Shig

distribute and clone live streams among Fediverse instances
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I am interested in interactive live streaming in the Fediverse.

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Fediverse

Mastodon

The Posts are coming to your App
Actor

Images: https://www.w3.org/TR/activitypub/
Content get cloned via Activities between Instances

- Activities: Subscribe, Follow..
- Content: Posts, Article, Video, Images ....
Activity Pub and Live Streams

Owncast, PeerTube,..

But: You can not interact without leaving your instance!

Multi User Livestreams

Live Chat

Collaboratives Streaming

...
Live Stream Scale (Fediverse)

Hardware, CDN, Object storage

PeerTube:
- P2P Media Loader (via HLS and BitTorrent over WebRTC)
- WebTorrent
- Remote Runner

Owncast:
- has a Online Dashboard with linked Instances
Interactive Live Streams

We use ActivityPub as a protocol to share.

We want to interact with live streams:

- Add/remove/enable/disable tracks inside the streams
- Tracks from various sources are combined into one stream.
WHIP/ WHEP & WebRTC

WHIP/WHEP

The main idea is to create or subscribe to a live stream resource via an HTTP request.

WebRTC

Because we need a real-time protocol.
WHIP

Images: https://www.ietf.org/archive/id/draft-ietf-wish-whip-01.html
WHIP Pipes

WebRTC Resource

A

WHIP to Endpoint

B

WHIP to Endpoint

C
Sounds like streams can be cloned!
However!

WHIP/WHEP is static, and a resource cannot be updated!

And interactive live streams are dynamic, constantly adding, removing, enabling, and disabling tracks.
How Shig solve this?

1. Data Channel for Egress Endpoints
2. SDP i-attribute (media title) on each media type:
   
   \[ i=1 \ 1 \ \text{A-STRING} \]

3. ActivityPub relies on HTTP requests for Subscribe and Create
Shig

- **Instance**: https://github.com/shigde/sfu
- **Javascript sdk**: https://github.com/shigde/shig-js-sdk
- **PeerTube Plugin**: https://github.com/shigde/peertube-plugin-shig-live-stream