IDE SERIES

2026 SINGAPORE

IDE ROBOTICS

(Primary Schools – LEGO & OPEN Category)
Competition Manual

Updated: 1 March 2026

Event Organiser:

NULLSPACE®

vm EDUCATION

PREFACE

In the vibrant city-state of Singapore, robots have become an inseparable part of everyday culture, quietly woven into the fabric of society. From the bustling hawker centres of Maxwell Market to the colourful shophouses of Katong, robots serve kopi and kaya toast with a precision matched only by their friendly greetings in Singlish: “Lai, kopi C kosong coming right up!” The gentle whir of their motors blends seamlessly with the rhythm of daily life, as families, young and old, accept them as neighbours, colleagues, and even friends.

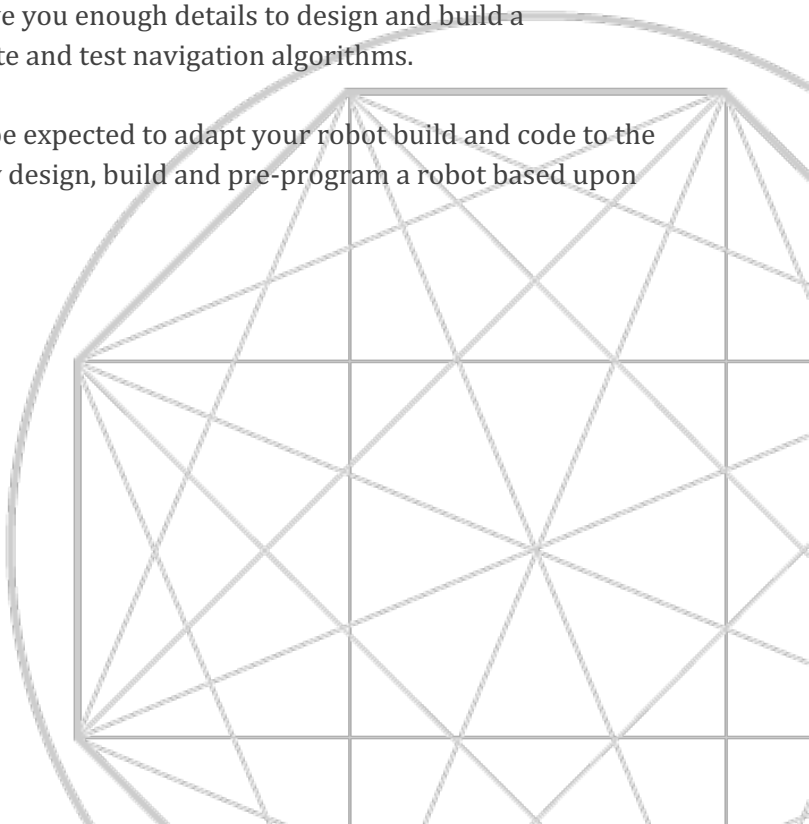
In HDB blocks, robots assist the elderly with grocery shopping, deftly navigating void decks and lifts, always careful to greet “Uncle” and “Auntie” with respectful bows. At Changi Airport, they guide tourists through the sprawling terminals, offering directions in Mandarin, Malay, Tamil, and English, reflecting Singapore’s multicultural identity. School children, inspired by the city’s push for STEM education, eagerly assemble robots in makerspaces, dreaming of the day their inventions will join the ranks of service bots in Gardens by the Bay or Sentosa.

During festivals like Hari Raya and Deepavali, robots help decorate homes with glittering fairy lights, ensuring the spirit of community shines brightly. On weekends, families gather at Marina Bay, where robot performers stage dazzling light shows, telling stories of Singapore’s heritage through synchronised movement and holographic art. Some robots have even taken up the role of “kampung ambassadors,” preserving traditional games and crafts, teaching younger generations the value of culture and history.

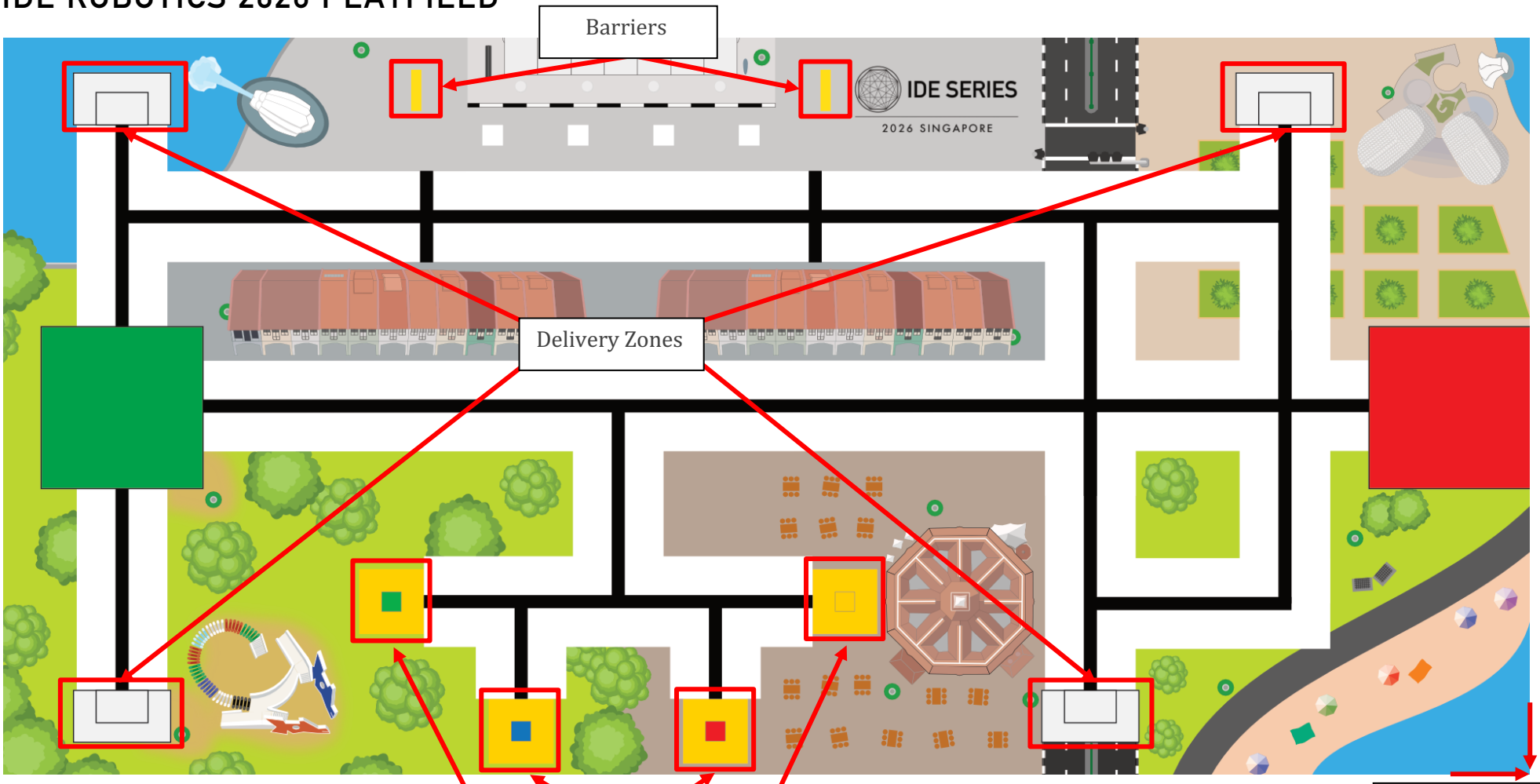
Despite their ubiquitous presence, robots in Singapore are not seen as mere machines but as partners in progress—symbols of the nation’s forward-thinking spirit and harmonious diversity. Through innovation and heart, Singapore’s robots and people work side by side, shaping a future where technology and tradition thrive together.

Note that this manual is not the final competition rules – those will be released only on the actual competition day itself. This manual is meant to give you enough details to design and build a preliminary design for the robot as well as to create and test navigation algorithms.

During the actual competition day itself, you will be expected to adapt your robot build and code to the new rules/requirements accordingly, but you may design, build and pre-program a robot based upon the details outlined in this document.



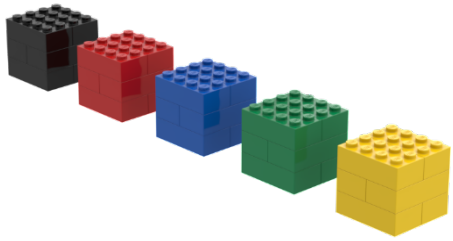
IDE ROBOTICS 2026 PLAYFIELD



If you have a playfield wall that is wider than the mat, alignment is to the bottom right corner as shown on the playfield above.

GAME PLAY

Skills Required



1) Participants will need to build a robot attachment which is able to grab/transport LEGO cubes that look like this: 4 studs (length) x 4 studs (breadth) x 4 bricks (height).

2) No colour scanning required for primary mission.

Released Objectives:

1) 2 barriers will be placed on the yellow markings above the "Scanning Zone". If the barriers are unmoved, points will be awarded.
2) Use a grabbing/transportation mechanism to collect and move each of the LEGO cubes from **Collection Zones to the Delivery Zones**. The exact delivery location will only be announced on the competition day.

Note:

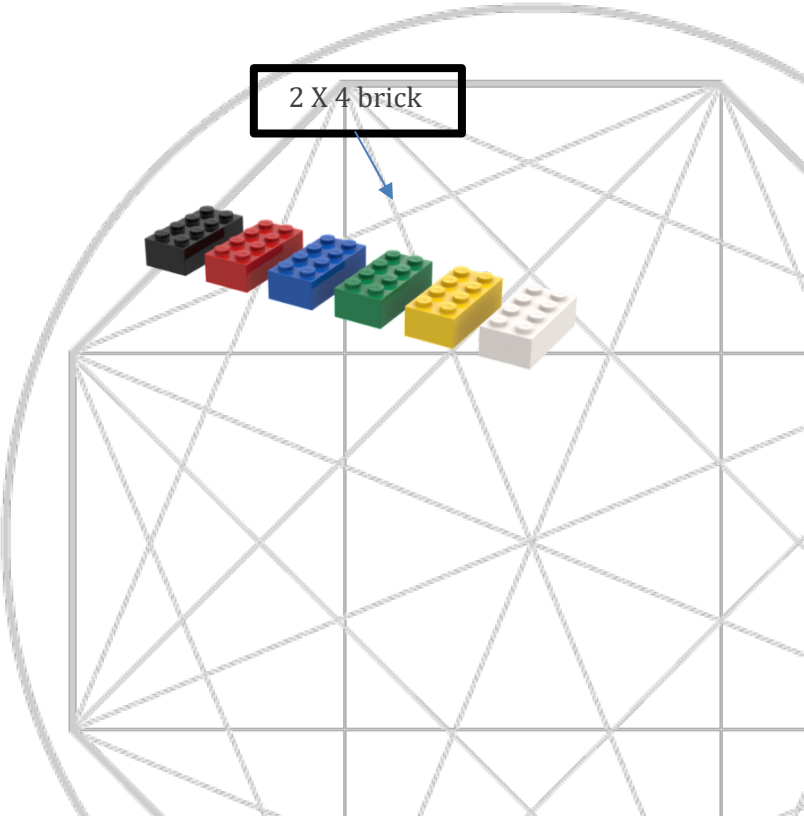
- The full competition mission and scoring will only be released during the competition day itself.
- Participants are allowed to bring a pre-built robot and program to the competition.
- The robot is only allowed to have one executable program. Judges must have the opportunity to clearly identify one program on the robot

Playfield and Logistics

It is not compulsory for teams to purchase the IDE Robotics playfield. Nevertheless, it is encouraged to have one playfield for practice.

For teams that wish to purchase the IDE Robotics Prop Elements which is used for the competition, the set is available for purchase at $40 per set. Ordering will be done through the competition registration form. The contents of the brick set are as follows:

Colour	Quantity
Red	12
Green	12
Blue	12
Yellow	12
Black	12
White	6



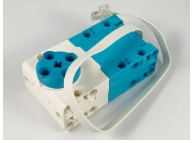
COMPETITION RULES

General:

1. No external help is to be rendered in this competition. This includes receiving direction, contribution, construction of any kind from the team mentor or any party or person not registered as a member of the team. Failure to comply with this rule will be dealt seriously and may result in the team's disqualification.
2. Teams should prepare and bring all the equipment, software and portable computers they need during the tournament.
3. Testing playfields will be set up for practice prior to the competition. Teams will queue up in an orderly manner and to refrain from hogging the playfields.
4. All decisions by the competition officials and organising parties are final.

LEGO CATEGORY Parts and Size Restrictions

1. Teams are expected to use their own LEGO® SPIKE Prime or EV3 sets, batteries and laptops.
2. The robots must use parts solely from LEGO® Sets. Teams are allowed to use only one controller (SPIKE Prime or EV3). The number of motors or sensors is restricted only by the number which the controller/hub can handle (e.g., 4 Motors and 4 Sensors for EV3, or 6 motors/sensors for SPIKE Prime). Multiplexers will not be allowed. The number of parts is not limited as long as they are LEGO® parts.
3. Mixing of parts from both platforms (EV3 / SPIKE Prime) is allowed.
4. Robots will be inspected before each run. Teams with parts which do not comply to the rules will be disqualified.
5. The size of the robot will be strictly limited to **250mm x 250mm x 250mm** at the starting area. All extensions beyond the size limit must be deployed autonomously.
6. No form of remote control or wireless programming is allowed during the course of the run of the robot.
7. Only LEGO® Mindstorms® EV3, EV3 Classroom, SPIKE Prime, or Pybricks programming platforms are accepted.
8. **HiTechnic sensors are not allowed.**
9. **Use of LEGO® Powered Up electric motors are allowed.**
10. List of Approved Sensors and Motors (Table 1)

 EV3 Large Motor	 EV3 Light/Color Sensor	 EV3 Touch Sensor	 EV3 Ultrasonic Sensor	 EV3 Gyro Sensor
 EV3 Medium Motor	 Force Sensor	 Large Motor	 Medium Motor	 Color Sensor
 Distance Sensor	 Large Motor (Powered Up)	 Medium Motor (Powered Up)		

OPEN CATEGORY Parts and Size Restrictions

- Teams are expected to bring their own robots that can be constructed from any robot kits. No sharing of robots between teams allowed.
- Robots must have a single 2-state physical switch or button that is not obstructed from view to the judges that is used to start and stop the robot during a competition run.
- Batteries used must be reasonably safe and robot construction should take into account of potential short circuits.
- Robots using laser components are restricted only to Class 1 lasers. Proof of laser class needs to be submitted for verification.
- The size of the robot will be strictly limited to **250mm x 250mm x 250mm** at the starting area. All extensions beyond the size limit must be deployed autonomously.
- Teams have allocated time to program and test their robots on the competition day. Following which, during the competition runs, no further modifications may be made.
- Robots are to be completely autonomous and finish the mission without interference from any external influence nor any wireless communication.
- LEGO® controllers are also allowed here, with no restrictions on number of sensors and motors – multiplexes are also allowed.

Operation Rules

1. A total of 3 Hours will be given for robot preparation and testing.
2. At the end of the 3 Hours, no additional robot runs will be allowed.
3. During the competition run, only the designated robot operators may operate the robot. Robot operators may only touch the robot inside the designated START or END zone.
4. After the robot leaves the START or END zone, no participant or other person may touch the robot or otherwise physically interfere with the run.
5. Robot program must be activated manually via EV3/SPIKE Prime screen options (LEGO® SPIKE Prime or EV3 sets) or via a single 2-state physical switch or button (Non- LEGO® robot kits). No form of wireless programming or operation is allowed during the competition run.
6. Referee will count down 3 – 2 – 1 – START. Robot operator will then start the robot immediately.
7. Robot run is limited to 2 minutes. When the robot run has hit the 2-minute mark, judges will pause the robot and calculate the score from there.

Violations

1. The Referee(s) have the ultimate authority during the competition. Their decisions are final.
2. No modifications may be made to the playfield or LEGO® cubes, or LEGO® pieces from which the robot is made. Violations to these will result in disqualification.
3. Team members must not interfere or assist the robot in any way during its run. No wireless robot communication is allowed during the 2 competition runs. Teams found in violation will be immediately disqualified.