Recommended Phase 3 Testing Procedure

As part of the Phase 3 Judge Video submission, teams are required to share video of their innovations in use (Requirement E). Teams are also required to submit data from their prototype testing (Requirement C).

Below are trials meant to thoroughly test competitors' systems and are strongly recommended to be completed as written and used to fulfil portions of Requirements C and E for your Phase 3 submission. Teams may choose to include these and/or other demonstrations as part of their submission, but these trials represent the minimum expectation of demonstration for teams.

These specific trials are not required but are strongly suggested to teams for their Phase 3 submissions.

Please make a video of ***one lap*** of each of the following trials. Recorded videos should include both footage of the individual completing the path and of any displays of the tracking interface. These may be two synchronized videos placed side-by-side. This compiled footage should be included in your submission video for Judges (Requirement E). Teams may include more footage from these or other trials as desired, but consider the 10-minute time limit for this video.

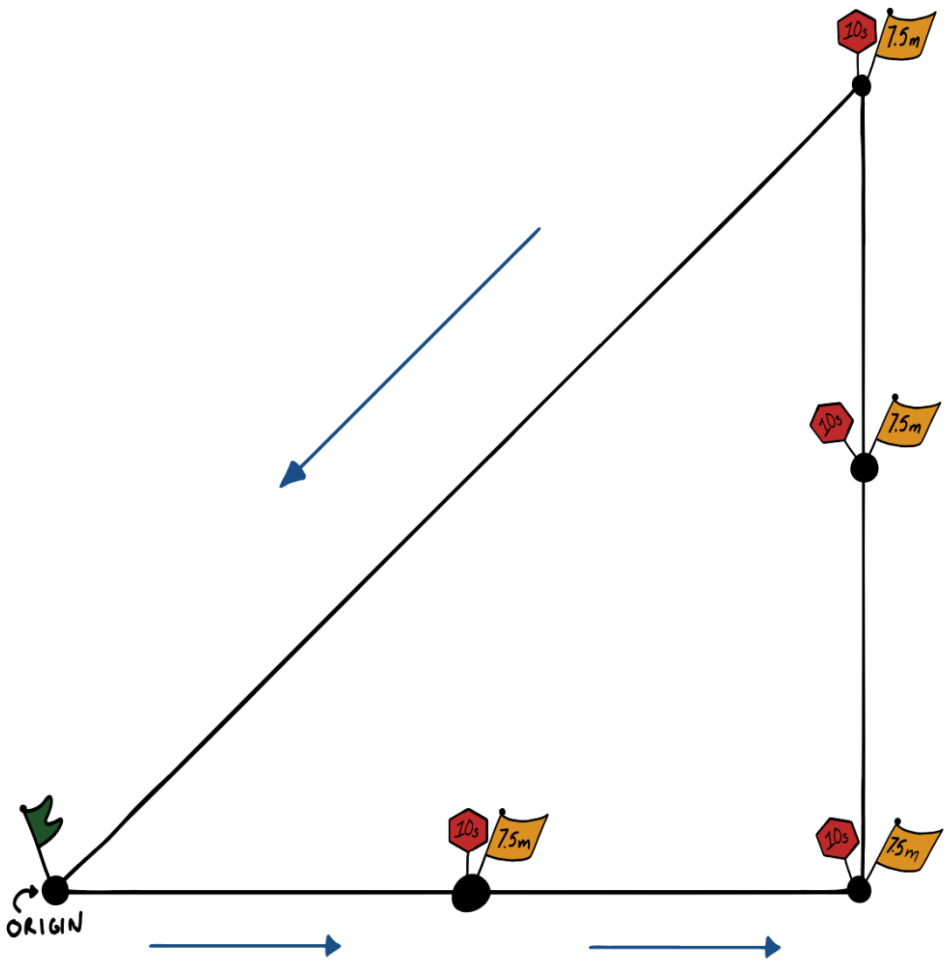
To fulfill Requirement C, data from the entirety of these trials (all laps) should be saved and submitted as four separate files, one for each trial. Each of the four data files should be submitted as a CSV file with a naming convention of Team_name_Trial_X.csv Please clearly name each file and follow the required CSV format. **All data submitted must be in the required format provided on the challenge website FRSTChallenge.com/rules.**

Before beginning your trial, please clearly denote the origin and other important points on the ground with a stake or other marker to ensure maximum repeatability and accuracy between laps. Any "command posts" or receiving devices should remain stationary at or near the origin throughout the trials.

Trial 1:

In this trial, you will follow a pre-defined path for a right triangle with specified timing. Please complete this trial outside – no obstacle is required for this trial.

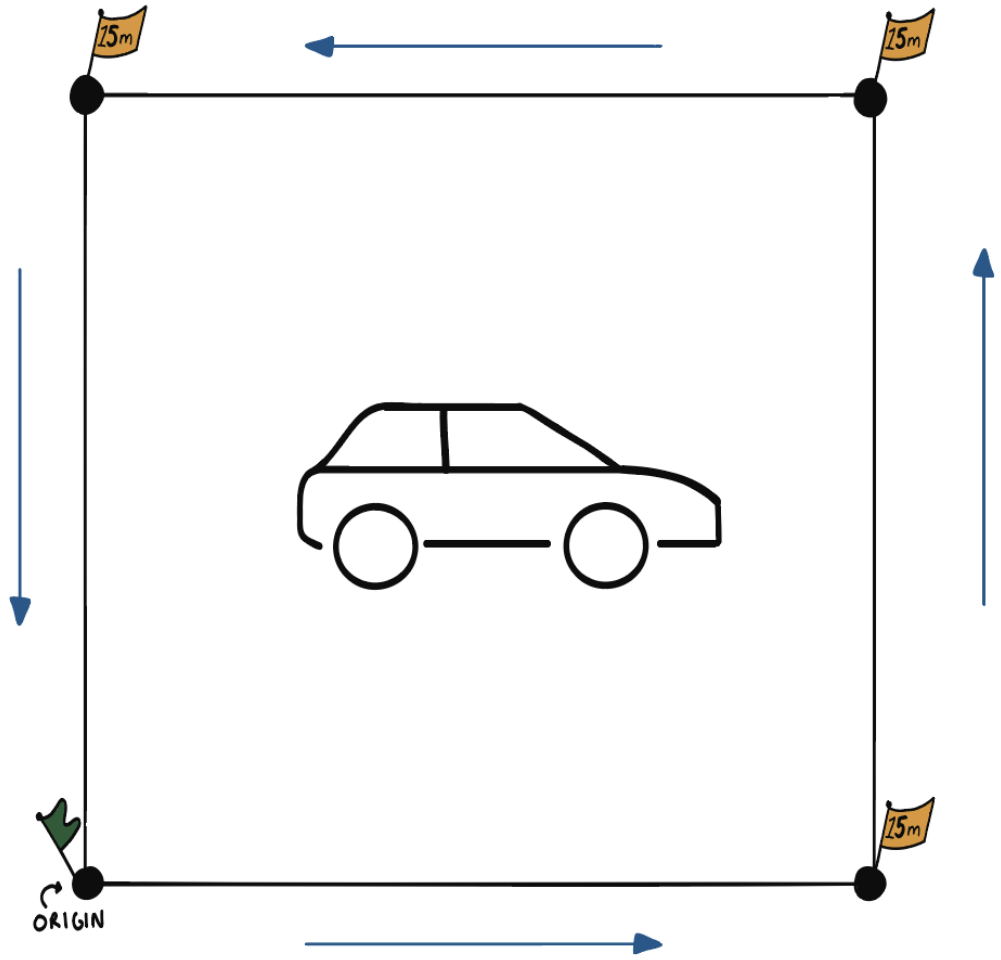
1. Start at the origin.
2. Walk 7.5 meters forward.
3. Wait 10 seconds.
4. Walk 7.5 more meters forward.
5. Wait 10 seconds.
6. Turn left and walk 7.5 meters.
7. Wait 10 seconds.
8. Walk 7.5 meters in the same direction.
9. Wait 10 seconds.
10. Turn left and walk to the origin.
11. Wait 10 seconds.
12. Turn and follow this sequence two more times (for a total of 3 laps).



Trial 2:

In this trial, you will complete a 15-meter square to return to the origin. Your square should surround a parked car or similarly sized, solid obstacle on a flat surface. Do not stop between points or between laps.

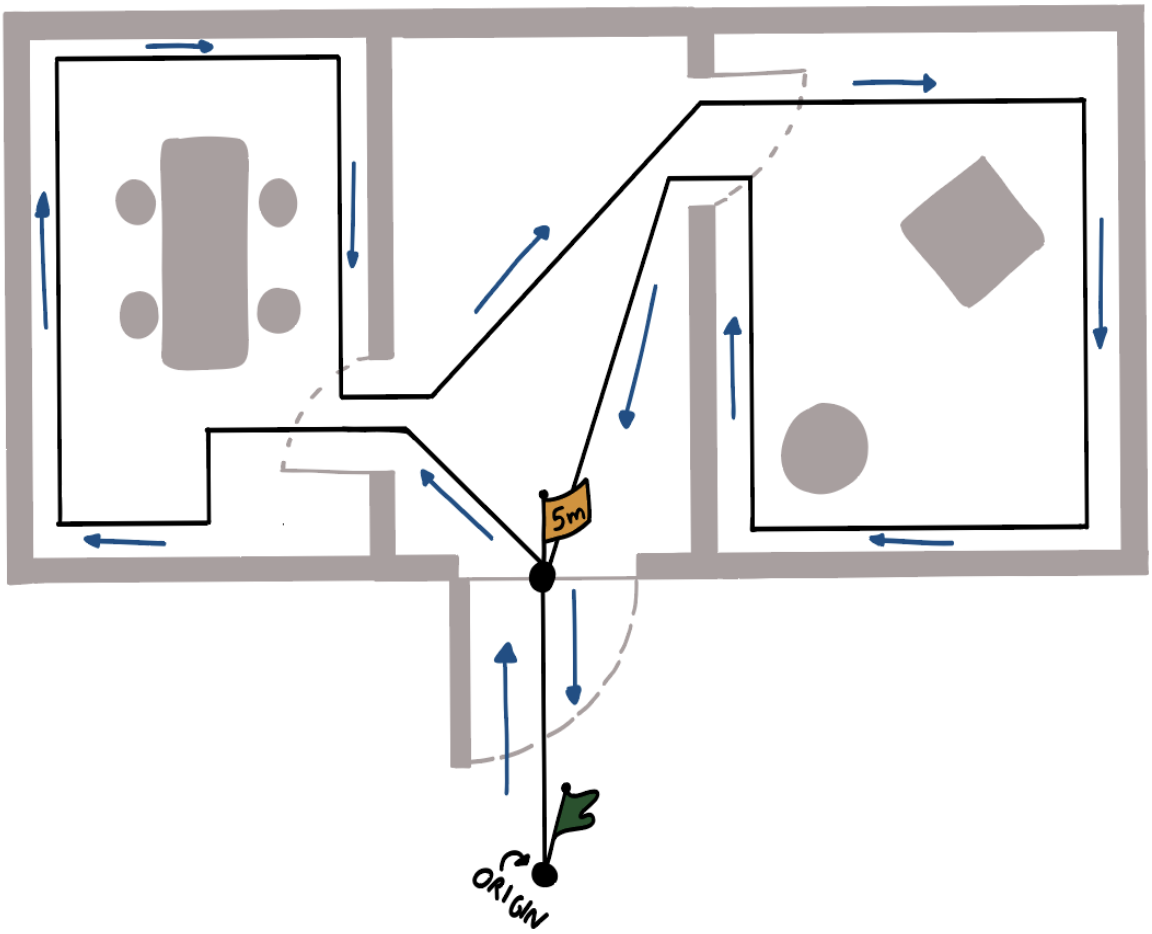
1. Start at the origin
2. Walk 15 meters forward
3. Turn left, walk 15 meters
4. Turn left again, walk 15 meters
5. Turn left again, walk 15 meters to return to the origin.
6. Repeat this square two more times (for a total of 3 laps)
7. End at the origin

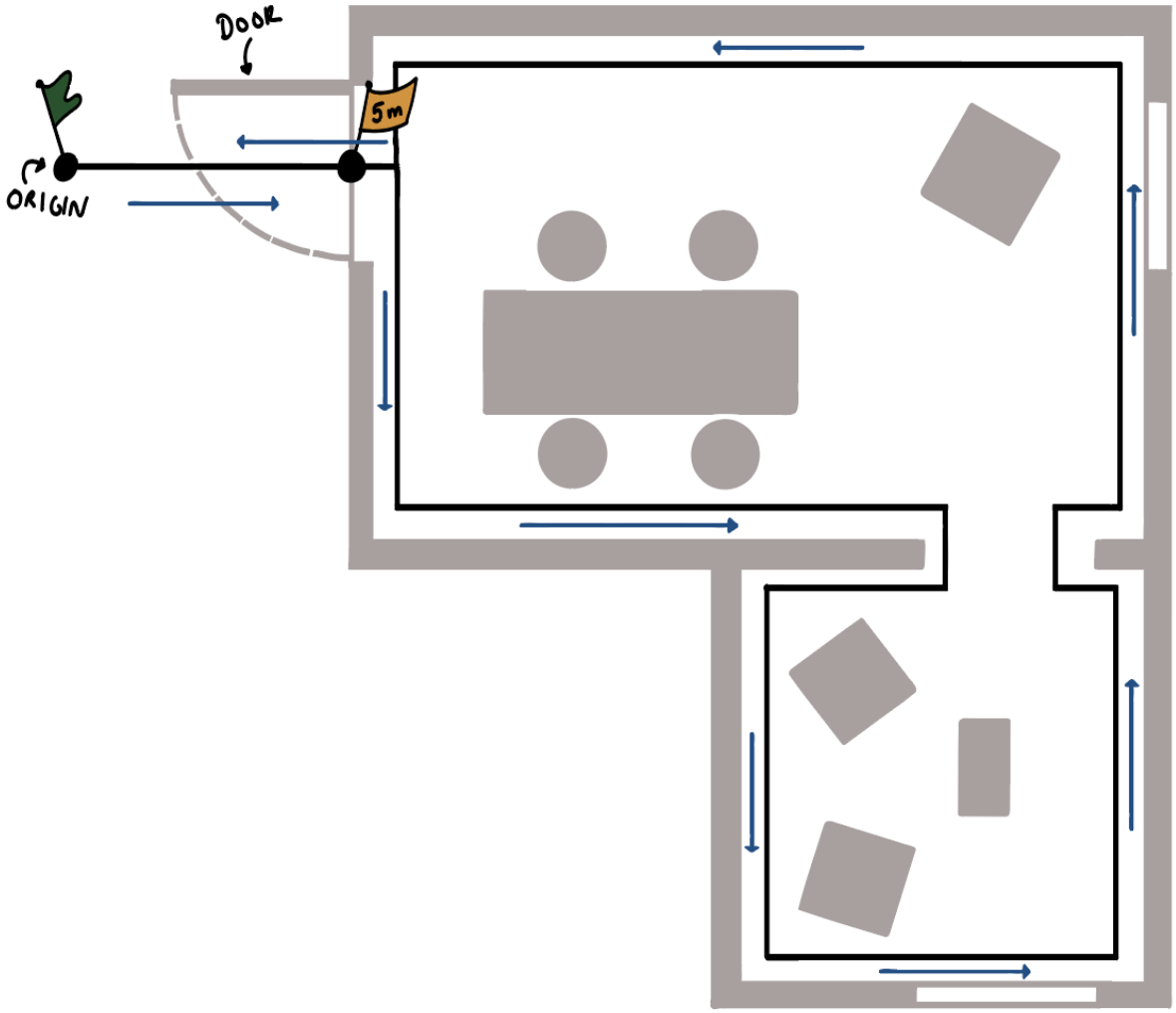


Trial 3:

In this trial, you will test indoor accuracy in two dimensions. Place your origin 5 meters outside of an exterior door to a building. Competitors' building layouts will vary, so please ensure the layout of your trial site is clearly visible in your video to act as a reference for your submitted data. Example layouts and paths are included below to indicate possible building configurations. Furniture or other obstacles within the rooms are not required.

1. Start at the origin, 5 meters from the entrance to the building.
2. Walk into the building.
3. Walk into a room, and walk the perimeter of the room
4. Exit the room and enter another room nearby.
5. Walk the perimeter of the room.
6. Exit the room and return to the origin.
7. Complete this sequence two more times (for a total of 3 laps). The three laps should be completed sequentially without stopping between laps longer than 5 seconds.




DOOR
5m
ORIGIN

Trial 4:

In this trial, you will test your X, Y, and Z axis tracking. Please note the building layout required for this trial and ensure that your staircase provides at least a 5-meter gain in elevation. A university building, parking garage, or apartment complex are likely to have appropriate sites for this trial. If you have to deviate from this testing site layout, please make a note in your submitted readme file with the exact measurements of important points.

1. Start at the origin, 1 meter from the bottom of a staircase.
2. Walk to the bottom of the staircase
3. Walk up the staircase. Pause for 10 seconds at the halfway point of the staircase.
4. From the top of the staircase, walk to a point that is directly above the origin on the floor below.
5. Pause for 10 seconds.
6. Walk the same path back to the top of the staircase, down the stairs, and return to the origin.
7. Do 10 jumping jacks in place.
8. Repeat this sequence two more times (for a total of 3 laps). The three laps should be completed sequentially without stopping between laps longer than 5 seconds.