



FIRST Live Video Streaming Policy

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For further questions, please contact Jacob Komar at jkomar@firstinspires.org.



FIRST Live Streaming Policy

This Policy states the requirements and best practices that *FIRST* Program Delivery Partners and users of the *FIRST* Robotics Competition Field Management System must follow when live streaming events online.

Definitions

- “Event” - means a gathering of more than one *FIRST* Robotics Competition teams playing a *FIRST* Robotics Competition game from the current or any previous *FIRST* Robotics Competition season. (Persons who wish to Stream events for other *FIRST* programs should contact *FIRST* directly to help evaluate their needs and to determine what sort of support may be provided.)
- “Stream” - means transmission of live video content of an Event via an online platform for public viewing.

Background and Production Interaction

FIRST is engaged in a new cross-program marketing effort focused on live video web content. Part of this effort is to standardize event streaming to allow for greater cross-promotion efforts and more viewers of events! This effort will supplement (not replace) the existing resources *FIRST* uses at events- like the Audio and Video (“Event Production”) services.

The duty of the event production services is to create a show for the audience that is inside the venue. This usually consists of static and/or handheld cameras, graphics overlays from things like a score bar, microphones for announcers or speakers, etc. Often times, inside a venue, a close-up camera shot of an individual robot works for the “story” of the event, as there is context to what the audience is seeing when they’re able to look around the field at their will. On the other hand, simply streaming the feed from the scoreboard at the event onto the web can leave out elements of the story that can be captured through the use of additional camera angles and designated volunteers to manage the event’s web presence.

Twitch

FIRST has selected [Twitch](#) as the official exclusive live streaming partner, due largely to both the technical capabilities as well as the community building products offered to rapidly develop large live viewership communities. The extensive video distribution infrastructure of Twitch (a division of Amazon) benefits our viewers, as distribution servers exist in dozens of locations around the world. This reduces latency, and betters the viewing experience.

FIRST’s long-term strategy is to develop content on Twitch using existing robotics competition events, new influencer-based engagement opportunities with teams and community members and new habitual programming related to STEM. This will allow us to reach a new audience and build a community of students, educators, sponsors, supporters and the public.



Execution Strategy

As *FIRST* continues to grow, so does the demand for video content from events. To date, countless volunteers have worked to help produce video content for our community to enjoy. As the number of hours streamed per year climbs, we are making an effort to make the online video experience across all *FIRST* events live up to a quality standard, with consistency at its core.

The major advantages of unifying the *FIRST* online video experience are:

- A consistent viewer experience helps make our brand recognizable on the platform and across the web
- Streaming partners gain access to our “firstinspires” channels, which have many benefits, such as special promotion and video transcoding
- An eventual pathway toward automated match splitting across all events
- A unified chat moderation policy and team

We are focused on:

- Stream Quality - A minimum bitrate and resolution are required, with a minimum set layout that consists of at least one full-field view (more options are available!)
- Branding Requirements - All *FIRST* logo requirements must be met, and no additional non-approved static logo graphic elements can be displayed over the stream.

This Policy describes different streaming options, branding regulations and requirements, technical requirements, operational advice, and other policies for each option. Compliance with this Policy is a mandatory part of using *FIRST*'S intellectual property (such as showing game play or *FIRST* graphics) in a stream.

The “Streaming Classifications” section states the requirements for each Classification to earn the benefits of that Classification.

All events must follow the requirements outlined in the “Streaming Branding Requirements” and “Streaming Technical Requirements” sections.

The “*FIRST* Chat Moderation Handbook” and “*FIRST* On-Air Behavior Practices and Standards” sections are intended to help create a welcoming and inclusive community environment and uphold the values of *FIRST*.



Streaming Classifications

This section lists the classifications of streams. Each classification is specified by a set of streaming requirements and includes a set of promotional rights and support. Classification is based on the configuration used for the stream.

This Policy refers to “numbered” channels. “Numbered” channels are in the format of “firstinspires1”. All Twitch channel names that contain firstinspires **must** be managed and accessible by HQ.

As a guideline, “hosting” a “firstinspires” channel is always acceptable and does not impact evaluation of streaming classification. Note that “hosting” in the Twitch ecosystem is a method of “sharing” an existing stream on another channel without “simulcasting” the event. You can read more about host-mode on the Twitch website [here](#).

Class A: “FIRST Webcast Unit” authorized by FIRST streamed to Twitch

- **Must:**
 - Stream on Twitch via “FIRST Webcast Unit” authorized by FIRST HQ two fully-defined channels:
 - “Program view”, operated by a video switcher live at the event, selecting one of three supplied cameras with defined shot or production company passthrough
 - “Multicam view”, full-time tiled shot of three supplied cameras plus the “program view” in one frame
 - Franchisees who have purchased “Webcast Units” with authorization of FIRST are eligible for Class A classification
 - Comply with Streaming Branding Requirements
- **Includes:**
 - Streaming on numbered “firstinspires” channel, promoted on frc-events web pages, both channels included in “TV Guide”
 - Hardware and Stream support provided by HQ
 - Access to Moderator Network
 - “Green” Verified Badge
 - Automated YouTube match splitting



Class B: Total 3rd party parity of “FIRST Webcast Unit” end product streamed to Twitch

- **Must:**
 - Stream on Twitch via 3rd party hardware two fully-defined channels:
 - “Program view”, operated by a video switcher live at the event, selecting one of three supplied cameras with defined shot or production company passthrough
 - “Multicam view”, full-time tiled shot of three supplied cameras plus the “program view” in one frame
 - Comply with Streaming Branding Requirements
- **Includes:**
 - Streaming on numbered “firstinspires” channel, promoted on frc-events web pages, both channels included in “TV Guide”
 - Access to Moderator Network
 - Stream support provided by HQ
 - “Green” Verified Badge
 - Automated YouTube match splitting

Class C: Single “Multicam View” streamed to Twitch

- **Must:**
 - Stream on Twitch via 3rd party hardware a single channel:
 - “Multicam view” consisting of at least a static wide-shot of the playing field with an unmodified audience display overlay.
 - Comply with Streaming Branding Requirements
- **Includes:**
 - Streaming on numbered “firstinspires” channel, promoted on frc-events web pages, included in “TV Guide”
 - Access to Moderator Network is negotiable
 - Stream support provided by HQ only when utilizing named “firstinspires” channels
 - “Yellow” Verified Badge
 - Automated YouTube match splitting is negotiable

Class D: Other “in-season” events

- **Must:**
 - Stream on Twitch using an unmodified audience display overlay on a private channel.
 - Comply with Streaming Branding Requirements
 - All in-season events must comply with Class D at a minimum.

Class E: Any FIRST event streamed using FIRST-owned field software

- **Must:**
 - Comply with Streaming Branding Requirements



Streaming Branding Requirements

It is crucial to both the integrity of the *FIRST* Live Streaming program as well as the integrity of *FIRST*'s relationship with their sponsors that all branding rules are followed, all of the time. By default, the Class A "*FIRST* Webcast Unit" system is shipped with all graphics to spec, but operation of Class B-E systems require careful attention to these details.

These requirements help keep our streams standard, providing a familiar viewership experience to our audience. This consistency in streaming will lead to a better user experience, and subsequently more eyeballs on our streams!

- *FIRST* and subsidiary logos must be used according to brand logo standards.
- Sponsor logos may not be displayed outside of "commercial" style content (such as the sponsor loop provided by HQ).
 - This is to avoid the impression that *FIRST* streaming is sponsored by any outside party.
- All graphics (lower thirds, full screen graphics, etc) to be used outside of the "match experience" must be approved by *FIRST* HQ for Class A-D systems.

FIRST Robotics Competition Specific:

- No additional graphics or overlays beyond the supplied FMS Audience Display may be displayed during match play, match preview, or score screen.
 - The "match experience" of a given *FIRST* Robotics Competition game is part of the property rights of that game. Parts of this experience may include corporate sponsorships with agreements that prevent additional content from being displayed alongside or in proximity to their logos.
 - It is critical that the graphics displayed over each "match experience" are unified to allow post-processing for other uses by *FIRST* and its subsidiaries.
 - During each *FIRST* official award presented, the corresponding FMS Audience Display graphics containing the name of the winner must be displayed upon the winner's announcement for a minimum of 10 seconds (without cropping or modification of the graphic presented by FMS).



Streaming Technical Requirements

In this section, *FIRST* establishes minimum standards for the content that appear in our online activations and channels. These standards are intended to enhance the experience of our students, mentors, volunteers, fans and the general public. The product produced as a result of these standards is a critical part of the storytelling initiative.

FIRST classifies all video content that is streaming live as a “stream” (or “webcast”) regardless of the destination service. In almost all cases, an operator is required to select between multiple camera feeds, graphics, video content and other promotional items. This operator is often called the “Webcast Operator”, and in the case of the *FIRST* Robotics Competition, is trained remotely by staff on the philosophy and goals of the streaming program. As noted in the overview, the role of streaming staff is to supplement the role of the event production staff (such as audio or video contractors), but utilize the output from the production crew as an asset in the creation of the stream. Depending on the size and length of the event, multiple volunteers can be assigned to provide shifts or break opportunities. Because the stream is meant to supplement the work of the production (A/V) company, we do not provide specific recommendations for camera operators or directors. It is assumed that those roles exist with the production side of the event, and not on the streaming side.

While our equipment requirements are modeled after the equipment in Class A, the equipment used in streams on all Classes are relatively similar. The core of the “Webcast Unit” is an ATEM Television Studio, made by Blackmagic Design. This unit, which in turn has multiple configurations available for purchase, accepts camera (and production crew) inputs and allows for the addition of graphics or mixing effects that are used to create the “program feed.” In cases where a “multicam feed” is desired, this ATEM can be paired with a Blackmagic Multiview 4 (or similar) and an OBS overlay to create a pair of streams. Equipment is not described in greater detail, as the final output product can be created to the required specification from a number of different products. It should be noted that the primary streaming method, Class A “*FIRST* Webcast Units” are managed by *FIRST* Engineering are described in more detail (including purchase options) in the product documentation.

Except at the subset of *FIRST* events that have HQ production staff, the “Webcast Operator” is the ultimate decision maker on the combination of camera angles and video content that make up the “program feed” (if applicable.) This “program feed” is intended to relay to the audience the story of the event, the teams and the broader mission of *FIRST*. Usually, the program view contains only one camera angle at a time.

At most events, a “multicam feed” is used to convey a larger amount of content at once. This stream is intended for an audience who is familiar with *FIRST*, such as members of teams or scouts at a competition. These multicam feeds contain three camera views, offering at least three static (or majority static) camera angles of the event or field (such as a “red alliance view”



and “blue alliance view”). The audience display software is overlaid over the camera layout, and uses triggers directly from FMS to automatically change audience display views.

Our streaming minimums consist of the following, regardless of what schedule classification your stream falls in:

- **Program Feeds**
 - Resolution: 1280x720
 - Framerate: 29.97 FPS
 - Bitrate: 4000kbps (up to 6000 kbps)
 - AVC Level: 4.1 (Main/High)
 - Render Method: Progressive
 - Keyframe: 2 seconds

- **Multicam Feeds (when applicable)**
 - Resolution: 1920x1080 (however we **strongly** recommend 2560x1440)
 - Framerate: 29.97 FPS
 - Bitrate: 5000 kbps (up to 6000 kbps)
 - AVC Level: 4.2 (Main/High)
 - Render Method: Progressive
 - Keyframe: 2 seconds

Often times, we refer to these stream specifications in a “short form” as: 720p59.94 (or in the case of Multicam, 1080p59.94). These short forms refer to the vertical resolution, render method and framerate, and sometimes appear in hardware/software in these formats. The other items in the specification are primarily used for configuration of the streaming hardware and/or software.

While streaming, recording to the local machine provides the capability to post event archives and use components in broader marketing initiatives. Recording also allows differentiation of specifications from those used in the stream standard, when desired by support staff. Event recordings (archives) are automatically created on all official FIRST channels (numbered or named channels). As an event is happening, viewers can use the Twitch app, or website, to scan through the content as they desire. After an event concludes, streams on official channels are archived by staff such that they remain available for VOD (on-demand) playback through Twitch indefinitely. In some limited cases, or in cases where a private (non-FIRST) channel is in use, VOD playback may only be available for 14 or 60 days.

In the case of *FIRST* Robotics Competition Regional events, the stream is automatically split into individual matches. These individual matches are then uploaded to FIRST (or FRC) media accounts, such as YouTube. This match (or event) archive/upload service depends on your stream agreement with FIRST HQ.



In addition to the configuration of the hardware/software used for streaming, a reliable and significant internet connection is required. It's critical to the success of a stream that the internet provider (be it a University, high school, convention center, etc) provide a clean connection- one that no upload throttling or domain restrictions. We'll need access to TCP/UDP ports 80 and 443 as well as TCP 1935. Ports 80 and 443 are standard web browsing ports, often recognized as HTTP and HTTPS. Port 1935 is used by a streaming protocol called RTMP, used to communicate with Twitch ingest servers.

In addition to having a clean streaming environment, we'll need the proper upload speed to handle one, or possibly two, streams simultaneously. For the program feed, using the specifications above, an upload speed of 6 Mbps (Megabits per second) is required. For a multicam feed, using the specifications above, an upload speed of 9 Mbps is required. These requirements are additive, meaning running both streams from the same internet connection would require an uplink of 15 Mbps. Best practices would be to have at least the same download bandwidth as upload, and almost every ISP provides more download bandwidth than upload bandwidth. Please keep in mind that our requirements are written exclusive of any other activity on a potentially shared internet connection- for example, if an event has other conferences or sessions that may be streaming, additional upload bandwidth would be required. It's also worth noting that a "speed test" done at a site will often present artificial results due to ISP interference- the best way to verify speed availability is to conduct a test stream to a private account (free to create on the Twitch.tv website) for a sustained duration of time on the venue internet connection as it will be during the event.



FIRST Chat Moderation Handbook

Congratulations on becoming a volunteer chat moderator for a *FIRST* or partner Twitch channel! It's up to you and the rest of the moderation team to ensure that our audience has a positive, engaging experience with *FIRST* on Twitch. With great power comes great responsibility, so pay attention to the details in the document to equip yourself to perform this role to the best of your abilities!

The first thing to note is your access permissions and your representation of the organization. Your personal Twitch user login will be given Moderation privileges for the channel(s) you are intended to moderate.

While you are moderating, you are upholding the core tenets of *FIRST* as outlined in this document, but are not to portray yourself as representing *FIRST* Staff or as a representative from the organization. It *is* OK, and encouraged, to communicate who you are and your role as a volunteer moderator.

Twitch Chat is a core product that *FIRST* is using on the Twitch platform to better engage our existing and new potential audiences and customers. There will likely be a mixture of users who are already familiar with *FIRST* along with new users who have no experience, or even may never have heard of the organization. The latter is particularly likely if you're moderating a program that gets Twitch Front Page Promotion. We must welcome these new users into our community, while clearly communicating that our chat moderation policy is quite stricter than most other Twitch communities.

Let's get started! Here are some general guidelines you should follow when interacting with chat to help make it a warm, friendly place:

- **Be polite** - Remember that everyone in chat is a real person, and should be treated with respect. People tend to mirror the behavior they see of other chat members and moderators, so setting a good example is key.
- **Be on-topic** - Staying on topic not only helps new users better learn and connect with the live content, but can be a great tool in fighting trolls and negativity: simply change the topic to engage other users with on-task discussion.
- **Be helpful** - Pay attention to other users questions to keep the conversation constructive and on-topic. Provide information and answers to questions if you know them, and feel free to whisper a user if they have a more specific, detailed question.
- **Be fun!** - Chat is a fun place that's great for finding other *FIRST*ers and to build a community. Relax, enjoy yourself, and help other have a good time too.



Next up, we have some guidelines that specifically govern your moderation role:

- **Be a leader** - You're not in charge of the chat, but are leaders of the chat. Set the example by having great conversations and supporting users. The ideal chat mod is a facilitator, someone who is encouraging and helps people feel supported and empowered.
- **Be friendly** - As a leader, you set the tone for the channel. If you're friendly and welcoming, others will follow your lead. If someone is acting rude or confrontational, react calmly and politely as you enforce the rules.
- **Assume good faith** - Users of all skill levels and opinions will participate in chat. Even if someone makes a mistake, they are still likely trying to be a positive part of the discussion. Assume that mistakes are made out of good intentions, not malice.
- **Ban with care** - Banning someone from chat is rarely the first option. If a user has problematic behavior, encourage them to improve the behavior before you resort to banning them.
- **Keep it fun** - Chat should be fun for everyone, including you! If you find yourself getting stressed, it's always okay to take a break. Chat should be a place where you too can relax, enjoy yourself, and help others have a good time.

What are the moderation tools available to you? As a moderator:

- **Moderator chat icon next to your user name** - Speaking in the chat as a mod brings its own level of gravitas, which can often be used to help cool down a situation or change topics decisively. Trying to solve the problem verbally should be your first option
- **Timeout** - You can time out an individual for a set amount of time. This allows the chat to change topics and cool down while the offending individual waits to participate again.
- **Ban** - You can ban individuals from chat on the channel entirely and indefinitely, or until the ban is manually lifted.
- **Slow Mode** - If the chat is running too quickly and is impossible for anyone to keep track of conversation, you can set Slow Mode, which rate limits any particular user's messages.
- **Follower Only** - For very large events, like the kickoff and Championship, the Follower Only mode can be used to only allow users who are following our channel to be able to chat. Additionally, a restriction can be put into place to only allow users who have been following for a certain period of time to be able to chat. The recommended value is 10 minutes, as 30 minutes may exclude legitimate chatters from participating. This has the added effect of increasing our follower count.
- **Subscriber Only** - Similar to Follower Only, only allow Subscribers to chat. We currently do not have a use case for this mode, and you are not allowed to use it unless under direction from support.
- **Emote Only** - Only allows users to post chat messages using emotes. This could be used either under very high volume chat conditions, or if the level of toxicity in the chat is too high to deal with otherwise. This mode should only be used under the direction of support.

The usage instructions of these tools can be found here: <http://bit.ly/2Dr4c7K>



What are some examples of content that we specifically want to look out for?

- **Foul language** - The automated moderation features should weed out most foul language, but some users will try to circumvent the filters by using clever spellings or symbols. These users should be timed out on the first offense and subsequently banned.
- **Racist remarks** - There is no place in our community for these type of comments, and these individuals should be banned immediately.
- **Threats of violence/cruelty** - Depending on the severity of the comment, the user should either be long timed out on the first offense before a ban, or immediately banned.
- **Sexual remarks** - Like foul language, the automated moderation features will catch most of these. Users using this type of language should be timed out on the first offense and subsequently banned, unless the first offense is egregious or about someone specifically in the stream or chat, which would warrant an immediate ban.
- **“Doxing” information** - Doxing is generally known as an attempt to reveal something that is not intended to be public about a person or streamer. Information that is generally publicly accessible is fine- such as the state or city a *FIRST* Robotics Competition team is located in. An example of unacceptable information would be a phone number or address (regardless of whether the information can be validated) of a team member or volunteer appearing of the stream.

Finally, here are some tips from our moderation team:

- Coming down hard on people who make personal attacks or jokes about others in chat or on camera is important. Long timeouts for first time offenders, and a ban for repeat offenders is appropriate.
- Don't directly punish people for being critical of *FIRST* as long as they don't push the issue too much or cross the line. Instead, try educating or changing the topic.
 - Example: Timing out someone for saying “:lul this game sux” can breed hostility in the chat as other users who share a similar opinion come to their defense, or simply start accusing moderators of censoring the chat.
- No matter how heated a discussion becomes, remember that you're still representing the organization, and that no form of vulgarity, abuse or personal attacks will be tolerated.



FIRST On-Air Behavior Practices and Standards

This section defines rules and best practices for any talent appearing on-air on any *FIRST* Online Video program. The section covers both hosts and guests, and is to be strictly adhered to at all times.

Rules:

- “Radio Rules” apply to foul language. In general, we keep our content very clean to reach a target audience as young as 13, and a large component of this is the elimination of profane language. Our streams are not covered with a real-time censor, so it’s entirely on you to prohibit the use of expletive or suggestive language on the channel.
- No obscene or indecent content is allowed. This includes any form of nudity, sexual implications in language or in actions, and any reference to violence or cruelty. We are stricter than the “Miller Test” (also known as the “three prong obscenity test”) - the fundamental question you should ask yourself is: “could the parent of a 13 year old take objection to this content?”
- Keep the stream fun and motivating! The purpose of these programs are to be fun, motivating and inspirational to students, educators, parents and sponsors, so it’s important to stay away from pejorative comments, and steer the direction of the conversation to something more on-topic.
- Don’t endorse any products without the approval of a content director. It’s important that our sponsors are fairly represented.

Best Practices:

- Read through any pre-scripted material before going live. This will help you identify any language that is unnatural for you to say, and will help you think about the conversation, not the words.
- Always assume your mic is hot! Nothing is more embarrassing (or libelous) than saying something when you think your mic isn’t on air... but it is.
- Don’t panic! Whether it’s missing text from a teleprompter, a sudden high-pressure situation, or a guest that says something that they’re not supposed to, keeping your cool and ad-libbing can help smooth over a situation for the audience.
- No yawning! Even though our days can be long, it’s important that you seem interested and engaged. If you’ve checked out, how do you think our audience is feeling?
- Don’t smile or laugh at inappropriate times, and don’t show a bias when talking about teams, programs or products. The exception is if you’re speaking with a sponsor or talking about a sponsored product under the direction of a director.
- Don’t insult a guest! Sometimes, asking tough questions is a must, but keeping everyone engaged and on-board with our content is important to the success of both the stream as well as our program as a whole.