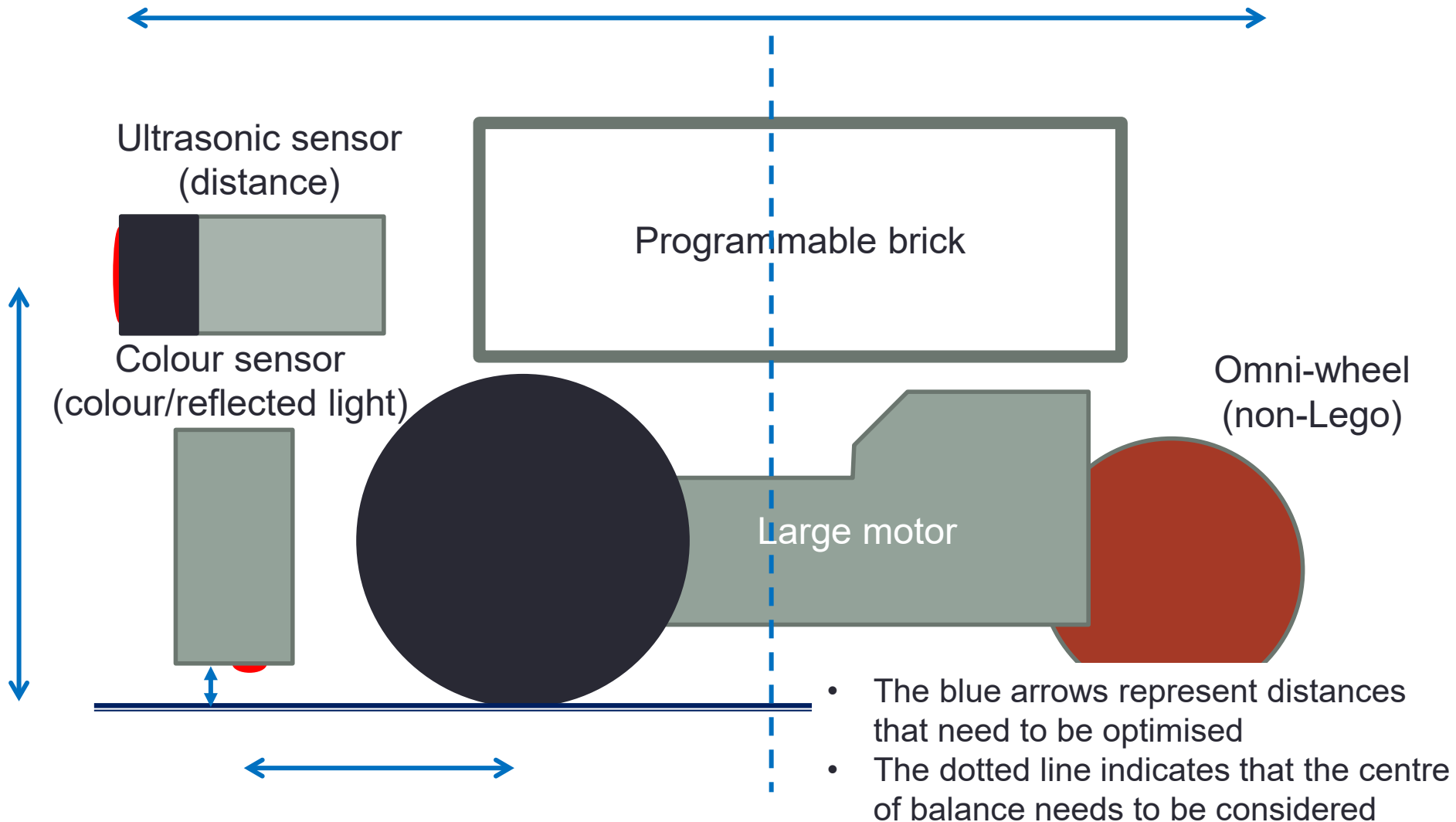


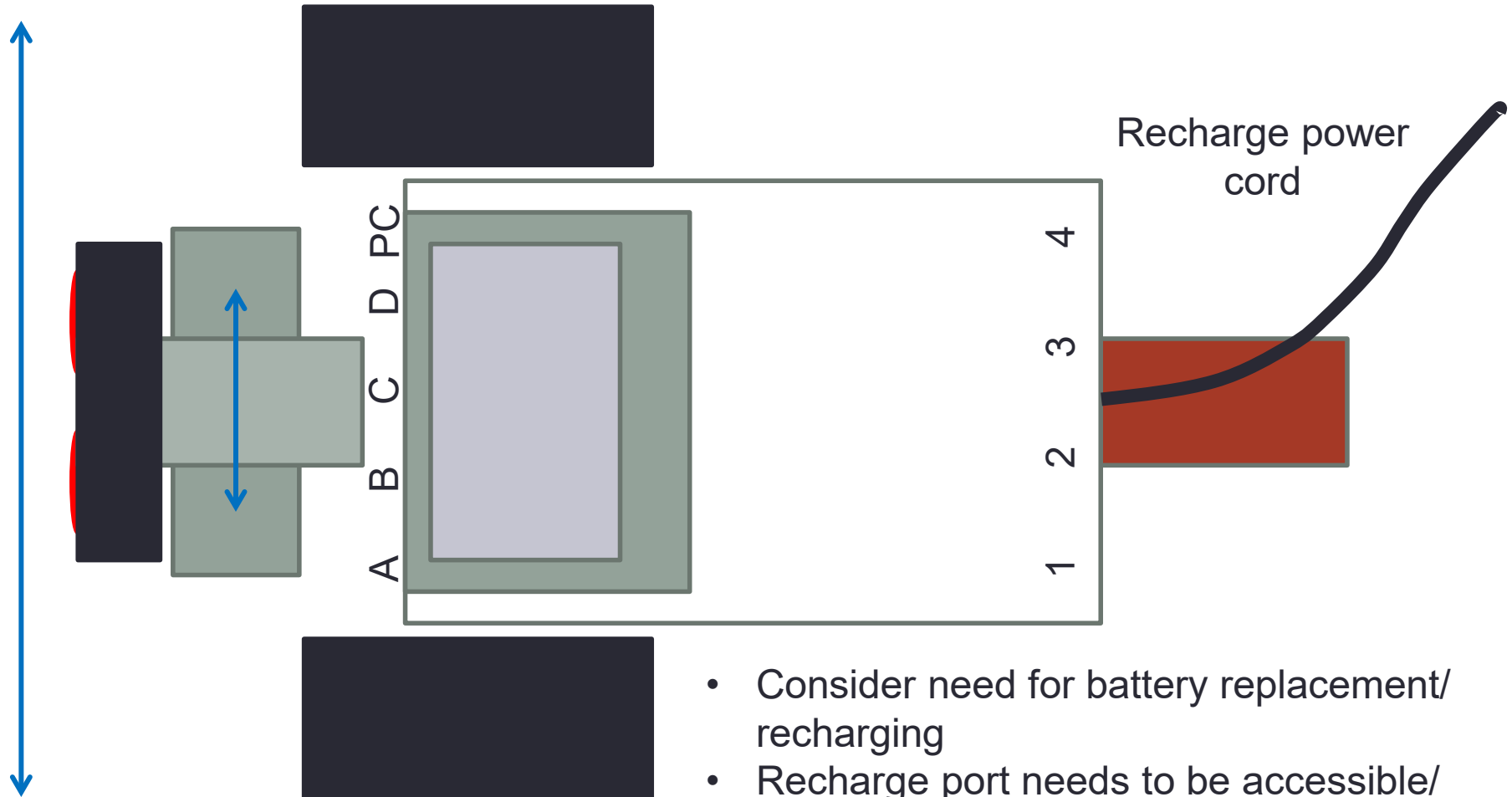
ROBOT DESIGN

What are the design consideration?

Robot Side View



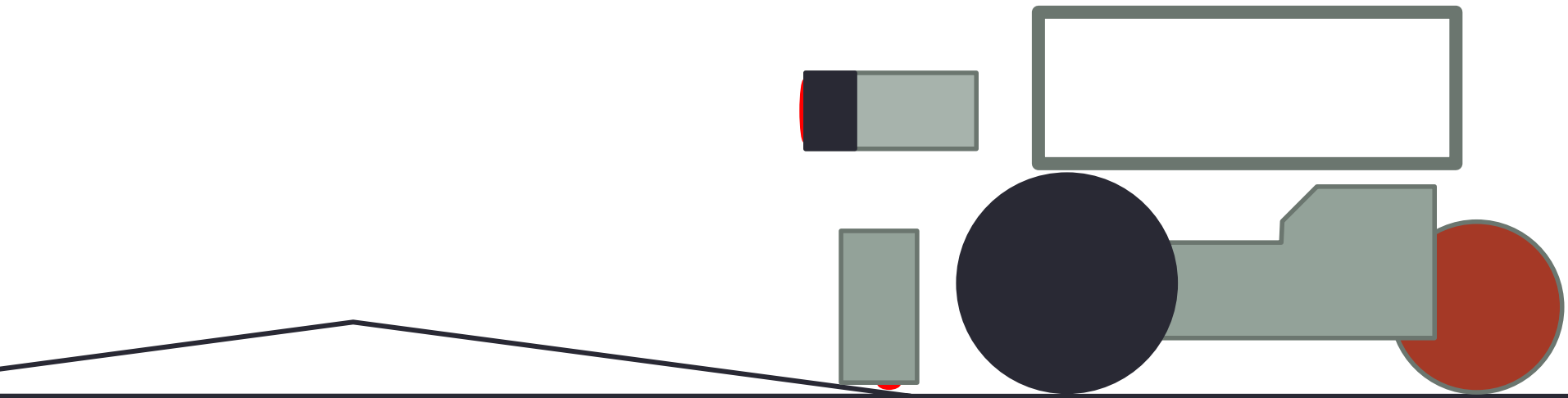
Robot Top View



- Consider need for battery replacement/recharging
- Recharge port needs to be accessible/batteries need to be easily removable

Physical Challenges

The Bridge (in all competition levels)

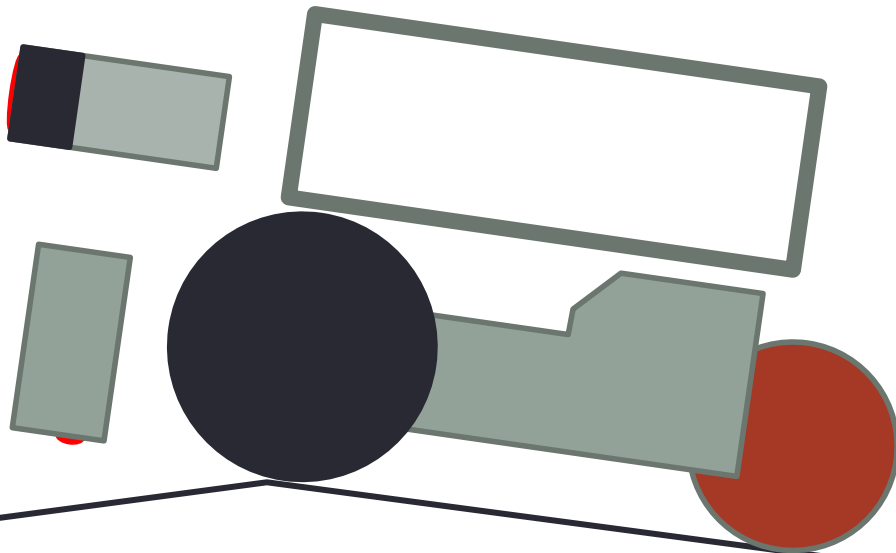


Pitfalls

- Fixed sensors too close to the surface (definite problem)

Physical Challenges

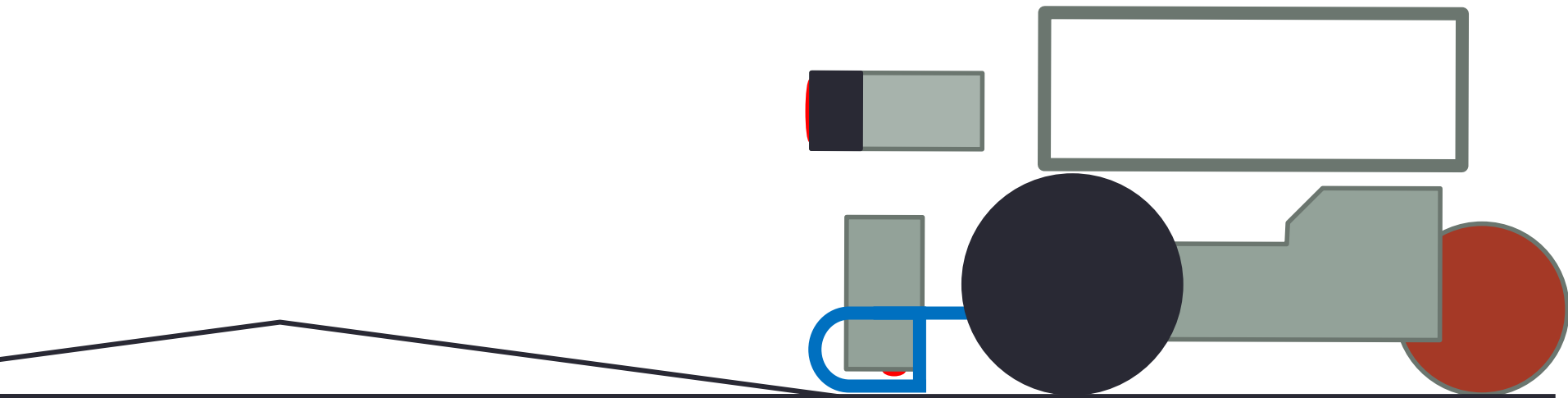
The Bridge (in all competition levels)



Pitfalls

- Fixed sensors too close to the surface (definite problem)
- Fixed sensors too far from the surface (not always a problem)
- Consider “floating” sensors

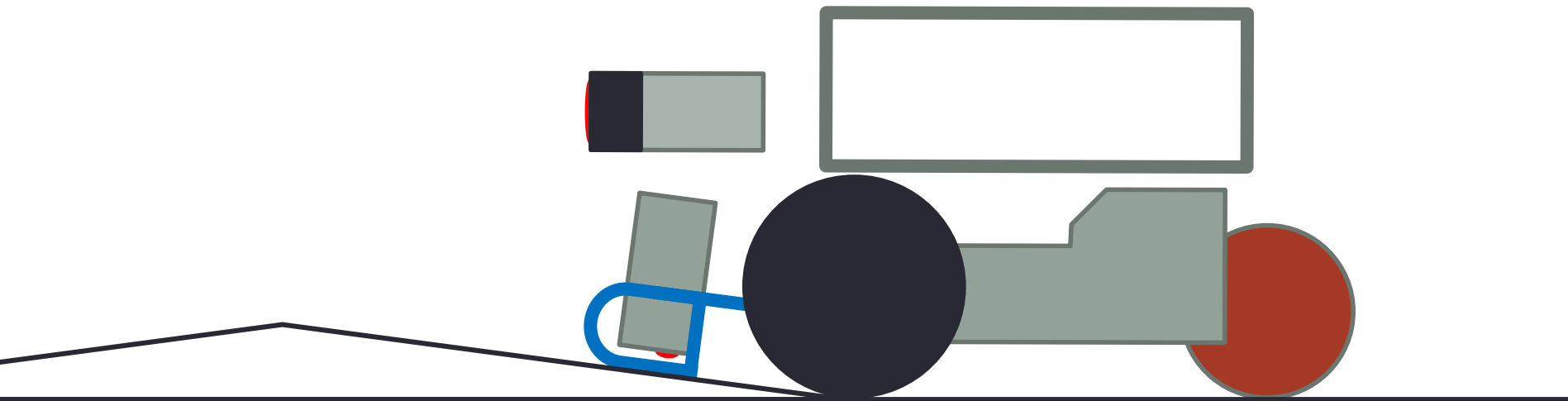
Floating sensor



What is a “floating sensor”?

- The sensor will move up and down with the contours of the mat
- There are many variations on construction involving, wheels without tires, pieces with gentle curves (in NXT sets, not EV3), etc.
- The “frictionless” peg connectors (grey or tan) can be very useful for this

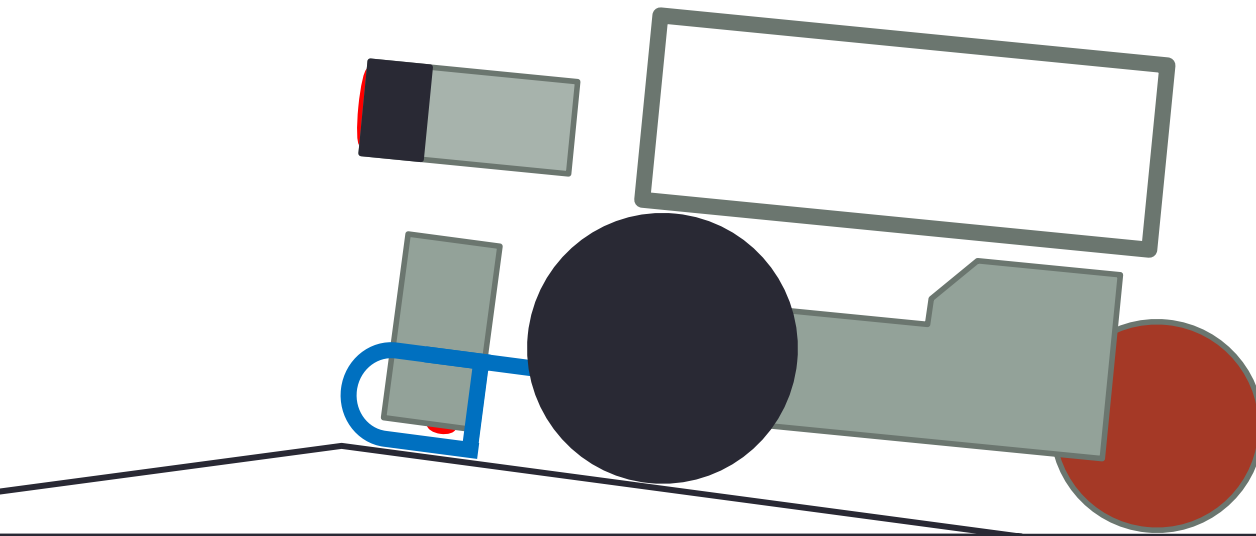
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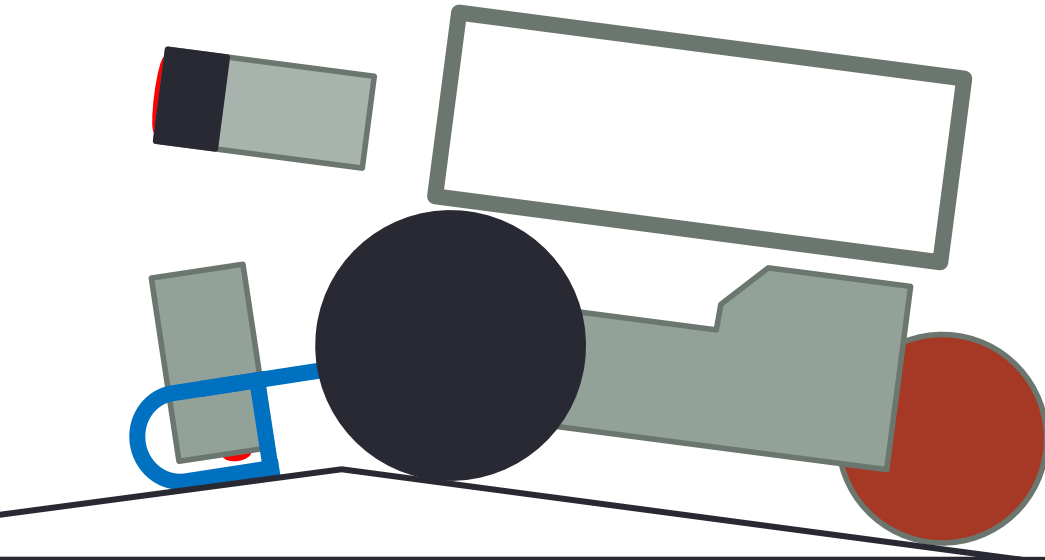
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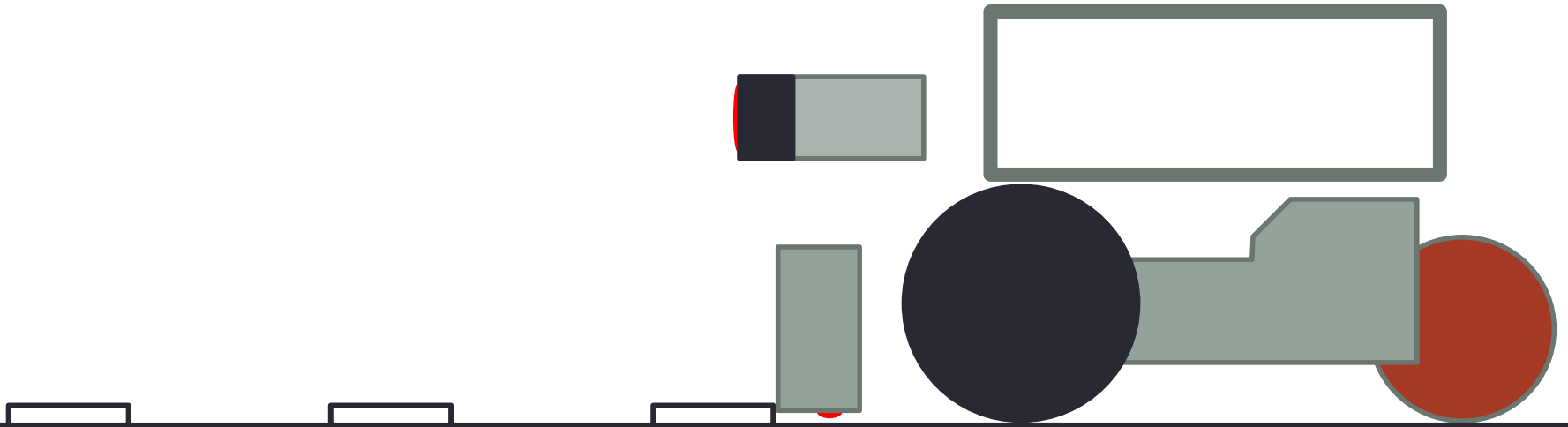
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Physical Challenges

Speedbumps

5 mm high, 30 mm deep, 200 mm wide



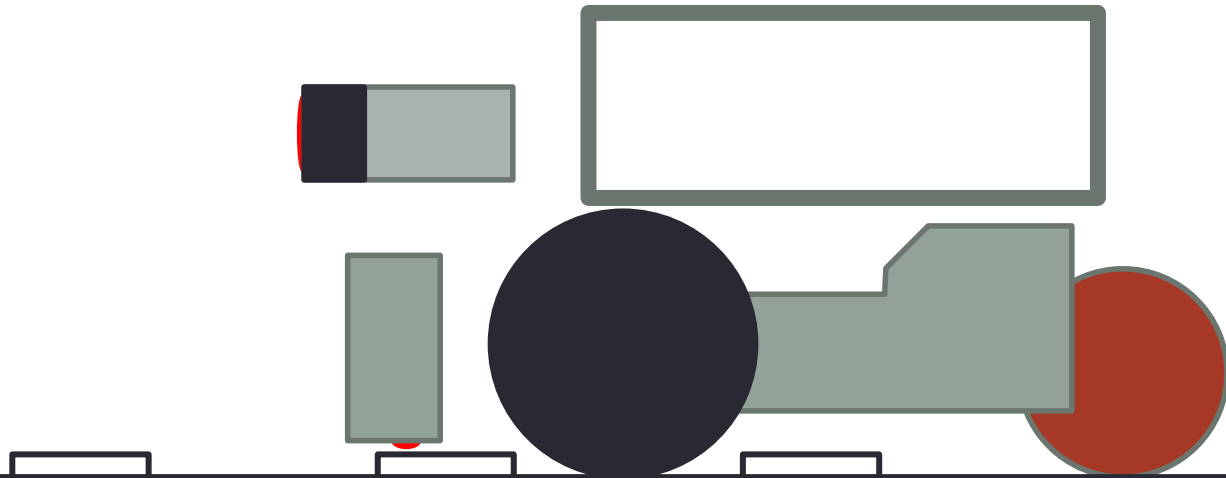
Pitfalls

- Fixed sensors catch on speed bump (consider raising or floating sensor)

Physical Challenges

Speedbumps

5 mm high, 30 mm deep, 200 mm wide



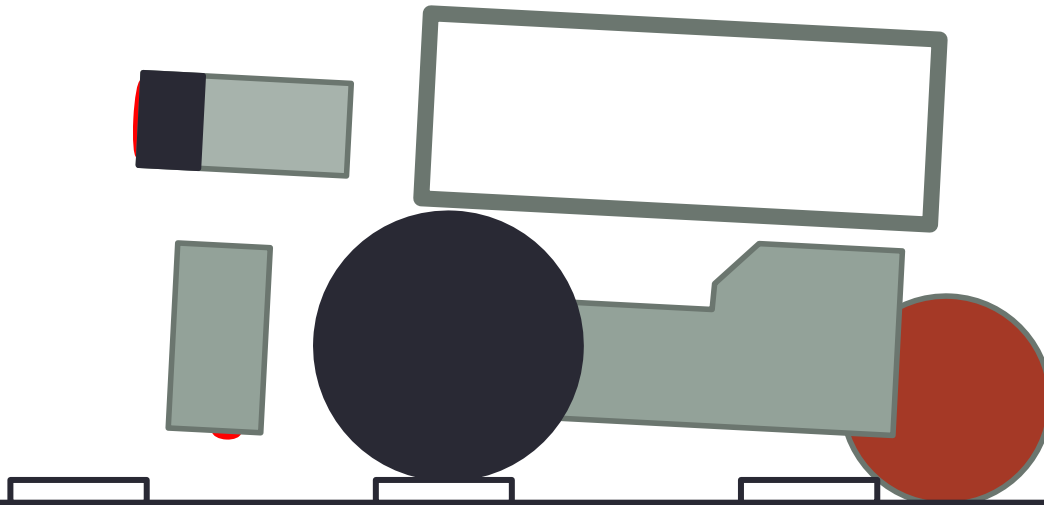
Pitfalls

- Fixed sensors catch on speed bump (consider raising or floating sensor)
- Fixed sensors too close to the surface (sensors should be about 1 Lego beam width off the surface; ~7 mm)

Physical Challenges

Speedbumps

5 mm high, 30 mm deep, 200 mm wide

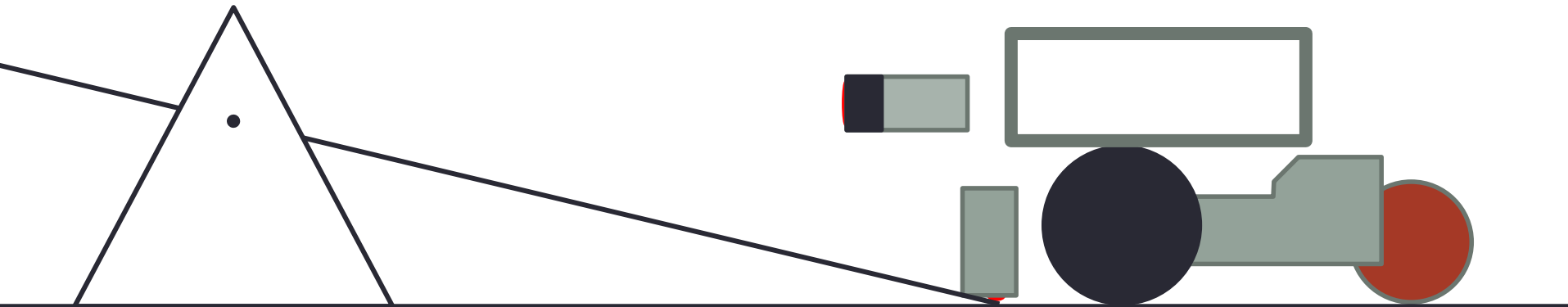


Pitfalls

- Fixed sensors catch on speed bump (consider raising or floating sensor)
- Fixed sensors too close to the surface (sensors should be about 1 Lego beam width off the surface; ~7 mm)
- Lego ball caster can get stuck on speed bumps (use Omniwheel or alternative glide mechanism)

Physical Challenges

The See-Saw

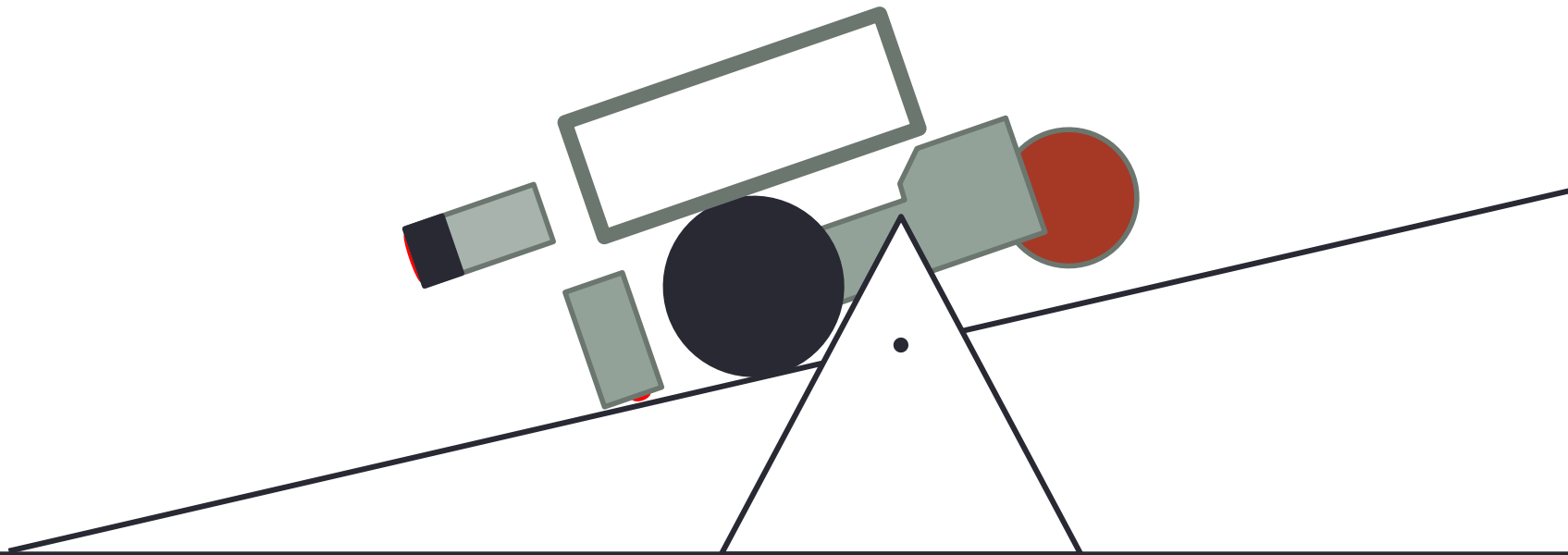


Pitfalls

- Fixed sensors too close to the surface (light/colour readings are off)

Physical Challenges

The See-Saw

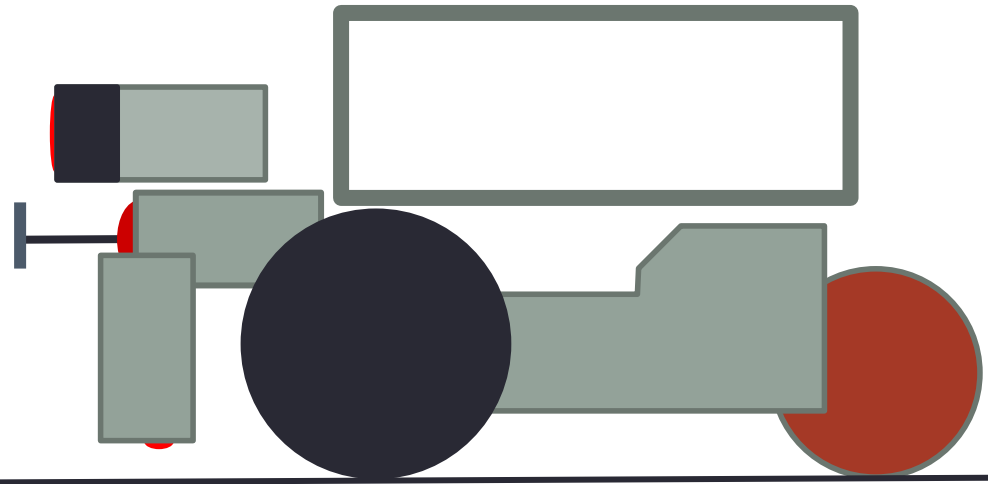


Pitfalls

- Fixed sensors too close to the surface (light/colour readings are off)
- Centre of balance too far forward; robot overbalances (not always a problem, but easily fixed)

Physical Challenges

The Water Tower



Decision

- Which is the best sensor to use?
 - Ultrasonic? (might this mistakenly see other objects as the water tower?)
 - Touch? (is the bumper mechanism sensitive enough?)