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2020-2021 *FIRST®* Tech Challenge

FTC Scoring – Team Guide

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Introduction

What is FIRST® Tech Challenge?

FIRST® Tech Challenge is a student-centered program that focuses on giving students a unique and stimulating experience. Each year, teams engage in a new game where they design, build, test, and program autonomous and driver operated robots that must perform a series of tasks. To learn more about FIRST® Tech Challenge and other FIRST® Programs, visit www.firstinspires.org.

FIRST Core Values

We express the FIRST® philosophies of *Gracious Professionalism*® and *Coopertition*® through our Core Values:

- **Discovery:** *We explore new skills and ideas.*
- **Innovation:** *We use creativity and persistence to solve problems.*
- **Impact:** *We apply what we learn to improve our world.*
- **Inclusion:** *We respect each other and embrace our differences.*
- **Teamwork:** *We are stronger when we work together.*
- **Fun:** *We enjoy and celebrate what we do!*

Gracious Professionalism®

FIRST® uses this term to describe our programs' intent.

Gracious Professionalism® is a way of doing things that encourages high-quality work, emphasizes the value of others, and respects individuals and the community.

Watch Dr. Woodie Flowers explain *Gracious Professionalism* in this [short video](#).

Remote Events

For the 2020-2021 competition season, in some regions, teams who participate in the FIRST Tech Challenge will compete in *remote* events. For remote events:

1. Teams will perform the challenge by themselves, from a modified 12' x 8' field set up at home.
2. Teams will use a cloud-based (Internet-hosted) system to score their matches from home.
3. Match results and awards information from the remote event will be available online once the event has been scored and has concluded.

This document shows a team how to access and score an event using the FTC Scoring system.

What's Needed

In order to score a remote event, you will need the following:

1. A stable Internet connection.
2. A device for entering scores:
 - a. Can be a laptop, Chromebook, tablet or smart phone.
 - b. Accesses the FTC Scoring system through web browser.

3. A second (optional) device to be used as Field or Audience Display:
 - a. Can be a laptop, Chromebook, or tablet (a larger screen is recommended)
 - b. Accesses the FTC Scoring system through web browser
 - c. Displays match clock, current score and plays audio cues

If you do not have access to a reliable Internet connection, you should use paper scoresheets (available from the [firstinspires.org website](https://firstinspires.org)) to score your remote matches. After you have scored your matches, you can have someone (such as your coach or the remote event organizer) enter in your scores from the paper scoresheets into the FTC Scoring system once they have access to the Internet.

Accessing the System

The FTC Scoring system is integrated with the firstinspires.org website. In order to be able to access the FTC Scoring system, your team must be officially registered for the current season. If your team has officially registered, then your mentor can login to the team's *FIRST* dashboard account and access the FTC Scoring system.

1. Visit www.firstinspires.org and select the “LOG IN” link in the upper right-hand corner and log in to your *FIRST* dashboard account.

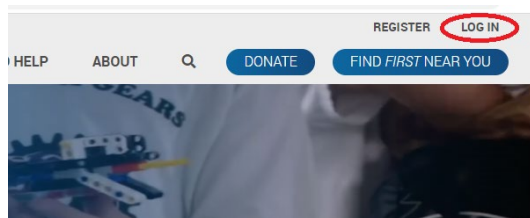


Figure 1 - Login to your *FIRST* dashboard account through the *FIRSTInspires.org* website.

2. Type in the address ftc-scoring.firstinspires.org into your web browser to navigate to the FTC Scoring website.

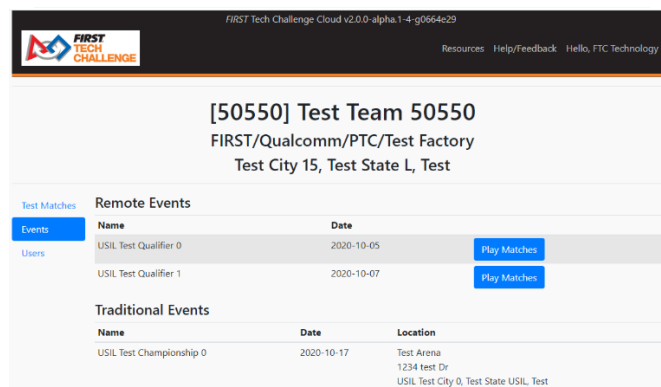


Figure 2 - The team landing page should display your team info and list your team's remote events.

3. You should see the FTC Scoring system landing page for your team.
 - a. Team info is displayed at the top.
 - b. A list of your team's remote events should be visible.
 - c. A list of your team's traditional events should also be visible.

Navigating to Your Landing Page

While logged in to the FTC Scoring system, if you want to return to the main landing page for your account, select the *FIRST* Tech Challenge logo in the upper left-hand corner to navigate back to this page.

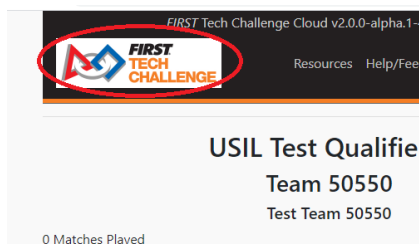


Figure 3 - Select the *FIRST* Tech Challenge logo to navigate to the main landing page for your team.

Managing Your Team Account

You can manage your FTC Scoring team account (change display name, logout, etc.) by selecting the “Hello <USER NAME>” link in the upper right-hand corner of the screen.

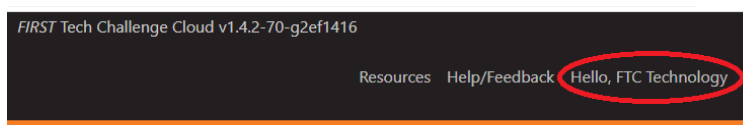


Figure 4 - Select this link to manage your FTC Scoring user account.

Adding Users to Help Manage Your Team Account

By default, the email address that was used to register the team through the *FIRST* dashboard will be the address used for the team administrator. If you would like to add additional users to help manage your team’s account, you can select the “Users” link on the left-hand side of the landing page.

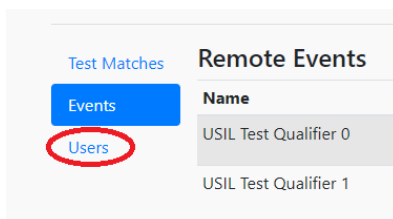


Figure 5 - Select the “Users” link to add/edit users to help with the management of the team.

Then select the “Add Role” button of the Users screen. The system will prompt you for a user email and ask you to specify the role. The email that you provide should be an email that is associated with an existing *FIRST* dashboard account. You should select “Team Administrator” as the desired role.

Figure 6 - The email that you provide should be associated with an existing FIRST dashboard account.

If the email of the user that you are adding is not yet associated with a *FIRST* dashboard account, then the user should visit the firstinspires.org website to create one for that email address. The new user will have to login to their *FIRST* dashboard account in order to get access to the FTC Scoring system.

Figure 7 - The user should create a FIRST dashboard account if the user does not already have one.

Scoring a Remote Match

Scoring with an Internet Connection

To be able to score a remote match, a team will need to designate someone to act as the scorekeeper during the remote match.

Note: The scorekeeper cannot also be a part of the drive team during a match. The team will need at least one device that is connected to the Internet and logged in to the ftc-scoring.firstinspires.org website (see Figure 8 below). This device will be used to enter in the scores during a remote match.

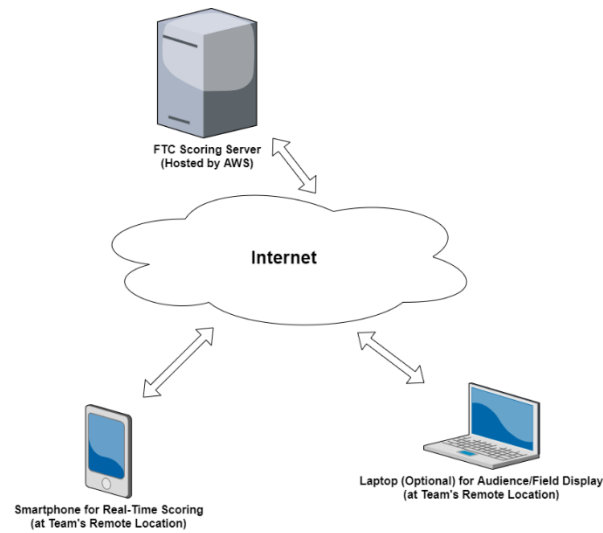


Figure 8 - The FTC Scoring system is a Cloud solution hosted on an AWS server.

The team also can have an optional second device, typically a laptop, that is connected to the Internet to act as an audience or field display. This display includes a game clock and plays audio cues during a remote match.

Selecting a Practice Match or an Official Match

Teams have the option of running a *test match* (i.e., a practice match) or can score an *official match* using the FTC Scoring system. For a test match, the results are not saved to the FTC Scoring server after the match has completed. For an official match, the results are saved for the active remote event to the FTC Scoring server and *cannot be changed* by a team once the results have been submitted. This is analogous to how an official match for a traditional (in-person) match is scored.

Note: The process for scoring a test match is very similar to scoring an official match. This document focuses primarily on scoring an official match, but the steps covered also apply to the process for scoring a test match.

If you would like to keep score for a practice match, select the “Test Matches” link from the side menu.

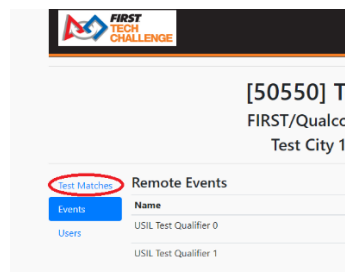


Figure 9 - Select “Test Matches” link to run a test match.

If you would like to record an official score for an active remote event, select the “Play Matches” button for that remote event.

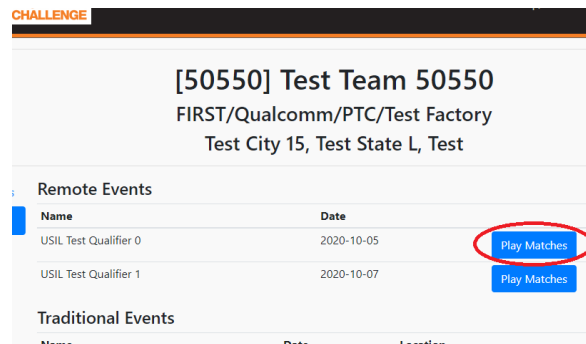


Figure 10 - Select “Play Matches” to record a score for an active remote event.

Team Event Screen

Pressing the “Play Matches” button for a remote event takes you to a page that displays information about your team for the selected event.

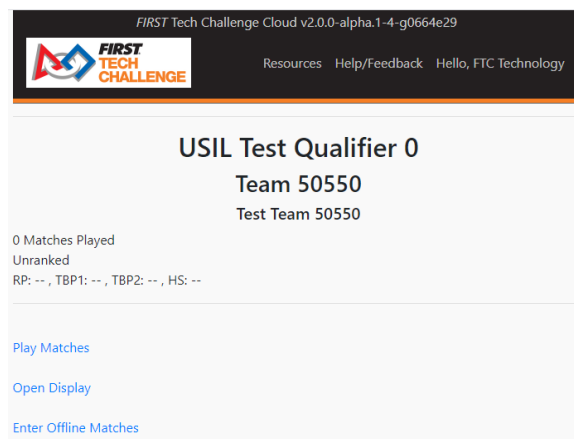


Figure 11 - Pressing the “Play Matches” button will display a screen with information about the matches a team has played.

In the upper left-hand corner of the screen, the number of matches played for the event is shown.

Note: Teams get to play six matches per remote event.

For an active event, ranking information is not displayed. However, the screen does include a team’s current ranking points, tie breaker points and high score for the active remote event.

Configuring a Display Screen (Optional)

In order to score a remote match using the FTC Scoring system, you will need at least one device that is connected to the Internet to enter in scores to the system. This device is referred to as the score tracker or scorekeeper device. The scorekeeper device can also be used to play audio cues to indicate when to start or start different phases of a match.

In addition to the scorekeeper device, a team might want to set up a second, *optional* device to act as a display screen. During a match, a display screen shows useful information to the drive team and to other participants of the remote match. A display screen is not required, but it can be helpful since the drive team can view the display to keep track of the time during a match.

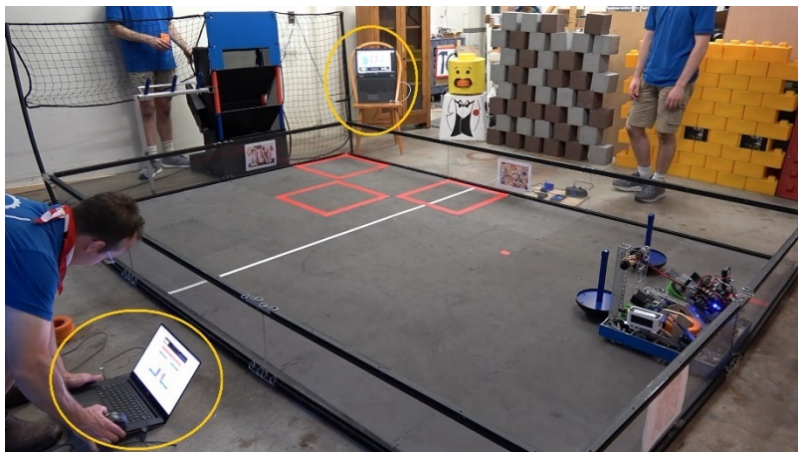


Figure 12 – One device is used by the scorekeeper (lower left). Optionally, a second device can be used as a field display (center).

One of the options on the left-hand menu of the Play Matches page is labeled “Open Display”. If you select this link, your browser should navigate to a new screen that you can use to configure an audience or field display that you can use to display a game clock, show the live score, and play audio cues for your remote match.



Figure 13 - System will prompt you to set display options.

You should select this link from the computer that you would like to use as your display device. The system will prompt you to set the options for your display screen.

- If you'd like to mute the audio, check the “Mute” box.
 - Note in your field area, in order to avoid audio synchronization issues, you typically only want to have one device (scorekeeper or display device) playing audio.
- If you would like to use a display that is designed primarily for an audience, select the “Audience Display” option for the Display Mode.
- If you would like to use a display that is designed primarily for use by teams on the competition field, select the “Field Display” option (used at traditional events) for the Display Mode.
 - The Field Display has a bigger match clock, which is easier for the drive team to see.
- Press the “Save” button after you have configured your options.

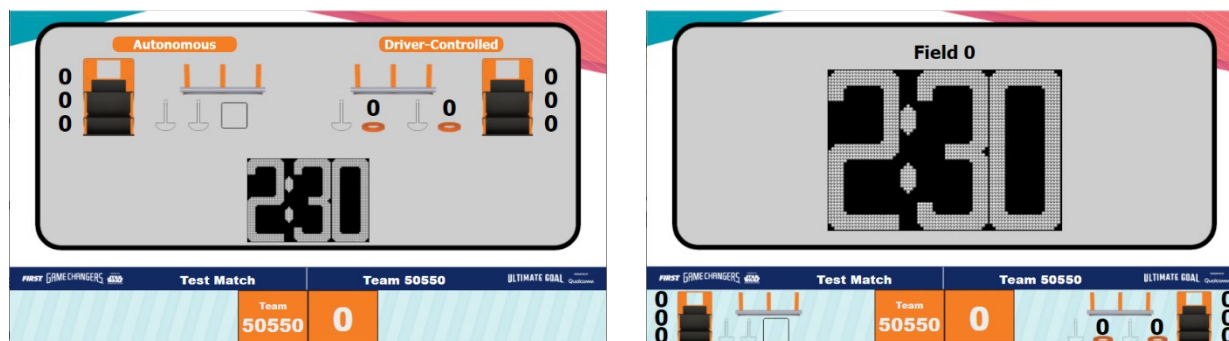


Figure 14 - The Audience Display (left) has bigger scoring icons and a smaller clock than the Field Display (right).

Scoring a Match

A FIRST Tech Challenge match consists of an autonomous phase and a driver-controlled phase. During the autonomous phase, which is the first 30 seconds of a match, the robot must operate independently, without any input from the team. The remaining two minutes of a match is the driver-controlled phase. The last 30 seconds of the driver-controlled phase is a special phase known as the *end game* period of a match.

When you are ready to play a match for an active Remote Event, select the Play Matches link on the Team Event Screen on the device that will be used to enter in the live scores during your match. If the submission window for the Remote Event is still open, the system will display a screen that lists your team's played and unplayed matches for the event.

Important Note: Once you have begun the process to score your official remote match, *you cannot cancel or restart this process!* Do not start to score an official remote match unless your team and robot are ready to play the match. Also, once the match has begun, do not navigate away from the scoring web page until the match has been completed.

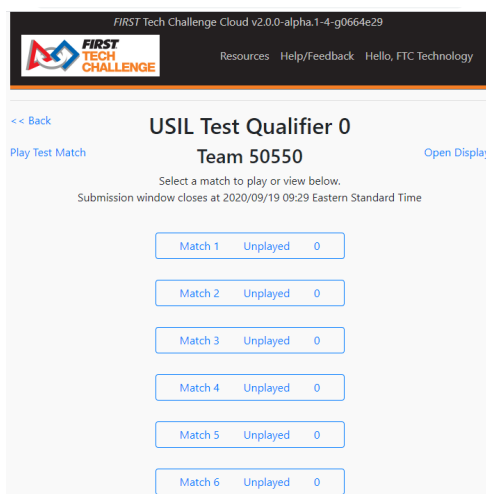


Figure 15 - The system should list your played and unplayed matches for an active Remote Event.

To score an unplayed match, select the match in the list of matches. The pre-match setup screen should appear.

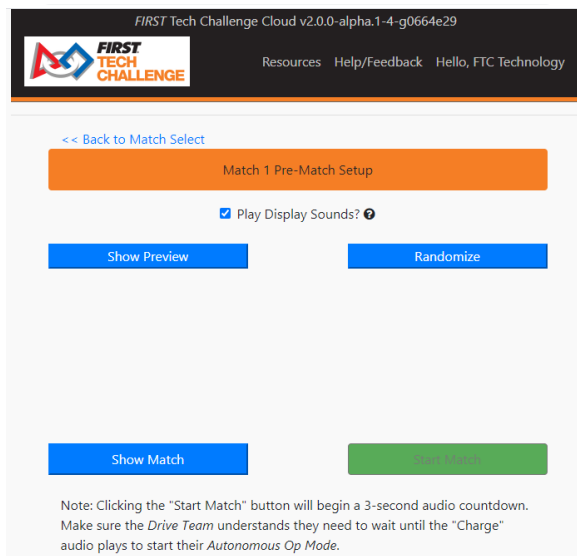


Figure 16 - Pre-Match Setup screen.

When your team is ready to start the match, press the “Show Preview” button. This will display the match information (team info and match number) on any Audience or Field display that you have open.

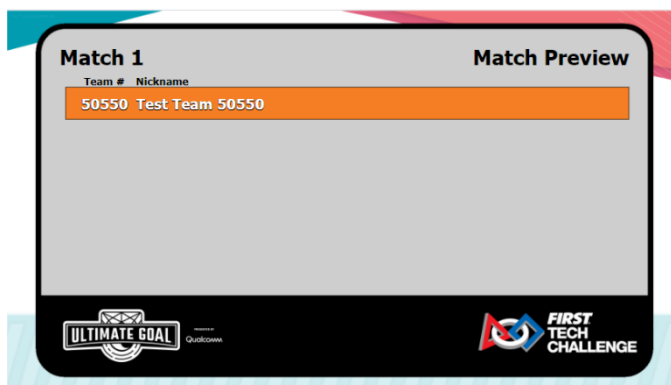


Figure 17 - The Match Preview screen shows match and team information on the audience and field displays.

Press the “Randomize” button to randomize the field. The pre-match setup page on the scorekeeper device and the audience and field displays will display the randomized autonomous goal for this match. A team member or mentor should place the appropriate number of rings (if any) on the Starter Stack area on the field. Once the field has been randomized, the team must not touch their robot or driver station, except for pushing the play button to start their autonomous op mode once the match has officially started.



Figure 18 - Pressing the "Randomize" button displays the randomized state for the autonomous phase of the match.

After the field has been randomized, the match is ready to start. Press the "Show Match" button to display the match clock and pre-match information on the audience or field display.

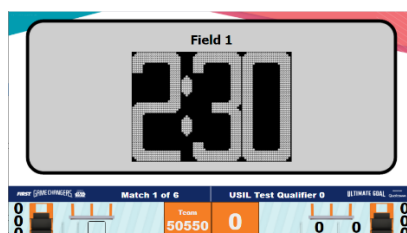


Figure 19 - Pressing the "Show Match" button displays the match clock and pre-match info on the audience or field display.

If the drive team members, the scorekeeper, and the human player are all ready to begin, press the "Start Match" button on the Pre-Match Setup page to begin scoring your match. The system will play an audio countdown ("3-2-1" and then a start sound) and then the match clock will begin running and the scorekeeper's screen should display the input screen for the autonomous phase.

Note: You cannot cancel or restart the match once it has begun. Also, you should stay on the score tracking input screen while the match is running (i.e., do not close the tab or navigate away to a different address).

Scoring the Autonomous Phase of a Remote Match

During the autonomous portion of a remote match, the scorekeeper's screen will look like the following image.

The screenshot shows the 'FIRST Tech Challenge Cloud v2.0.0-alpha.1-4-g0664e29' interface. At the top, there's a header with the FIRST Tech Challenge logo and links for 'Resources', 'Help/Feedback', and 'Hello, FTC Technology'. Below this is a title bar 'Test Match Autonomous'. The main area displays 'Period Time: 0:24 (A)' at the top. The interface includes several input fields for scoring: 'Wobble 1:' and 'Wobble 2:' each with 'None' and 'Delivered B' buttons; 'High Goal:', 'Mid Goal:', and 'Low Goal:' each with minus, '0', and plus buttons; 'Left Power Shot:', 'Center Power Shot:', and 'Right Power Shot:' each with 'Up' and 'Down' buttons; 'Navigated' with 'No' and 'Yes' buttons; 'Minor Penalties:' and 'Major Penalties:' each with minus, '0', and plus buttons. At the bottom, it shows 'Period Time: 0:24 (A)' again and a 'Submit Autonomous' button.

Figure 20 - Scorekeeper's screen during the autonomous portion of a match.

At the top of the screen is the name of the match ("Test Match" in the example screen shot in Figure 20 above). The screen also shows the "Period Time" at the top and bottom of the input screen. This is the amount of time left during the autonomous period.

The autonomous input screen has buttons to indicate if the team successfully placed the wobble goals into the correct target zones. In Figure 20 above, the randomized goal is target zone B. If the team scores one wobble goal in this zone, the scorekeeper should press the "Delivered B" button for Wobble 1. If the team scores a second wobble goal in this zone, the scorekeeper should press the "Delivered B" button for Wobble 2.

This close-up shows the 'Wobble 1:' and 'Wobble 2:' input fields. Each field has two buttons: 'None' (highlighted in teal) and 'Delivered B' (light blue).

Figure 21 - Use these buttons to mark whether or not a team successfully scored the wobble goals during autonomous.

The autonomous input screen also has controls to keep track of how many Launching Rings are scored by the team in the high, middle, or low goals.

High Goal:	-	0	+
Mid Goal:	-	0	+
Low Goal:	-	0	+

Figure 22 - Use these controls to track the number of rings scored in the high, medium, and low goals.

The autonomous input screen also has controls to keep track of the Power Shot targets.

Left Power Shot:	Up	Down
Center Power Shot:	Up	Down
Right Power Shot:	Up	Down

Figure 23 - Use these controls to track the Power Shot Targets.

There is also a control that you can use to mark whether or not the robot was able to navigate successfully and park on the Launch Line.

Navigated	No	Yes
-----------	----	-----

Figure 24 - Use this control to mark whether or not the robot successfully navigated to and parked on the Launch Line.

Finally, there are controls at the bottom of the screen to add minor and major penalties to the team's score during the autonomous portion of the match.

Minor Penalties:	-	0	+
Major Penalties:	-	0	+

Figure 25 - Use these controls to assign minor and major penalties to a team.

When the autonomous period is over, the Period Time field will go to zero and an audio cue with an end of phase buzzer will be played. The scorekeeper should finish scoring the autonomous portion of the match and press the "Submit Autonomous" button to submit the autonomous score and get ready to score the driver-controlled portion of the match.

Scoring the Driver-Controlled Phase of a Remote Match

There will be a brief period between the autonomous phase and the driver-controlled phase to allow the drive team to pick up their controllers and initiated their driver-controlled op modes. At the end of this transition phase the driver-controlled phase begins. The scorekeeper can use the controls on the driver-controlled input screen to track the team's score during this portion of the match.

FIRST Tech Challenge Cloud v2.0.0-alpha.1-4-g0664e29

Resources Help/Feedback Hello, FTC Technology

Test Match Driver-Controlled & End Game

Period Time: 1:42 (D)

High Goal:
 Mid Goal:
 Low Goal:
 Left Power Shot:
 Center Power Shot:
 Right Power Shot:
 Wobble 1 Rings:
 Wobble 2 Rings:
 Wobble Goal 1:
 Wobble Goal 2:
 Minor Penalties:
 Major Penalties:
 Period Time: 1:42 (D)
 Submit Driver-Controlled

Figure 26 - Scorekeeper's screen during the driver-controlled portion of a match.

The driver-controlled input screen is similar to the autonomous input screen, except the controls are for the driver-controlled and end game tasks.

The driver-controlled input screen has controls to track the number of high, medium, and low goals scored during this portion of the match.

High Goal:
 Mid Goal:
 Low Goal:

Figure 27 – These controls are used to track the number of rings scored in the tower goals during the driver-controlled phase.

The driver-controlled input screen also has controls to track the end game tasks, including the Power Shot targets, the number of rings stacked on each wobble goal, and the location of the wobble goals at the end of the end game period.

Left Power Shot:	Up	Down	
Center Power Shot:	Up	Down	
Right Power Shot:	Up	Down	
Wobble 1 Rings:	-	0	+
Wobble 2 Rings:	-	0	+
Wobble Goal 1:	None	Start Line	Drop Zone
Wobble Goal 2:	None	Start Line	Drop Zone

Figure 28 - These controls are used to track end game achievements during a remote match.

Finally, there are controls that the scorekeeper can use to assign minor and major penalties to a team during a match.

Minor Penalties:	-	0	+
Major Penalties:	-	0	+

Figure 29 - Use these controls to assign minor and major penalties to a team.

When the driver-controlled period is over, the scorekeeper should finish assigning points (or penalties) to the team and press the “Submit Driver-Controlled” button to submit the driver-controlled score and to enter the review mode of the match.

Reviewing and Submitting the Match Score

When the match is complete and both the autonomous and driver-controlled scores have been submitted, the scorekeeper has the option to review (and adjust if needed) both sets of scores before submitting the scores to the system.

FIRST Tech Challenge Cloud v2.0.0-alpha.1-4-g9664e29
Resources Help/Feedback Hello, FTC Technology

Test Match Review

Autonomous Scores

Wobble 1:	None	Delivered B	Wobble 2:	None	Delivered B	
High Goal:	-	0	+	Left Power Shot:	Up	Down
Mid Goal:	-	1	+	Center Power Shot:	Up	Down
Low Goal:	-	0	+	Right Power Shot:	Up	Down
Navigated:	No	Yes				

Driver-Controlled Scores

High Goal:	-	2	+	Left Power Shot:	Up	Down	
Mid Goal:	-	3	+	Center Power Shot:	Up	Down	
Low Goal:	-	0	+	Right Power Shot:	Up	Down	
Wobble 1 Rings:	-	0	+	Wobble 2 Rings:	-	0	+
Wobble Goal 1:	None	Start Line	Drop Zone	Wobble Goal 2:	None	Start Line	Drop Zone
Minor Penalties:	-	0	+	Major Penalties:	-	0	+

Submit Final Scores

Figure 30 - The scorekeeper can review and adjust the autonomous and driver-controlled scores before submitting them.

In Figure 30 above, the team was able to deliver one wobble goal to the correct target zone during autonomous. They also scored in the mid goal, knocked the right Power Shot target down, and parked on the Launch Line during autonomous.

The team also was able to score twice in the high goal and three times in the mid goal during the driver-controlled phase. The team knocked the Power Shot target down and placed one wobble goal in the Drop Zone during the end game.

When the team's scorekeeper has completed the match review, the scorekeeper will press the "Submit Final Scores" button to submit the scores to the system. If the match is an official match for an active remote event, the score will be recorded in the system and the team will no longer be able to modify the scores for that match. If the match is a test match, the scores will not be saved in the FTC Scoring system.

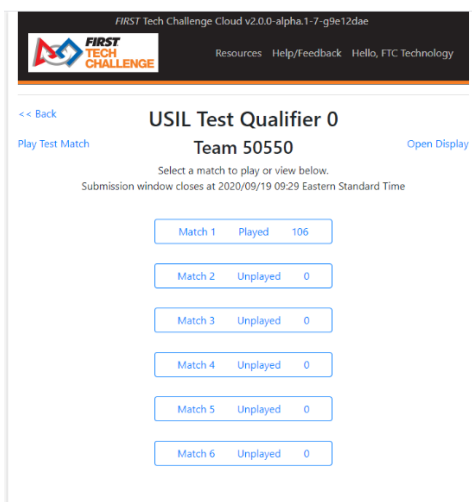


Figure 31 - After an official score has been submitted, the event page will be updated with the current match information.

Note: That a team's ranking and tie breaking points are private (only visible to the team and to the event administrators) until the event's submission period is complete, and until the results are published by an event administrator to the ftc-events.firstinspires.org system.



Figure 32 - A team's ranking and tie breaker points are private until the remote event is officially over.

Scoring a Match Using Paper Scoresheets

If you do not have a reliable Internet connection at the location of your remote game field, you will need to use paper scoresheets to keep track of your scores during your remote matches. You can download the remote scoresheet as a .PDF file from the firstinspires.org website.

https://www.firstinspires.org/sites/default/files/uploads/resource_library/ftc/remote-scoresheet.pdf

You can print out these scoresheets in advance of your remote event, then use them to score your matches during the event.

Remote Scoresheet

Match: _____

Autonomous Period				Driver-Controlled Period			
Tower High	_____			Tower High	_____		
Tower Mid	_____			Tower Mid	_____		
Tower Low	_____			Tower Low	_____		
Power Shot				Power Shot			
	Left	Center	Right		Left	Center	Right
Forward	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Forward	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Back	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Back	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					None	Start Line	Drop Zone
Wobble #1 Delivered	<input type="checkbox"/>	Robot Navigated	<input type="checkbox"/>	Wobble #1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wobble #2 Delivered	<input type="checkbox"/>			Wobble #2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Penalties				Penalties			
# Minor	_____			# Major	_____		

Figure 33 - Teams should use a paper scoresheet if they lack a reliable Internet connection at their remote competition field.

During a remote match, the team can use a stopwatch or set a countdown timer on their smartphone to keep track of the phases of the match. The first 30 seconds of a match is the autonomous phase. The remaining 2 minutes is the driver-controlled phase and the last 30 seconds of the driver-controlled phase is the end game.

Once a match has been scored, a team administrator who has access to the Internet can login to the FTC Scoring system and enter in the match data to the scoring system.

Select the “Enter Offline Matches” link from the team’s event page in the FTC Scoring system to begin the process of entering the match results.

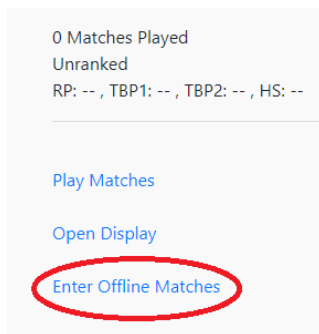


Figure 34 - Select the "Enter Offline Matches" link from the team's event page to enter match results.

The system will list the team's matches for the current active event. Select a match listing to enter scores for that match.

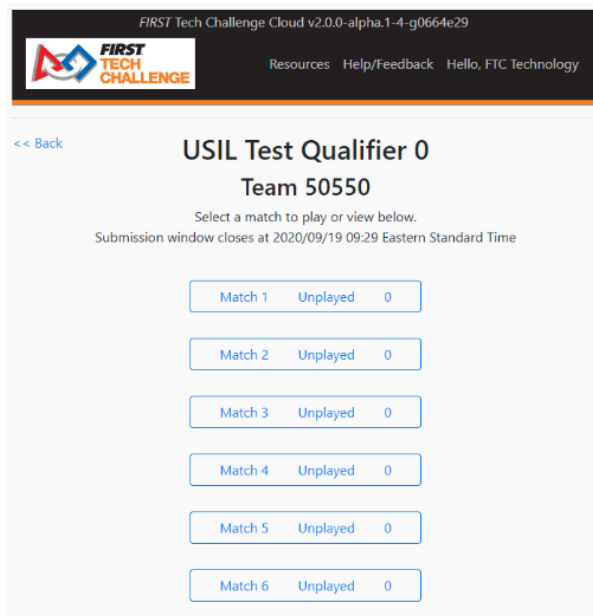


Figure 35 - Select a match listing to enter scores for that match.

Once you have entered and reviewed your scores, press the "Submit Final Scores" button to submit the final scores for that remote match. Once the final scores have been submitted, the team will no longer be able to edit the results for that match.

Figure 36 shows the 'Match 1 Review' interface in the FIRST Tech Challenge Cloud. It is titled 'FIRST Tech Challenge Cloud v2.0.0-alpha 1-4-g0664e29'. The interface is divided into two main sections: 'Autonomous Scores' and 'Driver-Controlled Scores'. Each section contains input fields for various game metrics, including Wobble 1/2, High/Mid/Low Goals, Left/Center/Right Power Shots, Navigated, Wobble 1/2 Rings, Wobble Goal 1/2, Minor/Major Penalties, and a 'Submit Final Scores' button at the bottom.

Figure 36 - Enter the scores onto the electronic form and press "Submit Final Scores" to submit them to the system.

Reviewing Your Scores on FTC-Events

After a remote event has finished, and the event administrator has reviewed and approved the final event results in the FTC Scoring system, the event results get published to the ftc-events.firstinspires.org website.

The *FIRST* community can visit ftc-events.firstinspires.org to browse event results for prior FTC seasons (beginning with the Skystone 2019-2020 Challenge).

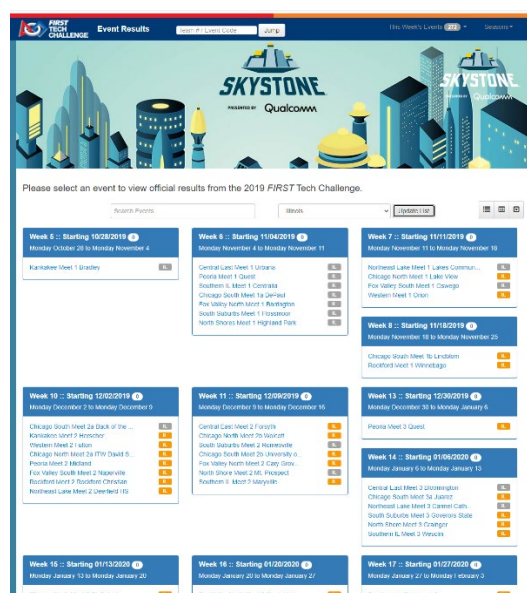


Figure 37 - After a remote event is over, the community can review the results at the ftc-events.firstinspires.org website.

Appendix A – Resources

Game Forum Q&A

<https://ftcforum.firstinspires.org/>

Anyone may view questions and answers within the *FIRST*® Tech Challenge game Q&A forum without a password. To submit a new question, you must have a unique Q&A system username and password for your team.

***FIRST* Tech Challenge Game Manuals**

Part 1 and 2 - <https://www.firstinspires.org/resource-library/ftc/game-and-season-info>

***FIRST* Headquarters Pre-Event Support**

Phone: 603-666-3906

Mon – Fri

8:30am – 5:00pm

Email: Firsttechchallenge@firstinspires.org

***FIRST* Websites**

FIRST homepage – www.firstinspires.org

[FIRST Tech Challenge Page](#) – For everything *FIRST* Tech Challenge.

[FIRST Tech Challenge Event Schedule](#) – Find *FIRST* Tech Challenge events in your area.

***FIRST* Tech Challenge Social Media**

[FIRST Tech Challenge Twitter Feed](#) - If you are on Twitter, follow the *FIRST* Tech Challenge Twitter feed for news updates.

[FIRST Tech Challenge Facebook page](#) - If you are on Facebook, follow the *FIRST* Tech Challenge page for news updates.

[FIRST Tech Challenge YouTube Channel](#) – Contains training videos, game animations, news clips, and more.

[FIRST Tech Challenge Blog](#) – Weekly articles for the *FIRST* Tech Challenge community, including outstanding volunteer recognition!

[FIRST Tech Challenge Team Email Blasts](#) – contain the most recent *FIRST* Tech Challenge news for teams.

Feedback

We strive to create support materials that are the best they can be. If you have feedback about this manual, please email firsttechchallenge@firstinspires.org. Thank you!