

Capelli Sports Inspire – Smart Logistics (Season 1).

Age group: 8–12 years old. This challenge is designed for younger competitors who can already code simple autonomous movement.

1. Introduction

Students program a robot to collect specific Team-Gear Cubes from the Lockers and deliver them to the correct preparation zones before the match, while protecting the reserved kit. This highlights the Capelli Sports identity: planning, precision, disciplined execution before game time.

2. Mission Story

It's just before kickoff. The players are warming up.
But not all the equipment made it to the sideline.

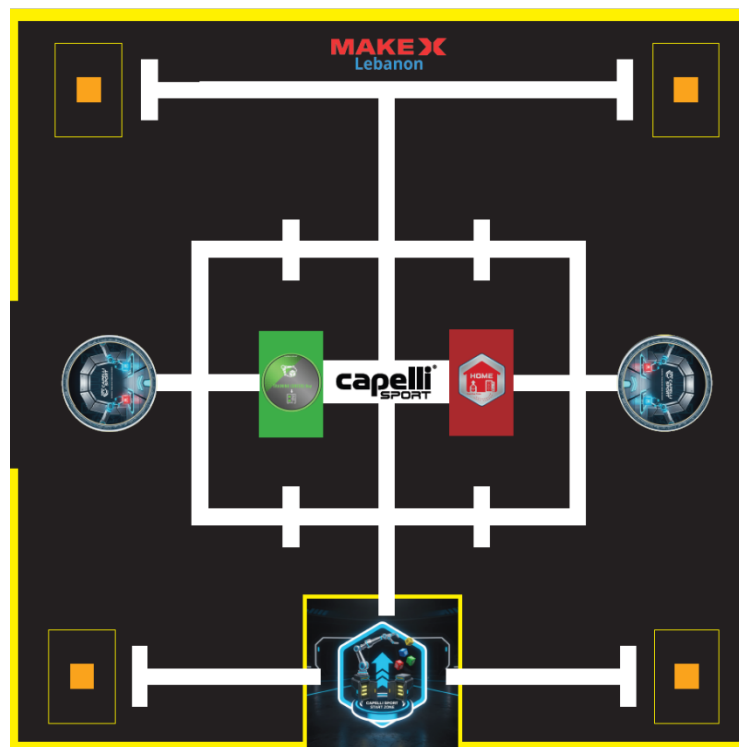
Your robot is the logistics assistant:

1. Go to the storage Lockers around the facility.
2. Retrieve the correct Team-Gear Cubes.
3. Deliver each piece of gear to its correct bay:
 - HOME Bay (RED) = official match gear.
 - TRAINING Bay (GREEN) = warm-up gear.
4. Leave the Reserved Kit (BLUE cube) untouched in stock.

This scenario mirrors real match prep: organized collection, correct routing, and no unnecessary disturbance.

3. Field Layout

Use the field you shared (black background, white line network, colored bays, Capelli logo in the middle). We define each part below so referees, coaches, and kids all talk the same language.



3.1 START Area

- The **START Area** is the zone marked by the **blue arrow** — the futuristic/tech-looking panel.
- This zone is on the opposite side of the board from the “MAKEX Lebanon” logo.
- At T=0 (before GO), the entire robot (chassis + any attachments) must be fully inside this START Area and not crossing its boundary.

This START Area also becomes your “return home” zone for the end-of-run parking bonus.

3.2 Lockers (Pickup Points)

- The **four yellow squares with an orange square (4*4 cm) inside** are the **Equipment Lockers**.
- Each Locker is a storage location.
- Before each match, cubes are placed inside these Lockers.
- During the match, the robot must navigate to these Lockers, extract cubes, and bring them to the correct bay.

3.3 Delivery Bays (Drop Zones)

In the center of the white line network there are two colored rectangles:

- **HOME Bay (RED rectangle)**
- **TRAINING Bay (GREEN rectangle)**

Delivery rules:

- RED cubes must end in the RED HOME Bay.
- GREEN cubes must end in the GREEN TRAINING Bay.

Only these two center bays give delivery points.

4. Game Elements

4.1 Team-Gear Cubes (RED / GREEN)

- These are the mission objects.
- Physical spec: **each cube is 5 cm × 5 cm × 7 cm.**
- Color:
 - **RED cube** = match gear → must be delivered to the HOME Bay (RED).
 - **GREEN cube** = training gear → must be delivered to the TRAINING Bay (GREEN).

These cubes are what your robot is supposed to “logistically deliver.”

4.2 Reserved Kit Cube (BLUE)

- There is also one **BLUE cube** representing the reserved kit.
- Physical spec: also **5 cm × 5 cm × 7 cm.**
- The BLUE cube is stocked in a Locker to simulate gear that must stay in inventory and must **not** be moved.
- If it gets displaced significantly, that counts as “BLUE was moved,” which is a penalty.

4.3 Pre-Match Placement

Right before each match:

1. The referee randomly draws **three (3) active Team-Gear Cubes.**
 - Each drawn cube will be either RED or GREEN.

2. The referee places those 3 active cubes into three different Lockers (3 of the 4 corner Lockers).
3. The referee places the **BLUE Reserved Kit cube** into the remaining Locker.
4. The referee notes which cubes (what colors) went where on the score sheet.

So at the start of every run:

- Three Lockers contain mission cubes (RED or GREEN).
 - One Locker contains the BLUE Reserved Kit cube.
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5. Match Procedure

Step 1 – Setup

- Referee completes the cube placement as described above.
- Referee confirms the START Area and field are clean.

Step 2 – Robot Placement

- The team places the robot entirely inside the **blue-arrow START Area**.
- The robot cannot start with a cube already grabbed.
- The robot must fit inside START at T=0, including any scoop/arm.

Step 3 – Countdown

- Referee announces: “**3... 2... 1... GO.**”
- Match timer starts.
- Standard match duration is **150 seconds**, unless officially changed by the organizer.

Step 4 – Autonomous Run

- After GO, the robot must operate autonomously.
No touching the robot, no touching cubes by hand, no joystick-style driving.
The category is “autonomous navigation after GO.”

Robot’s mission during the run:

1. Leave START and follow the white line network.
2. Reach a Locker (yellow/orange corner square).
3. Extract the cube from that Locker.
 - Cubes are 5×5×7 cm, so designing a pusher, scoop, or clamp that can handle that size is part of the challenge.

4. Deliver the cube:
 - If it's RED → place / push it fully into the RED HOME Bay.
 - If it's GREEN → place / push it fully into the GREEN TRAINING Bay.
5. Repeat for all active cubes.
6. Avoid knocking out or meaningfully shifting the BLUE cube.

Step 5 – Stop at Finish

- Before time runs out, the robot should navigate back and park partially inside one of the designated finish areas on the right and left of the map.
- This is now your “parking bonus.”

Step 6 – STOP

- When the referee calls “STOP,” everyone freezes.
- The robot must stop moving.
- The referee inspects the board for scoring.

6. Scoring

The scoring system follows the Inspire brief:

- Deliver correct gear to the correct bay,
- Park cleanly at the end,
- Keep the BLUE kit untouched,
- Avoid wrong drops and avoid disturbing BLUE.

6.1 Correct Deliveries

+20 points for each correct delivery.

A delivery is correct if, at STOP:

- A RED 5×5×7 cm cube is fully inside the RED HOME Bay, OR
- A GREEN 5×5×7 cm cube is fully inside the GREEN TRAINING Bay.

You only ever have 3 active cubes per match, so max delivery score is **+60 points total** (3 × +20).

“Fully inside” means the whole 5×5×7 cm footprint of the cube is clearly inside the colored zone, not hanging out.

6.2 Return-to-Start Bonus

+10 points if, at STOP, the robot is partially parked back inside the blue-arrow Finish Area.

6.3 BLUE Reserved Kit Bonus

+10 points if the BLUE cube (5×5×7 cm) is still in its Locker in essentially the same position:

- It has not been clearly pushed out or dragged away.

6.4 Wrong-Bay Penalty

−10 points for each cube left in the wrong bay:

- Example: a GREEN cube ends in the RED HOME Bay at STOP.
- That cube also does NOT score +20 because it's not correctly delivered.

6.5 Reserved Kit Disturbance Penalty

If the BLUE Reserved Kit cube is clearly moved (knocked clearly out of its Locker, displaced more than ~1 cm, carried, etc.):

- You LOSE the +10 BLUE bonus,
- AND you take an additional **−20 points** penalty.
This models “you messed up stock that was supposed to stay in reserve.”

6.6 Total Match Score

Match Score =

(correct deliveries × +20)

- (+10 Return-to-START bonus if parked fully in START)
- (+10 BLUE Safe bonus if BLUE stayed in its Locker)
 - (−10 penalty for each cube in the wrong bay)
 - (−20 penalty if BLUE was disturbed)

This total is what goes to rankings.

7. Robot Technical Rules

7.1 Platform

- Robot must be an educational robot from makeBlock (mBot2 / CyberPi ..).
- Must run on internal battery only.
- No projectiles, blades, flames, liquids, or anything dangerous.

7.2 Size at Start

- At T=0, the entire robot must fit fully inside the blue-arrow START Area, without sticking outside.
- You cannot pre-load a cube in START.
- After GO, the robot can extend arms / scoops etc., as long as it does not damage the mat or structures.

7.3 Handling Cubes

- All active cubes (RED / GREEN / BLUE) are **5 cm × 5 cm × 7 cm** blocks.
- The robot may:
 - push them from the front,
 - scoop them with a shovel-like plate,
 - drag them,
 - partially lift/carry them.

7.4 Autonomy Requirement

- This category is **autonomous navigation after GO**.
- No human is allowed to:
 - touch the robot,
 - manually re-aim a cube,
 - steer live with a controller, once the countdown ends.
- The only allowed “control” after GO is what the robot is already programmed to do (line following, distance sensing, etc.).

7.5 Field Protection

- The printed mat, Lockers, bays, and branding are tournament property.
 - If the robot deliberately rips, peels, punctures, or breaks elements, the Head Ref can invalidate the run.
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8. Refereeing & Validation

When the referee calls STOP:

1. The robot must stop moving.
2. The referee freezes the scene and evaluates:

(a) Deliveries

- Check each of the up to 3 active cubes:
 - Is each RED cube fully in the RED HOME Bay?
 - Is each GREEN cube fully in the GREEN TRAINING Bay?
- Each correct one = +20.

(b) Wrong Bay

- Any cube sitting in the wrong colored bay triggers –10 and earns no +20.

(c) BLUE Reserved Kit

- Is the BLUE 5×7 cm cube still basically where it started in its Locker?
 - If yes → +10 BLUE bonus.
 - If clearly moved → no bonus and –20 penalty.

(d) Return-to-START Bonus

- Is the robot fully parked back inside the blue-arrow START Area at STOP?
 - If yes → +10.
(This is our mapped version of the “finish park on a FINISH circle” bonus in the brief.)

(e) Autonomy / Fair Play

- Did anyone touch or steer the robot during the run?
- If there was illegal assistance, the Head Ref can void that attempt.

The referee records:

- Cube deliveries,
- Wrong-bay penalties,
- BLUE status,
- Return-to-START status,
- Final numeric score.

Coach and ref both acknowledge the score sheet.

9. Ranking, Finals, Tie-breakers

9.1 Qualification Ranking

- Each team normally gets 2 qualification runs.

- The team's **best Match Score** from qualification is used for ranking.

9.2 Finals

- Top-ranked teams advance to Finals (the number advancing depends on total registrations).
- In Finals, teams run again under the same rules.
- The highest Finals Match Score becomes the **Capelli Sports Inspire Champion — Season 1 (Lebanon)**.

9.3 Tie-breakers

If two teams tie on Finals score:

1. Most correct deliveries (+20 each) in that Finals run.
2. If still tied: who kept BLUE safe (earned +10 BLUE bonus without –20 penalty).
3. If still tied: who successfully returned to START (+10).
4. If still tied: Head Ref + Technical Jury decision (consistency, clean execution, respect of autonomy).

10. Team Cheat Sheet (what kids memorize)

1. Start INSIDE the blue-arrow START Area.
2. The four yellow/orange corner squares are the Lockers.
 - 3 Lockers have mission cubes (RED or GREEN).
 - 1 Locker has the BLUE Reserved Kit (don't move BLUE).
3. Cubes are 5 cm × 7 cm.
4. Pick up a cube from a Locker:
 - RED cube → bring it to the RED HOME Bay.
 - GREEN cube → bring it to the GREEN TRAINING Bay.
5. Don't disturb the BLUE cube in its Locker.
6. Before time finishes, go back and park fully inside the START Area.
7. Scoring at STOP:
 - +20 each correct delivery to the right bay (max 3 = +60),
 - +10 if robot is parked fully back in START,

- +10 if BLUE stayed in place,
- −10 per cube in the wrong bay,
- −20 if BLUE was moved.

That's the whole mission.

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