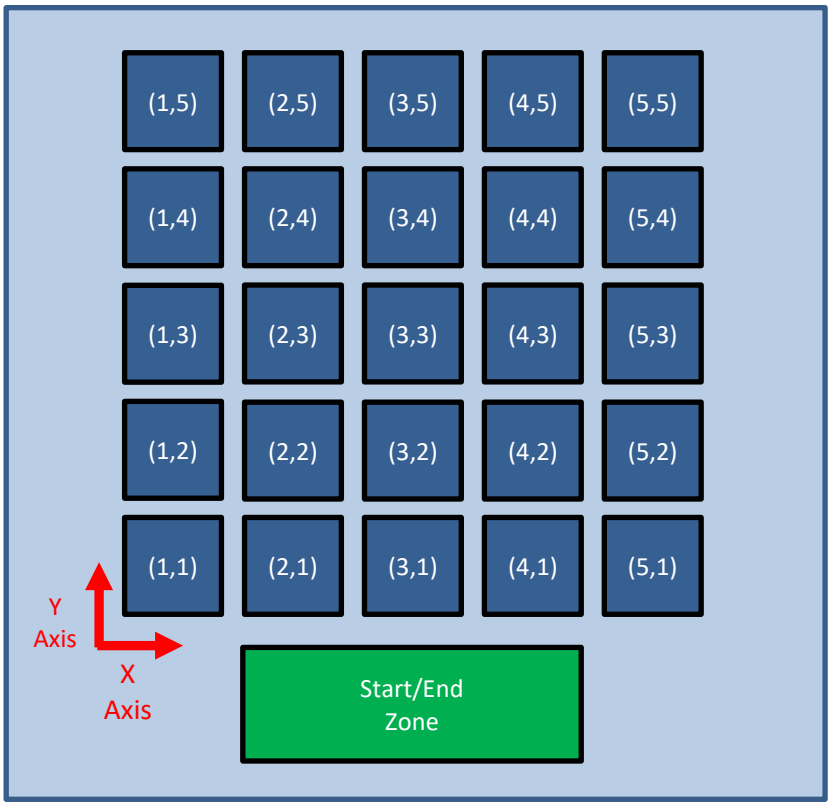
- Registration will take place at the Registration Booth located in the layout plan below. While registration is slated to commence at 8:00am and 12:30pm for the AM & PM sessions respectively, teams are advised to arrive early to prevent potential delays or bottlenecks. Teams reporting for registration later than this stipulated timing without extenuating reasons may be barred from competition at the discretion of the Drone Odyssey Challenge 2018 organising committee.

Map of ITE College Central

- Following registration, teams will be ushered to the Competition Hall / Holding Rooms. All teams must stay within these competition areas and follow instructions from the officials. No teams are allowed to venture beyond these areas without informing the officials.
- Teams will be brief on the proceedings on the day and issued specific instructions pertaining to the challenge during the Mission Briefing. Following which, teams will be given time to practise for their missions runs during the trial session.
- All participating teams will be expected to complete **THREE (3)** mission runs lasting throughout the day. Teams will be allowed time in between each mission runs to practise as well as prepare. The total score out for the **THREE (3)** mission runs will be used to determine the final rankings for the preliminaries. In the case of a tie in scores, the total time for the **THREE (3)** mission runs will be used as a tie-breaker.
- The top **TWENTY (20)** performing teams from each category will be invited for the finals. Details for the final missions will only be made known to all finalist teams following the conclusion of the preliminaries.

4. GAMEPLAY

The basic premise of the challenge for the preliminary rounds is for all teams to code a drone to autonomously navigate their drones within a 5 X 5 grid as shown below:



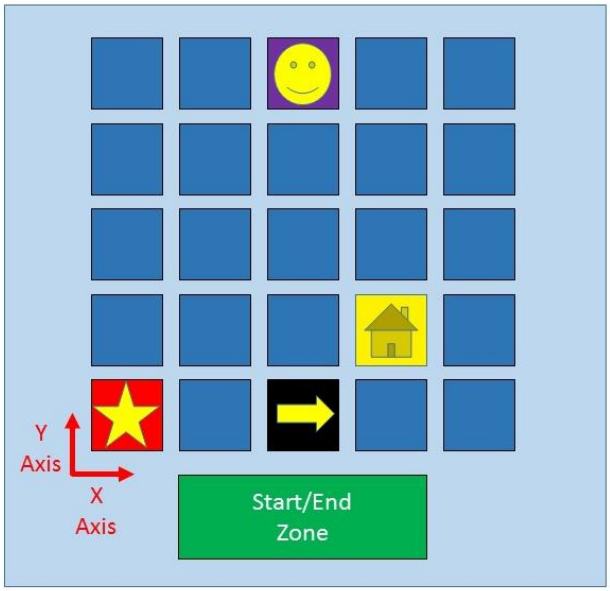
For illustrative purposes only.

Actual playfield layout may differ in actual look.

Category A – Primary Schools

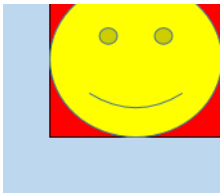
All participating Cat A teams are expected to perform the following during the mission runs:

- Each team will draw 4 random co-ordinates prior to the start of each mission run. Each co-ordinate drawn after the first one will cannot be in the same row or column as the one before. For example, “Team C.Alpha” draws (3,2) for the first coordinate and thus the second co-ordinate cannot be (x,2) or (3,y) where x/y is a number from 1 to 5. Subsequent co-ordinates follow the same rule and thus is dependent on the co-ordinate drawn prior. No same co-ordinate can be drawn twice in each mission run.
- Officials will then place pictures of landmarks/objects/threats at each of the co-ordinates. For example, a team draws (1,1), (3,5), (4,2) and (3,1). The playfield will look something like this:



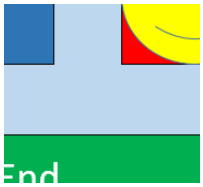
For illustrative purposes only.

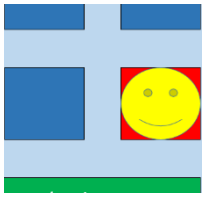
- Teams will then be given 5 minutes to code and autonomously navigate their drones to each of the co-ordinates drawn in any sequence the team may prefer. Team members may assign themselves different roles as a strategy to complete everything on time. Timing will start when the team is given instruction by the Referee to start coding. Autonomous flight can start any time after during the 5 minutes given.
- At each co-coordinate visited, the team need to hover and stabilise the drone sufficiently to take a picture of the landmark/object/threat using the drone’s vertical camera. The picture taken is considered valid as long as it is sufficiently clear to identify the landmark/object/threat visually and covers over 50% of the frame of the picture. For example:



Acceptable

Covers >50% of Picture





Not Acceptable

Covers <50% of Picture. Drone is off target or flying too high above the tiles.

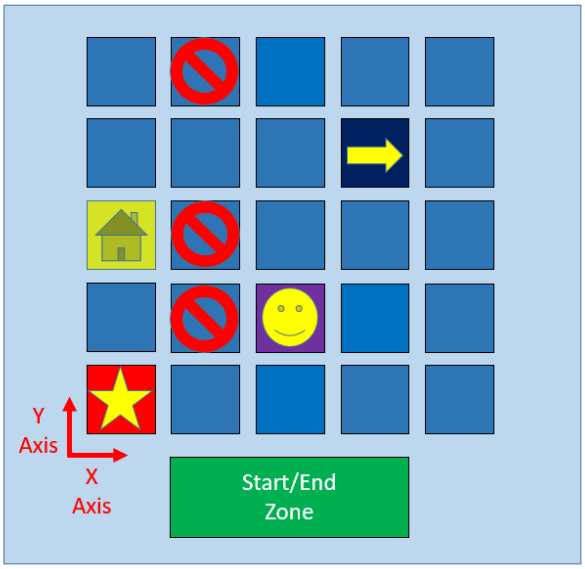
- The drone may start from anywhere within the Start/End Zone. Timing will end when the drone lands back within the Start/End Zone. If the team is unable to complete the mission run for any reason, ie drone failure, crashes, and etc, within the stipulated time, a maximum time of 5 minutes will be recorded down.
- Scoring will be done at the end of the 5 minutes run. Teams need not fully complete a mission run, ie land back at the Start/End Zone to score any points.
- Restarts are allowed. However, the timing will continue to run and points scored in the prior unsuccessful attempt will not be counted.
- The scoring rubric for Cat A Preliminaries will be as follows:

Task	Score
Every landmark/object/threat identified	+25 pts *(+100 pts max)*
Successful landing back in Start/End Zone	+20 pts
Total:	120 pts

Category B – Secondary Schools

All participating Cat B teams are expected to perform the following during the mission runs:

- Before the start of each mission run, a specific column or row of the grid will have 3 of the co-ordinates lying along it designated as a “No-Fly” zone. Drones are not permitted to pass above these co-ordinates. A penalty will be imposed if this rule is breached.
- Each team will then draw 4 random co-ordinates prior to the start of each mission run. These co-ordinates cannot be the same co-ordinates as those defined as part of the “No-Fly” zone. Each co-ordinate drawn after the first one will cannot be in the same row or column as the one before. For example, “Team C.Bravo” draws (4,2) for the first coordinate and thus the second co-ordinate cannot be (x,2) or (4,x) where x/y is a number from 1 to 5. Subsequent co-ordinates follow the same rule and thus is dependent on the co-ordinate drawn prior. No same co-ordinate can be drawn twice in each mission run.
- Officials will then place pictures of landmarks/objects/threats at each of the co-ordinates. For example, a team draws (1,1), (3,2), (1,3) and (4,4) with (2,2), (2,3) and (2,5) designated as “No-Fly” zones. The playfield will look something like this:



For illustrative purposes only.

- Teams will then be given 5 minutes to code and autonomously navigate their drones to each of the co-ordinates drawn in any sequence the team may prefer. Team members may assign themselves different roles as a strategy to complete everything on time. Timing will start when the team is given instruction by the Referee to start coding. Autonomous flight can start any time after during the 5 minutes given.
- At each co-coordinate visited, the team need to hover and stabilise the drone sufficiently to take a picture of the landmark/object/threat using the drone’s vertical camera. The picture taken is considered valid as long as it is sufficiently

clear to identify the landmark/object/threat visually and covers over 50% of the frame of the picture. For example:

Acceptable

Covers >50% of Picture

Not Acceptable

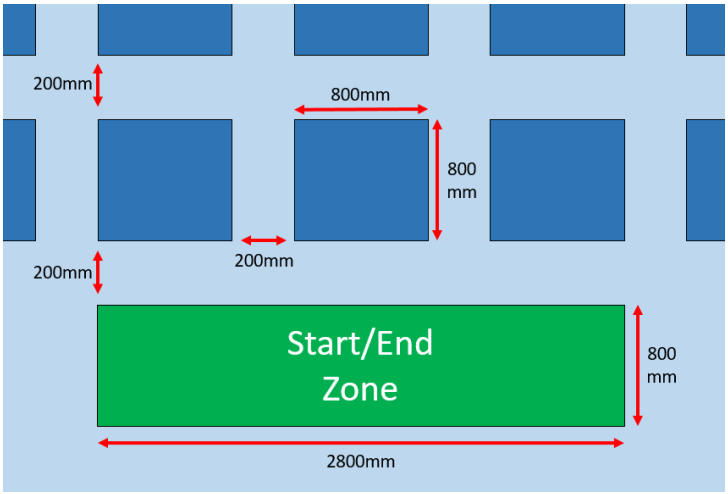
Covers <50% of Picture. Drone is off target or flying too high above the tiles.

- The drone may start from anywhere within the Start/End Zone. Timing will end when the drone lands back within the Start/End Zone. If the team is unable to complete the mission run for any reason within the stipulated time, ie drone failure, crashes, and etc, a maximum time of 5 minutes will be recorded down.
- Scoring will be done at the end of the 5 minutes run. Teams need not fully complete a mission run, ie land back at the Start/End Zone to score any points.
- Restarts are allowed. However, the timing will continue to run and points scored in the prior unsuccessful attempt will not be counted.
- The scoring rubric for Cat B Preliminaries will be as follows:

Task	Score
Every landmark/object/threat identified	+25 pts *(+100 pts max)*
Successful landing back in Start/End Zone	+20 pts
Flying over “No-Fly” zone	-20 pts per incident
Total:	120 pts

5. PLAYFIELD SPECIFICATIONS

The playfield sits within an approximate 6m X 6m space. The playfield consists of 25 tiles, each of dimensions 800mm X 800mm with a spacing of 200mm between edges. The Start/End Zone is a 2.8m x 0.8m space. See illustration:



Not to scale.

For illustrative purposes only.

9. THINGS TO NOTE

- Only Parrot Mambo programmable minidrones (www.parrot.com) and its associated Parrot-branded accessories are allowed. Teams may use any programming language to code their drones. No modifications to the stock Parrot Mambo are allowed for the preliminaries.
- Teams are advised to bring chargers and sufficient spare batteries for the competition. Teams are allowed to charge their batteries within the competition hall and Holding Rooms. Only official battery packs are allowed and should be charged according to the manufacturer's recommendations.
- Likewise, teams need to ensure that there is sufficient charge for their smart devices to last through the competition. Else, they are advised to bring a suitable charger for the smart device.
- Teams are to bring their own drones and accessories. However, there will be limited spare drones and IPads provided to teams in event of technical difficulties.

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