



Category E: Unconventional



Competition Category E



- Challenge
- General Rules & Regulations
- Awards



Challenge



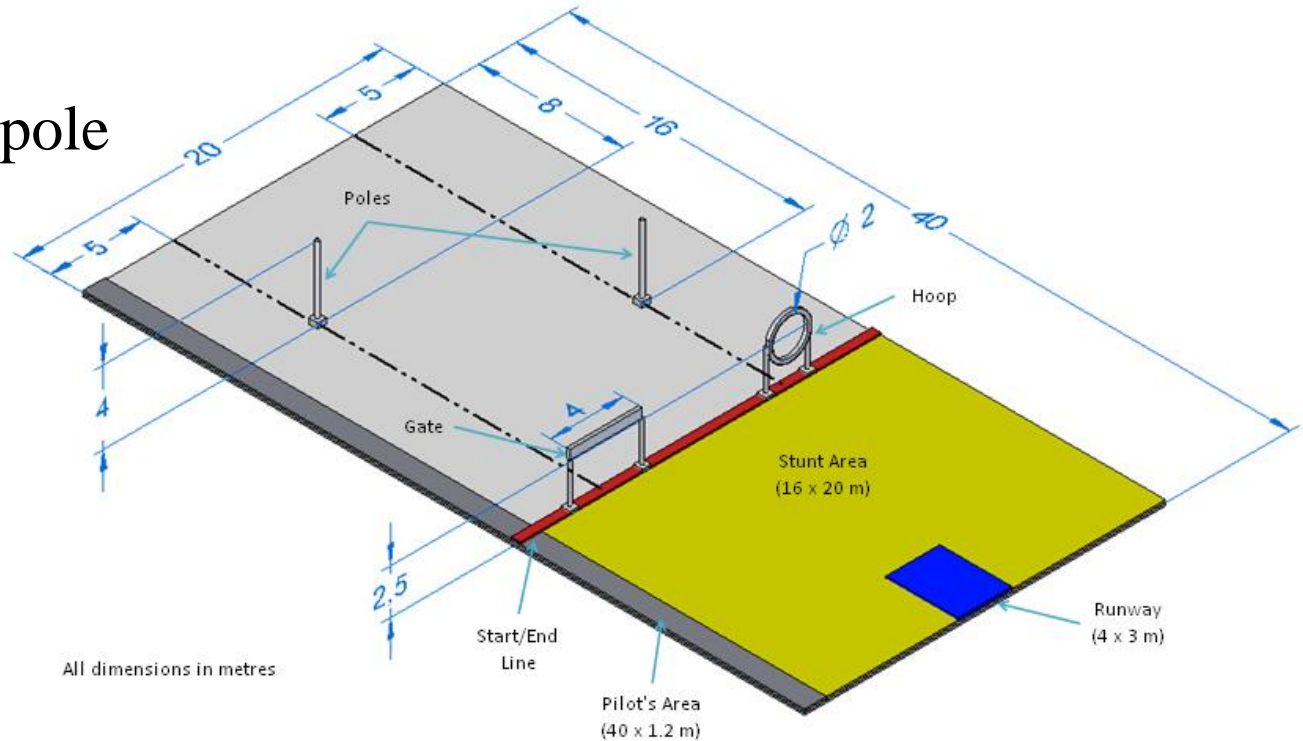
Design and build a unique and innovative air platform to perform a series of tasks, as well as to “WOW” the audience.



Mission – Phase 1 (Circuit Flying)

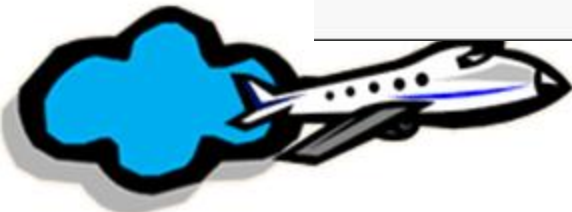


1. Take-off from runway
2. Fly through a gate
3. Figure-of-8 through pole
4. Fly through a hoop
5. Land on runway

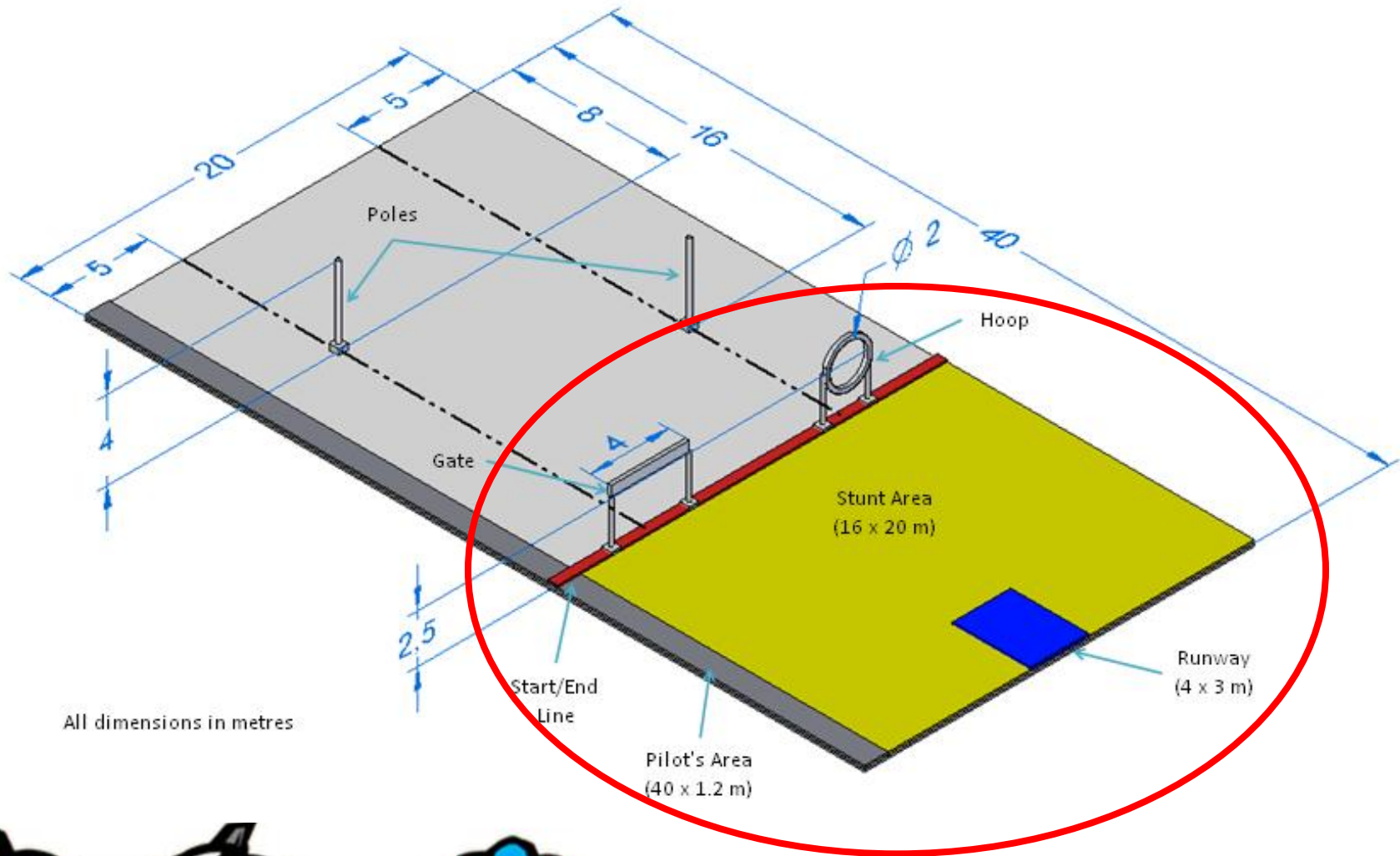


Mission – Phase 1 (Circuit Flying)

Flying Circuit 3D animated video



Mission – Phase 2 (Stunts Performance)



All dimensions in metres



Rules and Regulations (I)



- Open to public, except DSO National Laboratories and Science Centre Singapore staff
- Each team consist ≤ 5 members
- No conventional flying machine design allowed, such as the following:
 - *Helicopter* defined as one main rotor and one tail rotor.
 - *Fixed wing aircraft* defined as one fuselage with wings (mono wing / biplane / tri-plane) with tail or flying wing.
 - *2D Kite model* flying machines such as IFOs.
 - Anything out of this definition will be considered. If team is unsure, please check with SAFMC way before the competition.





Rules and Regulations (II)

- Each team is to design and build a radio controlled flying machine based on the following guidelines:
 - No kits or COTS flying machines are allowed
 - Wingspan $< 2\text{m}$ and max take-off weight $< 1\text{kg}$
 - Only electric flight is allowed
 - Brush and brushless motors are allowed but no modification to the motors
 - No internal combustion / gasoline engines / flammable substances allowed
 - Hand-launched / ground take-off only
- Submit two 4R sized photo during presentation. No major changes to flying machine after presentation.





Rules and Regulations (III)

- Only **29.700–30.000 MHz** R/C Frequency ranges are allowed (set by IDA)
- No charging of batteries within the competition hall
- Only Lithium-Polymer (**Li-Po**), Nickel Metal Hydride (**Ni-MH**) and Nickel-Cadmium (**Ni-Cd**) batteries are allowed
- No personnel allowed in the flying area, except the pilot during competition
- No transmitter (RC, data link and video link) is allowed to be turned on without permission
- The same flying machine must be used for both the Circuit and Stunt Mission for each attempt.

For a more complete list, please refer to the [challenge booklet](#) and www.safmc.com.sg



Cat E Awards



	How do I/we win that?	Weightage for the Championship Award
<i>Championship</i>	Overall Champion	----
<i>Performance</i>	Best performance in the flying field	50%
<i>Aesthetic</i>	Most artistically decorated flying machine	0%
<i>Creativity</i>	Best innovative and original flying machine design	20%
<i>Theory of Flight</i>	Best knowledge in flight tests and fabrication of the flying machine	15%
<i>Presentation</i>	Best exhibit creativity, fluency in the presentation of their team's work	15%



Scoring System for Flying Circuit



Flying Circuit	Points
Successful takeoff from within runway area	5
Fly through gate	5
Complete Figure of 8 flight	10
Fly through hoop	5
Successful landing within the runway area <i>after <u>Circuit</u> or <u>Stunt Mission</u></i>	5
Touch penalty	-3



Scoring System for Stunt Performance



Stunt Performance	Definitions	Points
Level of difficulty/complexity	Perform a number of stunts consecutively	5
Artistic Impression / Wow-factor	Perform graceful stunts which no other teams have done before	10
Smoothness of execution	Perform stunt after stunt without any abrupt change in flight	5

- Please note allocated points are missing in Challenge Booklet page 38.

