# Ultimate Goal Getting Started as an FTA

Last updated August 15, 2020 (not fully updated for Ultimate Goal)

# Pre-Event Preparation

## What to Bring

* Safety glasses
* Comfortable shoes
* Optional: Phone with [WiFi Analyzer app](https://play.google.com/store/apps/details?id=com.farproc.wifi.analyzer&hl=en_US) (or equivalent for iOS).
* Optional: Spare cables: mini-to-micro OTG, mini-to-A female OTG, A-male to micro, A-male to mini
* Optional: Tape measure
* Optional: Flash drive and OTG cable with APKs for Driver Station (DS) and Robot Controller (RC) for supported versions (see Game Manual 1 -- for Skystone, that’s 5.2 and later). Download the APKs from <https://github.com/FIRST-Tech-Challenge/SkyStone/releases> . Make sure you get the 5.2 32-bit RC, too.
* Optional: If you have a Windows 10 computer, all the files mentioned on this page (and more) can be grabbed by downloading and running a script from <https://github.com/JohnMMcD/Team5873SkyStone/raw/master/doc/apk/download_files.ps1>

## What to Read and Bring Electronic or Paper Copies Of

* [Field Inspection Checklist](https://www.firstinspires.org/sites/default/files/uploads/resource_library/ftc/field-inspection-checklist.pdf)
* [Rev Hub Expansion Guide](https://www.revrobotics.com/content/docs/REV-31-1153-GS.pdf) (in particular, the section on what the LED colors mean on page 16)
* [Field Setup Guide](https://www.firstinspires.org/sites/default/files/uploads/resource_library/ftc/field-setup-guide.pdf)
* [Control System Troubleshooting Guide](https://www.firstinspires.org/sites/default/files/uploads/resource_library/ftc/control-system-troubleshooting-guide.pdf) - this is long, so you might not be able to read the whole thing, but reading the table of contents is recommended, so you are aware of known problems and where to look if they come up during the day
* [Field Assembly Guide](https://firstinspiresst01.blob.core.windows.net/ftc/2020/fi-led-sembg-udie.pdf) bring for reference - most of the assembly should be done beforehand.

## What to Complete Beforehand

* FTA training on BlueVolt
* YPP Certification (may take a few days to go through)

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# Event Day - Inspection and Before

## Before Teams Arrive

* Check the condition of the fields
  + Navigation target placement
  + Tape in the correct places (especially outside the field).
  + challenge-specific values
* Start scoring system and check inspection tablets and field displays (if no Randy)
* Check WiFi environment and decide on channel-of-the-day. Use 1, 6, or 11, depending on which has the fewest / weakest conflicting signals. Try to avoid channels in use by the building’s access points, especially “Open” / unsecured ones with Internet access.
* Discuss with head referee(s) the workflow ([see the Referee Manual's section "FTA and Head Referee Match Workflow"](https://www.firstinspires.org/sites/default/files/uploads/resource_library/ftc/referee-and-head-referee-manual.pdf))

## Field Inspection - Table Portion

1. Have the RC phone plugged into the Expansion Hub (if not using Control Hub)
2. Use the Self-Inspect menu for both RC and DS to open the Self-Inspect activities. Everything should be green except as noted below.
3. On the RC self-inspect activity, read the Hub firmware version (the hub must be plugged into the RC phone). It will always be green, but warn the team if it shows mismatched versions, or versions before 1.8.2. 1.8.2 solves USB problems and is strongly recommended, but is not a reason to fail the team.
4. RC and DS app versions must match and be 5.2 or higher (warn at first meet, must fix at later meets or qualifier). Each self-inspect activity will show its own version as green; they don’t check for mismatches.
5. If the app versions are mismatched, the best thing to do is usually to upgrade or downgrade the DS app to match what the RC is using. Uninstall the DS app, plug in the flash drive, and browse to the DS app for the version that matches what the RC is using.
6. Change the channel to the channel-of-the-day and make sure the Driver Station screen reflects it. Sometimes the phones need to be restarted for the change to take effect.
7. Give the robot a brief once-over and gently warn the team if they have something that might cause a failure on the field; a poorly-secured phone or battery; a too-easily-accessible power switch; a vital piece of electronics on the outside where it could get damaged. These aren’t failure items.
8. Mark them Passed on the Inspection tablet once all of the above are done and send the team to the field.
9. Self-Inspect red indicators that are false alarms:
   1. Control Hubs will show red for Airplane mode.

## Field Inspection - Field Portion

1. Have the team set up their robot just like they would before a regular match (alliance markers aren’t needed)
2. Have them run their autonomous (if they have one)
3. Have them start teleop (you can do an 8 second countdown if you want, or you can give them a bit more time if they look stressed about it, or want to analyze what went wrong with their autonomous).
4. Have them move the robot bit to get comfortable, then have them move the robot a long distance. While the robot is moving, press the Stop button on the DS phone and make sure the robot stops quickly and with no errors.
5. Mention the “Queuing Process Information” blurbs. I usually say, “Don’t rewrite your code while your waiting for your match to start. If you want to make changes, do them in the pits and try them on the practice field (if any). I will delay the match if you’re having problems getting connected, but I’m not going to delay the match because you’re still in the middle of code changes, or you made a change and now your code won’t run. Queuing: keep an eye on which matches are running. You should be on the queueing table when the match before yours starts. Since this is a two-field event, if you are in match 6, you should be at the table by the time match 4 starts. Also, put on your alliance markers at the queueing table.”
6. Ask if they have any questions. If they have gameplay-related questions, point out the referees or tell them to ask in the Driver’s Meeting.
7. Mark them Passed on the Inspection tablet.

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# Event Day - Post Inspection

## Before Each Match: At the Queueing Table

At the queuing table, the team members may be strategizing with their partners, so try not to interrupt them while you do these checks.

* Check for alliance markers of the correct color
* Check that the Driver Station phone is connected to the Robot Controller phone (or Control Hub) and that the ping time is less than 100 milliseconds.
* Check that the gamepad indicators are showing for the number of gamepads they are using. Have them press Start-A or Start-B if any indicators are not visible; if Start-A and start-B don’t help, see the [Troubleshooting Before Match](#_g4xjlzm3ypyo) section.

## Before Each Match: At the Field

After referees have called for “Reset”, teams should take the field as soon as the previous teams have left. If the field is empty, wave the teams onto it. Let the team members set up their robot in peace; stay on the field, but out of the way. While they’re placing the robots, check for the alliance markers and locate the robot main power switch.

During setup, team members can’t use alignment devices (rulers, tape measures, etc) while placing their robots on the field. Team members can’t touch the stones or Foundation but can ask if these items are positioned correctly. Robots must touch the wall and NO part of the robot can be over the taped-off areas. Robots must be within the 18” cube. If part of the robot looks movable and is outside the 18”, ask the team to pull it in. If it still looks too big, ask a ref to check.

After the team members have stepped off the field, check each phone:

* Make sure the Play triangle is visible. Have them press Init if not. If they don’t have an autonomous op mode, they can still init their teleop op mode, which will save them time when the match starts.
* Check that the Ping time is reasonable and that there are no warning messages on the screen.
* Make sure the gamepad indicators are showing for the number of gamepads they are using. Have them press Start-A or Start-B if any indicators are not visible; if Start-A and start-B don’t help, see the Troubleshooting section.
* Ask the team if they are ready to run; if they say, “Yes”, say, “Great, please keep your hands off from now until the start of the match”.

Once all robots are ready to run, say “hands off, we are ready to randomize” and tell the head ref that you’re ready to go and step off the field (possibly after helping to move the stones after randomization).

## Troubleshooting Before the Match

* Check cables and power. Teams forget to plug things in, or don’t plug them in securely.
* Restart the phones if:
  + they’re having trouble connecting via WiFi
  + start-A and start-B are not working for getting the gamepad indicators to light

If the problem appears to be caused by the control system, you can delay the match while you try to solve the problem. Restarting the phones takes a long time and resolves a lot of problems, so I tend to do it early in the troubleshooting sequence. If the problem is under the control of the team, you should not delay the match unless the problem can be solved quickly.

## Troubleshooting During the Match

* Once the match has started, you can’t touch the robot except to turn it off if there’s a safety problem (smoke, fire, wildly out of control). If the robot is behaving unexpectedly but is not a safety hazard, don’t turn it off unless the Head Referee directs you to.
* Watch the robots on the field; if they’re moving normally, then just stay out of the way. If a robot isn’t moving during teleop, see if the team looks upset, and if so, start moving in that direction.
* If the team yells “FTA!”, then go to them and ask them to describe the problem. Look at the LEDs on the hubs - green with blue flashes is OK and the problem may be recoverable. Orange means they lost their main battery, which usually isn’t recoverable. Solid or blinking blue means the hub lost its connection to the phone, but keep watching to see if it changes back to green.
* You can run the Restart Robot command from the DS phone, then have them select (or select yourself) the Teleop program and press Init and Start. Wait a second or so after pressing Init; it can take a second for the init code to run.
* Don’t restart the phone during the match because the match will be over by the time the phone restarts.