VEX Robotics Competition

Live Remote Tournament (LRT)

Event Partner & Volunteer Guide/
Tournament Operator Instructions
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Introduction to Live Remote Tournament (LRT) Gameplay

Live Remote Tournament (LRT) gameplay is an alternate event format developed by the REC Foundation. LRT gameplay allows teams to compete remotely in live interactive competitions using a web-based portal through RobotEvents.com. The purpose of this document is to outline the technical and volunteer requirements needed as well as provide the required instructions for Event Partners to set up and conduct Live Remote Tournaments.

Previously, traditional VEX Robotics Competition events have been held “in-person” in a single location such as a school, gymnasium, community center, or a myriad of other public venues. By utilizing the RobotEvents.com Live Remote Tournament system, Event Partners can choose to hold an event entirely remotely. This enables teams to compete with other teams in their region and beyond without the expenses of travel.

Many aspects of the competition that might have been handled by volunteers, including proper field setup and reset, and ensuring teams are on the field for their upcoming match are responsibilities that now fall to team members and their designated adult team Facilitator, the coach, or other responsible adult who will be supervising students during the event. Event Partners hosting Live Remote Tournaments must be proactive and detail oriented in preparing for and managing these events. Failure to follow these directions may result in substantial delays to the event and/or an inability of teams to participate in the event.

In a Live Remote Tournament, a VEX Robotics Competition is played by two Alliances – one “red” and one “blue” – each composed of a single team. Each Team competes on a separate field (i.e., there are two Robots, two Teams, and two fields involved in each Match).

For the full game rules, please consult the current version of the VRC Game Manual, including the section on Live Remote Tournament Rules.

General information for Event Partners is found in the Event Partner Guide. Additional resources for Event Partners are available at RoboticsEducation.org or by contacting your Event Engagement Manager.
Document Overview

This guide is divided into six sections:

Section 1: Volunteer Roles/Event Staffing Requirements
This section will explain the volunteer/event staff requirements for Live Remote Tournaments and how they compare to in-person events.

Section 2: Technology Requirements for Volunteers
This section will explain technology requirements for volunteers/event staff. Requirements for teams is found in the Live Remote Team Guide & Setup Instructions.

Section 3: Tournament Setup & Initialization
This section will explain how to set up a Live Remote Tournament in RobotEvents.com and setting up volunteer permissions.

Section 4: Event Initialization Procedures
This section will explain how to initiate the start of the event on the RobotEvents.com Live Remote Tournament system so teams and volunteers can connect.

Section 5: In-Event Procedures
This section will explain the step-by-step process for running a Live Remote Tournament.

Section 6: Troubleshooting
Click here for the LRT Troubleshooting Guide.

Section 1: Volunteer/Event Staffing

Overview

Event Partners who are familiar with the volunteer roles and responsibilities for in-person events will recognize that Live Remote Tournaments (LRTs) require volunteers to take on new responsibilities. For example, resetting fields correctly - a responsibility of the field reset crew and referee staff at an in-person event, falls under the responsibility of the teams during Live Remote Tournaments.

Another key difference is that Live Remote Tournaments do not use Tournament Manager to input scores, start match timers, or finalize results. Instead, a browser-based user interface is used through remote.robotevents.com. The person(s) responsible for using this interface to execute the event is called referred to as the Tournament Operator in this document. Once in the event, Tournament Operators can fill more specific volunteer roles: Emcee/Announcer, Match Controller, or Scorekeeper.
LRT events may be viewed by their audience with a slight delay via an automatically generated link via YouTube. However, the teams participating in the match and a select few key event staff need to have a real-time connection. There is a practical limitation for how many computers can be connected to the event in real time. As such, it is recommended that a Tournament Operator fulfill the role of the Emcee/Announcer in addition to another role such as Match Controller. The Head Referee and Scorekeepers also need access to the event in real time. All others should watch using the public video feed which will have a slight delay. The Head Referee, Emcee/Announcer, and Match Controller are key roles which have identical levels of access to the event and can fill in as backup for each other if needed.

Volunteer Roles

Those who are accustomed to in-person events will recognize that many of the roles and responsibilities for Live Remote Tournaments are similar to those filled at in-person events, but there are key differences. The table below compares the volunteer roles at in-person events to Live Remote Tournaments.

<table>
<thead>
<tr>
<th>Live Remote Tournament (LRT) &amp; In-Person Volunteer Roles Comparison</th>
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</thead>
<tbody>
<tr>
<td><strong>Live Remote Volunteer Role</strong></td>
</tr>
<tr>
<td><strong>Event Partner</strong></td>
</tr>
<tr>
<td>• Organizer of event</td>
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<tr>
<td>• Responsible for recruiting and organizing volunteers</td>
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<tr>
<td>• Responsible for setting up the event in RobotEvents.com</td>
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<tr>
<td>• During event, helps solve unforeseen issues/communicate with teams having connection issues</td>
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<tr>
<td>• Ultimately responsible for the execution of the event</td>
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<tr>
<td><strong>Key: Match Controller/Announcer</strong></td>
</tr>
<tr>
<td>• Backup Head Referee</td>
</tr>
<tr>
<td>• Needs access to real-time match video</td>
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<tr>
<td>• Needs Microphone</td>
</tr>
<tr>
<td>• Starts/stop Matches</td>
</tr>
<tr>
<td>• Finalize scoring</td>
</tr>
<tr>
<td>• Assist with scoring/correct errors</td>
</tr>
<tr>
<td>• Makes any event announcements</td>
</tr>
<tr>
<td>• Play-by-Play commentary during matches</td>
</tr>
<tr>
<td>• Communicates to teams for refresh.tech help</td>
</tr>
</tbody>
</table>
### Key: Head Referee
- **Emergency Backup Tournament Operator/Announcer**
  - Needs access to real-time match video
  - Needs Microphone
  - Watch the match and make rulings on legality
  - Makes final ruling on scoring issues
  - Oversees Team/Robot Inspection
  - Helps check accuracy of field reset

### Head Referee
- Watch the match and make rulings on legality, final word on rules and violations
- Verifies scores as posted with teams
- Oversees Team/Robot Inspection
- Can score fields if needed

### Scorekeeper Referee
- Does not use live video - but snapshots of team video feeds sent at intervals
- Scores matches (Usually assigned to a particular field or alliance)
- Potentially assists with inspection

### Scorekeeper Referee
- Score matches
- Potentially assists with inspection
- Helps check field reset

Currently it is recommended that only **three** computers can be connected into the Live Remote Tournament as Match Controllers/Announcers/Head Referees/Scorekeepers at any given time. This is due to the technological limitations of having multiple independent users being a part of the real-time data stream. The designation of roles for a Live Remote Tournament will depend on the physical locations of each volunteer. A Live Remote Tournament can be hosted with volunteers all working out of the same location, or with some or all of the volunteers working the event remotely. Review the guidelines below to get an idea of how volunteer roles can be delegated based on volunteer location.

### Recommended Volunteer Roles Based on Location

| All volunteers working the event from the same location | • 1 Match Controller with computer that receives live video  
| • 1 Announcer watching the Match Controller’s live video  
| • 1 Head Referee watching the Match Controller’s live video  
| • 2 Scorekeepers each with computer that receives live video |

| Scorekeepers working the event remotely, with EP, Match Controller, and Announcer in the same location | • 1 Match Controller with computer that receives live video  
| • 1 Announcer watching the Match Controller’s live video  
| • 1 Head Referee with computer that receives live video  
| • 1 Scorekeeper with computer that receives live video |

| All volunteers working the event remotely | • 1 Match Controller with computer that receives live video, this volunteer will act as the announcer as well  
| • 1 Head Referee with computer that receives live video  
| • 1 Scorekeeper with computer that receives live video |
If two volunteers can share a computer and a video screen, then event roles can be subdivided among additional personnel as long as the overall number of connected computers is limited. For example, one person serving as a Tournament Operator looking at one computer screen, while another serves as an Announcer looking at a connected monitor showing the same display. If each volunteer is in isolation and would need a separate connection, then it may be necessary for each volunteer to fill more than one role during the tournament (i.e., one person acting as both Tournament Operator and Announcer) in order to keep the number of overall connections to a minimum.

**Overall Volunteer Needs**

The Event Partner is responsible for recruiting:

1. One Tournament Operator/Announcer
2. One Head Referee
3. One Scorekeeping Referee per 1-2 fields
4. Any inspection staff (dependent on the number of teams at the event)
5. Any judging staff including a Judge Advisor if Judged Awards are given at the LRT event

As stated previously, some roles may be combined for Live Remote Tournaments. This depends on the circumstances of each Event Partner and their key volunteers.

**Note:** All event volunteers who need to be logged into the LRT system (Announcers, Tournament Operators, Head Referees, and Scorekeepers) will have identical access to the event. As such, volunteers will need instructions from the Event Partner as to what role they will need to fill on the day of the event and be mindful of their assigned role when selecting how to join into a match.

This also allows for volunteers to quickly cover each other’s roles if needed. For example, if a Head Referee loses internet access, a qualified Scorekeeping Referee can take over their position by joining a match as a Match Controller rather than as a Scorekeeper. To put it another way, volunteer roles are defined by what users do and in what role they join a match, rather than any attribute or level of permission associated with their account.

**Section 2: Technology Requirements for Key Volunteers/Event Staff**

The following list of technology requirements are for EACH of the key volunteers. Any Volunteer that is planning on filling the roles of Match Controller or Scorekeeper must adhere to these standards to ensure the quality of the event. At present only three Key Volunteer computers should be joined with the Live Remote system to receive real time video feed.
Required Equipment:

- Reliable Internet access (preferably via an ethernet connection)
- Computer running Windows 10 or Mac OS
  - Minimum of an Intel i7 processor (4 processing cores) or equivalent.
- Chrome web browser (running the most recent release of Chrome) on the computer for logging into remote.robotevents.com

**Note:** As the system improves, the system requirements are likely to change, and this section may be updated to include more specific hardware requirements.

Recommended Equipment:

- Additional large monitor or screen to make it easier for scoring/sharing the view of fields if multiple volunteers such as scorekeepers are working in the same location.
- High-quality microphone

**Note:** It is advised to have a solid communication plan for all Key Volunteers during the event. If some of the Key Volunteers plan to work the event remotely, a video chat service such as Zoom, or Google Meet can be used to communicate. Event organizers and the Head Referee should coordinate so scorekeepers are scoring the correct fields and have an alternate plan of communication such as group chat or telephone system for resolving any scoring issues.

**Section 3: Event Setup & Initialization**

**Step 1: Event Setup on RobotEvents.com**

The Event Partner sets up their event on RobotEvents.com by filling in all required fields. The process is the same as setting up other types of events on Robot Events except for some specific fields that need to be entered correctly on the “Event Information” page:

1. Be sure to select “Live Remote Tournament” as the Event Type.
2. Be sure to select “Remote” as the Event Format.

If you are unsure of this process and would like detailed instructions on posting events on RobotEvents.com, refer to this guide. It is recommended that Event Partners add a survey question in the event for coaches to confirm the event day contact phone numbers for each team’s Event Facilitator. This could also be done outside of the RobotEvents.com system via email or an independently written survey that the EP sends to teams. This is also included as an item in the LRT inspection checklist.

Once all required fields are filled out, Event Partners should contact their Regional Support Manager to initiate the final approval/review process.
Step 2: Set Up Key Volunteer Permissions

There are two methods within the event setup on RobotEvents.com to give volunteers access to the event via remote.robotevents.com. Both can be located under the ‘Event Administrators’ tab during event setup. In this tab, anyone with a RobotEvents.com account can be made either an ‘Event Administrator’ or ‘Authorized Live Remote Volunteer.’ The Event Administrator designation should be reserved for any REC or VEX staff supporting the event, including EESs, TEMs, and EEMs. ALL other volunteers for the event should be listed as Authorized Live Remote Volunteers. This includes Key Volunteers and volunteers filling the roles of Match Controller, Announcer, Head Referee, and Scorekeeper.

Volunteers will need to first make a RobotEvents.com account and then forward those emails to the Event Partner, who will then send their completed list of volunteer emails to their Event Engagement Manager (EEM) who will make the necessary modifications to their RobotEvents.com account. This needs to be done well in advance of your event date to ensure they are properly set up in the RobotEvents system.
Section 4: Event Initialization Procedures

Step 1: Verify Team List

Prior to event setup, the EP must verify the accuracy of the team list on RobotEvents.com. If a team does not appear on the team list in RobotEvents.com, they will not receive notifications in remote.robotevents.com to join both the inspection room, and the actual event. Each team’s attendance should be verified as a part of inspection and confirmed the day of an event. Any teams that do not pass inspection should not be included in the team list for the event. Teams who are marked as having failed inspection in the LRT system will be automatically removed from the team list and will not appear in the match schedule. This will be discussed in detail in the inspection section below. Event Partners can remove teams from the team list by going to the admin portal on RobotEvents.com and transferring them to the waitlist.

![Image showing the “Registered Teams” and “Add to Waitlist” buttons in the RobotEvents.com Admin portal.]

Step 2: Logging into the Tournament

When you are ready to start your event, all event volunteers should go to remote.robotevents.com and select “Login as an Event Partner.” All volunteers should use this button to log into the event.
Note: If someone is both a Tournament Operator and has a team in the event, they will need two separate computers, one to log in as a team, and the other to log in as an Event Partner/Volunteer.

Note: Separate buttons to log in as either a Team or as an Event Partner/Volunteer.

Step 3: Selecting Audio and Video Inputs

Once the Tournament Operator has logged into remote.robotevents.com, they will be asked to connect their audio and video preferences. At this time, they will have to choose/connect an audio input such as a microphone (please be aware of your microphone and mute yourself unless you are talking to the teams) but can select “None” for video. All volunteers require a microphone in order to connect to the event.

Note: The Tournament Operator and Head Referee roles do not require an appearance on camera and thus does not need a dedicated webcam.

Audio/Video Input selection screen

Step 4: Open the Tournament

Once logged in, a list of LRT events that your account has access to will appear. Click “OPEN” on your event that will be running on that day.
**Note:** If your event does not appear within the list, be sure to hit the “Refresh Events” button to pull in the most recent data from Robot Events. If event still fails to appear go back to the Event setup page and be sure you have event format as “Remote”.

![View of Available Remote Tournaments accessible by an Event Partner’s account.](image)

**Step 5: Set up Event Variables**

Once the event has been Opened, the Tournament Operator will be asked to set up the event by selecting the time allotted between matches, the number of matches, and other event details as shown below.

![The Event Setup screen where an EP can set up various aspects of the event schedule and settings.](image)

**Note:** The event date in the LRT system must match the date on RobotEvents – if the event is postponed, the event date in RobotEvents must be changed prior to the start of the LRT

The date and time in this setup window correspond to the start time of the first practice match for the event. If the event does not have practice matches, the time corresponds to the start time of the first qualification match. The time is measured in seconds. The time between matches is **not** the same as the “match cycle time” used in Tournament Manager. Match cycle time can be calculated by adding the match duration and the time between matches.

**Note:** The LRT system automatically builds in a 15 second autonomous period using the allotted match duration. As such, the match duration for a Live Remote VRC event should be 120 seconds.
The Event Partner can select the number of practice and qualification matches each team will play in the event. Due to the nature of this format, it is recommended that Event Partners give teams at least one practice match. This will give teams the opportunity to troubleshoot potential technical issues before their qualification matches.

**IMPORTANT:** When configuring the number of teams moving on to elimination matches, please keep in mind that due to the nature of this format, teams that lose connection will be unable to participate in the elimination matches, hindering the progress of the event. As such, Event Partners should be conservative when configuring the number of teams that will move on to Eliminations, setting that number to fewer than the total number of teams in the event.

The LRT system allows Event Partners to host an event spanning multiple days. This type of event can be configured in this setup window by checking the ‘Use custom time blocks?’ box. Custom time blocks allow the Event Partner to configure multiple start times for their event, as shown below.

![The custom time blocks interface, which allows the event to be configured with multiple start times.](image)

The example above shows an event which is configured to run over the course of two days. Block 1 starts on 9/1 and includes 1 practice match and 2 qualification matches for each team. Block 2 starts on 9/2 and includes 3 qualification matches for each team. This feature can also be used to build in breaks for one day events, such as a lunch break.

Once all the settings have been configured, the Event Partner will click ‘Save & Finalize Schedule,’ which will take them to the Setup Lobby. While these settings can be modified in the setup lobby, Event Partners should discuss these numbers with their Event Engagement Manager before moving on.
Step 6: Event Setup Lobby

After finalizing the initial setup, the Event Partner will be taken to the Setup Lobby. In the setup lobby, the EP can conduct inspections, generate match schedules, and edit the information from the initial setup.

The EP view of the setup lobby. The numbered items are described below.

1. **Begin Inspection**: The begin inspection button will open the inspection lobby to teams and volunteers. Teams are not able to access the inspection rooms via remote.robotevents.com until this button is pressed.

2. **Go to Inspection**: This button will take the EP to the inspection lobby.

3. **Generate New Schedule**: This button will generate a match schedule for the event using the settings configured in the initial setup. This button can be pressed multiple times and will regenerate a new match schedule each time. **Note**: Teams who have not been marked as passed inspection within LRT will not show up in a generated match schedule. As such, EPs should ensure that all teams who should be are marked as passed inspection are marked before generating a match schedule.

4. **Start Division**: This button will start the event. **BE AWARE**: Once this button is pressed, teams can no longer be inspected, the match schedule can not be altered, initial settings cannot be changed, and teams cannot be added or removed from the event. EPs should ensure that all teams have passed inspection and appear in the match schedule, and all settings are configured properly BEFORE proceeding beyond this point.

5. **Additional Settings**: These additional settings allow the user to enable best of 3 rounds for elimination matches, change the event start time, and change the number of practice or qualification matches each team plays. Best of 3 rounds for elimination matches can be enabled for any, all, or none of the elimination rounds.
Step 7: Organize Robot, Field, & Camera Inspections

Event organizers should develop a plan for inspecting teams. This process may take longer than in-person events since teams need to have their field and camera setup inspected in addition to their robot. This information can be found in the VRC LRT Technology and Field Inspection Guide.

The LRT platform includes an inspection lobby where teams can meet with EPs and volunteers to complete the inspection process. The inspection lobby is not accessible until the event variables described above have been set by the EP. Once these variables have been set and the EP clicks ‘Save & Finalize Schedule’, they will be able to access the inspection lobby.

*Inspection Panel: Above the event variables setup will be an inspection panel: Clicking “Begin Inspection” will start the inspection process with all the teams registered for your event. The “Go to Inspection” button will take you to the Inspection Lobby.*

**Note:** Once the ‘Begin Inspection’ button is pressed, the teams will be prompted through remote.robotevents.com that inspection for their event has begun. Teams will be able to then join the inspection lobby and queue for inspection.
Once inspection has been started, all the volunteers with access to the event can join the inspection lobby and begin inspecting teams. The LRT system allows multiple inspections to be conducted in parallel.

The image above shows a volunteer’s view of the inspection lobby. On the left side of the screen (1) is the inspection queue. Teams who have queued for inspection will appear here. The queue shows how long the team has been waiting, their position in the queue, and whether they are actively logged into the LRT system. The middle of the screen shows an active tally of the number of teams who have passed, are pending, or who have failed inspection. The checklist on the right (2) lists all the inspection items the teams must pass. This includes the robot, and camera/field setup portions of inspection.

Clicking ‘Inspect’ next to a team in the queue will bring the volunteer and the team into an inspection lobby. **Note:** If the ‘Inspect’ button next to a team appears grayed out, this means they are actively in an inspection room with another volunteer.

Once in the inspection room, the inspection can take place. The volunteer can check the boxes next to each item on the checklist to show that the team has met that requirement. If, for some reason, the team needs to leave the inspection room and return later, the volunteer can save the team as incomplete. This will return them to the inspection lobby where they can re-queue for inspection.

The dropdown menu below the checklist is used to change the status of that team’s inspection. Once the team has passed inspection, the volunteer can mark them as passed and click ‘Save and Leave’ to return to the inspection lobby.
Inspection status: Teams can Pass, Fail, or be saved as incomplete and removed from the queue - this option is for teams that may need time to fix an issue. Note: Failing a team in inspection will cause that team to not be included in the match schedule.

Completing inspections ahead of the event day gives teams time to resolve any issues before the event. It is highly recommended that event organizers do inspections with plenty of time for teams to make changes or corrections to be in compliance with the inspection criteria. Scheduling inspections a day ahead of the event can help the event run more smoothly, shorten the overall length of competition day, and provide a better experience for teams. This can be linked in the email that RobotEvents.com will generate for each team that registers for the event. To speed up the process, multiple inspectors can work in parallel.

If teams fail inspection at in-person events, they will often have an opportunity to make corrections to their robot in order to compete and must sit out of any matches until they pass an inspection. LRT events by nature cannot work the same way. For LRT events, teams that do not demonstrate that they can pass inspection in their allotted inspection time should be marked as failed and removed from the match schedule. This is because the event cannot start until all inspections are complete.

Permitting teams to compete in LRT events who do not have field or technology configurations that are in compliance with the inspection requirements will degrade the experience for other teams, event volunteers, and the audience. While it is laudable to try and accommodate teams who may be struggling to try and give them a good experience, the inspection requirements are not negotiable and the experience of all other participants in the event should take precedence over an individual team.

Section 5: In-Event Procedures

Overview of Main Lobby

Once the Tournament Operator presses the ‘Start Division’ button in the event setup lobby, they will be taken to the LRT Main Lobby. In addition, when this button is pressed, the teams will receive a notification to join the event via remote.robotevents.com.
This view shows the volunteer view of the LRT Main Lobby. Numbered items are:

1. **Match Schedule and Rankings tabs**: Clicking between these two tabs allows the volunteer to look at the match schedule, the current rankings, and elimination matches, once they have been generated. The rankings will automatically update after each qualification match.

2. **Current Match**: This section shows the match that is currently being played.

3. **Upcoming Matches**: This section shows the remaining matches to be played.

4. **Completed Matches**: This section shows matches whose scores have been finalized.

5. **Livestream**: In the center of the screen is the livestream. When the EP begins the event, LRT automatically creates an unlisted livestream on the REC Foundation’s YouTube channel. Since the stream is unlisted, it will not show up on YouTube search results. However, any person with the link to the livestream can watch the event live. The link can be found by both EPs and teams by clicking the YouTube icon in the bottom right corner of the stream.

6. **Communication Options**: In the top right corner of the Main Lobby are the communications icons. From left to right, the icons are Broadcast, Mute/Unmute, Private Chat, and Settings. The broadcast icon is only available to volunteers and allows an EP or volunteer to broadcast their video directly to the YouTube livestream. Mute/Unmute will control the volunteer’s microphone. **Note**: When a user is in the main lobby, no one can hear their audio. Private chat allows the EP to communicate privately with teams or other volunteers. The settings allow toggle between light and dark mode and allow the user to log out.

7. **Event Chat**: Teams and volunteers can post in the event chat. Posts in the event chat will appear for all users in the tournament. Volunteers have the ability to delete posts in the event chat by clicking the small red X that appears next to each chat.

8. **Generate Elimination Matches/End Event**: Generate elimination matches will take the user to a window (discussed later) where they can configure the settings for elimination matches. Teams will be ranked for elimination matches based on their qualification performance.
Overview of the In-Match Interface

This view shows the in-match view for the Tournament Operator. Numbered Items are:

1. **The Match Timer, Current Score, and Autonomous Scoring Indicators** – The color of the ‘Auton’ box next to the score indicates the autonomous winner. If both ‘Auton’ squares are colored at the end of the Autonomous period, this indicates an Autonomous bonus tie. A gold star in the ‘Auton’ box indicates that the team has received the Autonomous Win Point.

2. **Current Videos of Teams in the Match** – Each has independent full screen and mute buttons.

3. **Match Schedule and Rankings** – The left-hand side of the screen is the same as in the Main Lobby. Current/upcoming matches and updated rankings are viewable within matches.

4. **The Match Chat** – This chat is only visible for teams in the specific match and volunteers.

5. **The Scoring Interface** – The Head Referee and Scorekeepers will use this interface to score each match. Volunteers can use this interface to live score matches, or score matches after completion. Note that the user must select which team is being scored.

6. **The Match Actions Panel** – This panel allows the Match Controller to control actions in the match, including starting/stopping the match, and sending ‘Ready Checks’ to teams. The buttons in this panel are discussed in depth below.

7. **Communication Options** – These options appear the same when actively in a match as they do in the Main Lobby view.

**Note:** To join a match as either a Score Keeper or Match Controller, click on the 3 dots next to a match as shown. Scorekeepers will not have access to the Match Actions Panel, only the scoring interface.
Clicking on the three dots next to any match in the Match List brings up options to join as either a Match Controller or Scorekeeper. Event Partners should be aware of the differences between these roles.

The Broadcast Feature

This button allows an Event Administrator to change the outgoing video from the regular match view to the users’ own web camera and microphone and automatically begin streaming. When the user presses ‘Start Broadcast,’ the system will automatically send the users audio and video to the YouTube generated Livestream. This is useful for opening and closing ceremonies, award presentations, and/or drivers’ meetings. Clicking the button again will change the outgoing video back to the regular match view.

Once in the broadcast mode, you will be able to confirm your video and audio source before “going live” on your stream. Once you have selected your audio and video inputs, you will click “Start Broadcast.” **Note:** Be sure you are prepared before pressing ‘Start Broadcast’ as the user’s audio and video will be immediately pushed to the YouTube livestream when pressed. When you are done with your broadcast you will click “End Broadcast” which will bring you back to the Event Lobby and revert the stream to its normal view.

**Step 1: Start the Event**

After completing the event configuration and team inspections, the event is ready to start. Pressing ‘Start Division’ in the Event Setup Lobby will bring the user to the LRT Main Lobby, start the automatically generated YouTube livestream, and allow teams to join the event. Teams will receive a notification in Remote.Robotevents.com that the tournament has been started and a link that will take them to the LRT Main Lobby. As teams join, the team numbers will appear white in the schedule. If a team is not connected to the Live Remote Tournament, the team number will be grayed out. **Note:** It is recommended that the Event Partner pay close attention to teams who often appear grayed out in the match schedule. This indicates that they may be having technical issues and require assistance.
Tournament Operator can use the chat function on the right-hand side of the screen to communicate with the teams in the lobby. Event Partners and volunteers should also have their phone available that is listed on the event page at RobotEvents.com as the Event Day Phone Number. This gives teams that may be having internet connectivity issues a way to communicate with event staff.

**Step 2: Join and Queue a Match**

When the event partner is ready to start running matches, they can join a match by clicking the 3 dots next to a match and selecting ‘Join as Match Controller.’ This will bring the EP into the In-Match Interface, described above. The event partner should be aware that only **One Person** should join as Match Controller for a single match. All other volunteers (head referee, scorekeeper, etc.) should select ‘Join as Scorekeeper’ when joining a match. These users will still receive live match video but will not have access to the Match Actions Panel. Both Match Controllers and Scorekeepers have access to the scoring interface and chat features.

When the EP joins a match, the first thing they should **always** do is press the ‘Queue Match’ button, located on the top left of the match actions panel. Pressing this button does a few things:

1. Automatically brings the teams participating in the current match into that In-Match Interface.
2. Allows the user to send a ‘Ready Check’ to the teams in the current match.
3. Changes the Livestream view from scrolling rankings to the current match and allows the Emcee to be heard on the Livestream.

**Note:** Once in the match, the Tournament Operator can use the match chat function on the bottom of the page to communicate with the teams. The Tournament Operator can also use the microphone to communicate with the teams as well. The Tournament Operator will notice that teams can be muted using the microphone buttons on the bottom of each team video. This will mute the team for the Tournament Operator only. Teams will still be able to hear each other (teams can mute each other independently).

**Announcer Note:** Welcome teams to match, verbalize any discrepancies with field setup, if video for a team is not appearing, ask team to refresh their browser.
This view shows the in-match view for the Tournament Operator. The Match list is on the left, match actions such as Start Match as well as the scoring application are on the right. Event Chat is on the bottom of the screen, and the center has the view of both team fields.

Step 3: The Ready Check

Tournament Operator performs a “Ready Check” for all the teams to ensure they are ready to start the match. This is done by clicking the ‘Ready Check’ button, found in the Match Actions Panel. Pressing this button will send a notification to each team in the current match, asking them if they are ready to start the match. The team must confirm they are ready to start by clicking ‘Ready’ on their computer. In an in-person event, this is usually done by drive team members giving the head referee a “thumbs-up” signal that they and their robots are ready to start the match. The Ready Check button is purely cosmetic. This means that the Match Controller can still start a match, even if a team has not clicked ‘Ready’ on their end. EPs should be aware of this and use discretion when starting a match before all teams have indicated they are ready to play.

Note: If the Tournament Operator does not see one of the teams show up in the view, they should first refresh their browser page. It may take up to 8 seconds to refresh. Wait before clicking refresh again. If the team video feed still does not appear, the team must refresh on their end. For more information, click here for the LRT Troubleshooting Guide.

Announcer Note: Instruct teams: “Please click your ready check so we know you are ready for your match.” if they do not answer the ready check prompt.
Step 4: Starting the Autonomous Match Period

The Match Controller will select “Autonomous” to run the autonomous period of the match once all teams have confirmed they are ready to play. Pressing the ‘Autonomous’ button will start a 5 second countdown, after which the autonomous period will start.

**Announcer Note:** You can give a clear countdown to start the match, but do not say “Go.” Allow the Timer sound to be the signal as to the start of the match.

Once Autonomous is complete, referees will score the autonomous period, including whether teams have completed the requirements for an autonomous WP. The autonomous WP is a bonus independent of the autonomous bonus.

To do this, Scorekeepers, or the Head Referee/Tournament Operator will use the scoring interface on the right-hand side of the screen to assign points to teams based on their actions in the autonomous period. Points will be automatically calculated based on the inputs from the user.

**Announcer Note:** You should state which team is the autonomous winner or if it is a tie, and mention if teams have earned the autonomous WP.

Step 5: Starting the Driver Controlled Match Period

Once the Autonomous period has been scored, the Tournament Operator will click on “Driver” to begin Driver Control. This button will again initiate a 5 second countdown, after which the diver control period will start.
**Announcer Note:** You can give a clear countdown to start the match, but do not say “Go.” Allow the Timer sound to be the signal as to the start of the match.

While the match is running, head referees and scorekeepers can use the scoring interface to ‘live score’ the match as it progresses. In order to effectively live score a match, the EP should allocate one dedicated volunteer per team (field). This allows each volunteer to focus solely on their field and make scoring changes as they occur.

**Note:** It is not at all required that scorekeepers live score a match. Scorekeepers can wait until the end of the match to score each field. However, live scoring will add to the audience experience, and allow the Emcee to react to scoring changes as they occur in the match.

If, for whatever reason, a team’s robot needs to be disabled during a match, the Match Controller has this ability. Below the scoring interface, there is a switch that enables/disables a team’s robot during a match. This switch will always default to enabled at the start of a match. If this switch is accidentally flipped to disabled during a match, the robot can be re-enabled during the match.

**Step 6: Scoring the Match**

Once the match is complete, the scorekeepers will score the match using the scoring interface on the right-hand side of the screen.

**Announcer Note:** You can also use this time to discuss the different strategies employed by the teams, pointing out positive contributions by different teams, and thanking sponsors and supporters.
This is the match scoring interface located on the right side of the screen. Note that the scorer will need to select which team’s field they are scoring.

As shown above, the scoring interface allows the scorekeeper to score different aspects of each team’s field. Volunteers which are expected to score matches must have a thorough understanding of the VRC scoring rules, as well as any LRT scoring rule differences, which can be found in Appendix E of the VRC Game Manual.

**Step 7: Ending the Match**

Once the match is completed and believed to be scored correctly by the scorekeepers, the Match Controller will select “End Match”, and then click “Continue.”

**Note:** The "End Match" button gives you access to the "Finalize Scores" which will bring teams back to the event lobby. Think of this process as two factor confirmation that the match is over.
Once the match has been ended, teams will have a chance to confirm the scoring of their field. There will be a check mark by the team number in the scoring interface when a team has done so as seen below. Like the “Ready Check” feature, this is not a requirement for the event to proceed (teams that are unable or unwilling to confirm a score will not hold up a tournament).

While teams do not have to confirm their scores for the event to proceed, it is recommended that the volunteers communicate with teams after the match to identify scoring errors and correct them. Due to the nature of LRT competitions, there is a level of trust which must be given to teams in regard to scoring matches. While running a LRT, volunteers will often be required to score fields whose cameras are not ideal. Some game objects may be hard to see over video, and thus the ‘benefit of the doubt’ should be given to teams who contest scores.

**Note:** Scoring discrepancies should be handled by either the Head Referee or Event Partner. It is ultimately up to the EP as to the level of scrutiny with which fields will be scored. Remember, the point of the event is to provide positive experiences to students. Keep that in mind when handling scoring discrepancies.

*In the above image, one of two teams have confirmed the game object placement of their fields. This is shown by the white checkmark next to the team number.*

### Step 8: Finalizing the Score

Once the Head Referee has completed any final checks of the score, and all teams have confirmed their score, the Match Controller will select “Finalize Scores” in the Match Action Panel and then “Continue” On the “Finalize Scores” prompt. Pressing this button will push the scores of the current match to the rankings, and they will update live.
**Note:** Once the “Finalize Scores” button is clicked, the button will turn into “Unfinalize,” which will allow a Match Controller to go back and make a correction if needed. This should be rarely used if teams are confirming the scoring of their fields.

**Step 9: Leave the Match**

Once the Tournament Operator has ended the match for teams and finalized the score, the Tournament Operator will "leave" the match using the button in the Match Actions Panel. Pressing this button will bring the user back to the lobby to select the next match.

![Match Actions Panel](image)

**Note:** Since scorekeepers do not have access to the Match Actions Panel, they will have to leave the match by clicking the icon located next to the match they joined in the match list.

![Completed Matches](image)

*The arrow icon to the right of the completed match allows the scorekeepers to leave the match once it is completed. This is located in the ‘Completed Matches’ section on the left-hand side of the screen. Note: scorekeepers may have to scroll down on the match list to find this button.*

**Step 10: Repeat for Each Match**

Repeat steps 2-9 for each match. Once all Practice Matches and Qualification Matches have been completed, the Event Partner can move onto Elimination Matches.

**Announcer Note:** As you get closer towards the end of the event, remind teams that if they think they are going to be in a position to participate in elimination matches, they should make the appropriate plans to remain online through the duration of elimination matches.
Step 11: Generating Alliances and Elimination Matches

**Announcer Note:** After Qualification matches are over, congratulate all teams and set a timeframe for when finals matches will start.

Once all Qualification matches have been completed, the Event Partner can generate alliances and elimination matches. Since LRT competitions are played in a 1v1 format, there is no alliance selection following completion of qualification matches. To do this, the Event Partner will click on the “Generate Elimination Matches” button on the right-hand side of the screen. Clicking this button will take the user to the Elimination Matches Configuration Window. This window allows the EP to retroactively change the number of teams that will move on to elimination matches, as well as disqualify a team from participating in elimination matches.

The ‘Generate Elimination Matches’ button can be found in the LRT Main Lobby, below the event chat.

These settings allow the EP flexibility as the event progresses. For example, an EP might believe that they have enough teams to have 8 teams in the elimination matches at the beginning of the event. However, as the event progresses and some teams drop out or are unable to continue to compete for whatever reason, the EP no longer has enough teams to fill an 8-team bracket. With this window, the EP can change the number of teams who will move on to elimination matches.

As shown in the image above, the elimination matches are currently configured for 2 teams to participate. These teams are highlighted in green. The number above the image can be edited to change the number of teams who move on to elimination matches. Additionally, team ‘RECF1’ has been disqualified from participating in elimination matches. This was done by clicking the ‘DQ’d’ slider to the right of the team in the rankings.
When the elimination matches configuration has been completed, click continue to automatically generate elimination matches. Once elimination matches have been generated, the matches will appear in the upcoming matches section on the left-hand side of the LRT Main Lobby.

**Note:** Once elimination matches have been generated, there is no way to change the team rankings. Event Partners should ensure that the rankings are correct before generating Elimination matches.

**Step 12: Run Elimination Matches**

Continue running matches as shown in steps 2-8 until the last match. Brackets will be automatically generated as matches progress until the finals are played and a Tournament Champion is determined. Remember that teams with back-to-back matches will need time to change batteries and reset their field.

**Step 13: Ending the Event**

Once the last match is complete (finalized score and ended match) the Tournament Operator will be brought back to the LRT Main Event Lobby. The last thing the event Partner must do is end the event. This is done by clicking the ‘End Event’ button found on the right-hand side of the LRT Main Lobby. Ending the event will remove all the teams from the event and end the YouTube livestream.

![Generate Elimination Matches Button]

*Ending the event is an action that can not be undone, as such, the Event Partner should be sure that all aspects of the event are finished before pressing this button.*

**Congratulations!**

Your event is complete! At this time, you will need to manually add award winners, including Tournament Championships to the event on [www.robotevents.com](http://www.robotevents.com) via the EP admin portal.

**Section 6: Troubleshooting Information for Teams**

Please [click here](http://www.robotevents.com) for the LRT Troubleshooting Guide.