LIVESTREAMING

A technical exploration into Livestreaming and sharing of best practices

Presented by:

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ROBOTICS EDUCATION & COMPETITION FOUNDATION

SUMMIT

| VEX ROBOTICS PROGRAMS |

REC FOUNDATION   VEX ROBOTICS

Robotics Experience

Involved with VEX in Ohio for the past 15 years - team mentor, photographer, tech support, livestream, EP

Event Experience

On the EP Team for the Kalahari Classic Signature Event and Ohio State Championship

Work Experience

35 Years with the Delaware County Engineer's Office - Information Systems Manager

Clinton Matlack

RSS Central Support

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Attended the RECF EP Summit for the past 3 years as an EP

Volunteer Mentor - North Union Robotics, V5RC & VIQRC

Robotics Experience

21 Years of Robotics experience in multiple programs. 13 years experience in VEX programs as a Coach, EP and now with the REC

Event Experience

Hosted many Live Remote Skills events, In person Qualifying events, and ERCs for both V5RC and VEX IQ

Work Experience

Before joining the REC full time I was a teacher for 21 years. My most recent teaching job was Tech Ed and Project Lead The Way in Harrisburg South Dakota

Chris Stewart
Senior Regional Support Manager

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I have a passion for robotics and have been fortunate enough to find a job that blends my passions and my skills and where I work with and learn from a group of like minded individuals.

As a Regional Support Manager I manage the upper Midwest to include North Dakota, South Dakota, Minnesota, Wisconsin, and Michigan, and I also assist with the JROTC programs

Mission & Vision

✓ Mission

The Robotics Education & Competition Foundation's global mission is to provide every educator with competition, education, and workforce readiness programs to increase student engagement in science, technology, engineering, math, and computer science.

✓ Vision

We see a future where every student designs and innovates as part of a team, overcomes failure, perseveres, and emerges confident in their ability to meet global challenges.

Inspiring students, one robot at a time.

01

Why To Livestream
The Benefits

The Benefits
of Livestreaming

- Elevate your events

- Exposure for your robotics program

- Scouting (Teams use match footage)

- Coaches, Teams, and Head Referees can see gameplay in other states

- Possible Sponsor partnerships (Ads or Logos)

Adding Livestreaming To Your Event: Who should consider adding Livestreaming

- Livestreaming will add more technology, volunteers & equipment

- **New EPs** - Running your first few events is probably not the best time to add livestreaming

- **Experienced EPs -** Who have experience with running successful events, and want to elevate their tournaments

Equipment: How Much Will This Cost Me?

THE SKY'S THE LIMIT

- **Beginner** - Computer, Webcam, Tripod, USB Extender, Cables, OBS Software. **$**

- **Advanced** - NDI Network Cameras, Network Knowledge, Audio Mixer, Network Cables, Router, etc. **$$$**

- **Expert** - Video Mixers, Audio Mixers, NDI, SDI, HDMI Cameras. Networks, Livestreaming services. - **$$$$**

OBS Studio

02

Livestreaming - The Basics

Let's Get Started

Getting Comfortable with Livestreaming: Low-Stress Ways to Practice

Livestreaming adds another component to your event. Don't try to implement livestreaming before you are comfortable with the process.

Here are some low-pressure ways to experiment and build confidence:

- Scrimmage

- League - Maybe it's a small league– you can experiment with one camera, one field, low pressure

- VIQRC Event (Less field technology)

- Work your way up to larger tournaments

Best Practices: When you're first experimenting with the livestreaming process, avoid broadcasting directly to YouTube. Instead, record your video locally to your computer.

Let's get started Livestreaming Basic Beginner Setup (Start Small)

Livestream equipment for a small two-field
local tournament or league.

- 1 - Dedicated Livestreaming Computer with Networking
  capabilities. Tournament Manager & OBS (Open
  Broadcaster Software) installed. 3-4 USB Ports

- 1 - Youtube.com Streaming Account (Free)

- 2 - USB Webcams (90° Field of View)

- 2 - 9' Tripods (light stands)
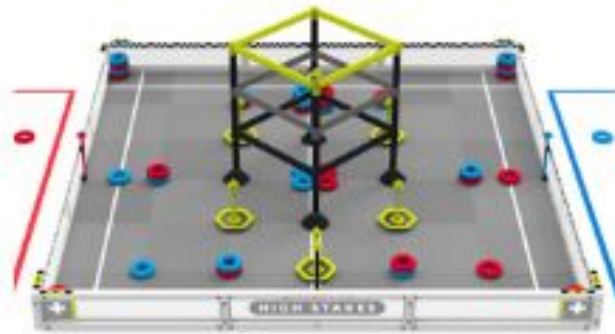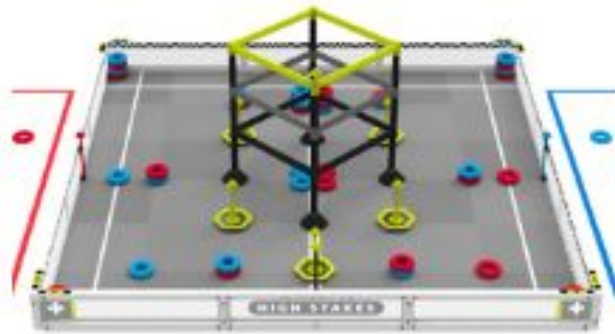
- 2 - USB over Cat6 Cable Extender & Cat6 Cables

**Best Practices: Have a dedicated computer for your livestream.
DO NOT run your Tournament Manager Server & livestream
on the same computer.**
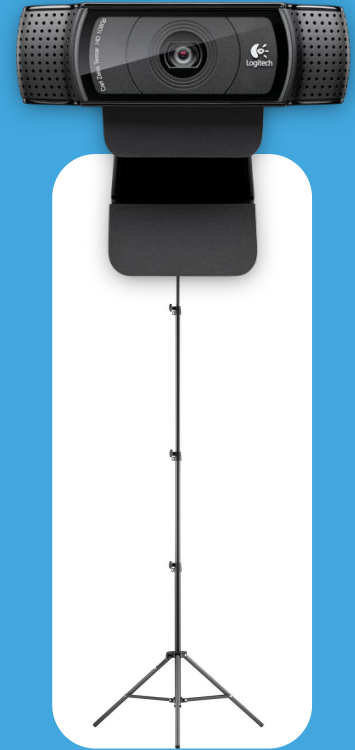
Let's get started Livestreaming Basic Beginner Setup

Let's take a look at a basic video setup for a
VEX V5 Robotics Competition with two fields

Each field has a camera pointing at it.

Let's get started Livestreaming
Basic Beginner Setup

These camera inputs go into the video switcher, which overlays the graphics from Tournament Manager onto the camera feed.

In this case, OBS is our video switcher handling the video sources of each field, and the Tournament Manager Overlays (sources) and combining both creates an OBS scene.
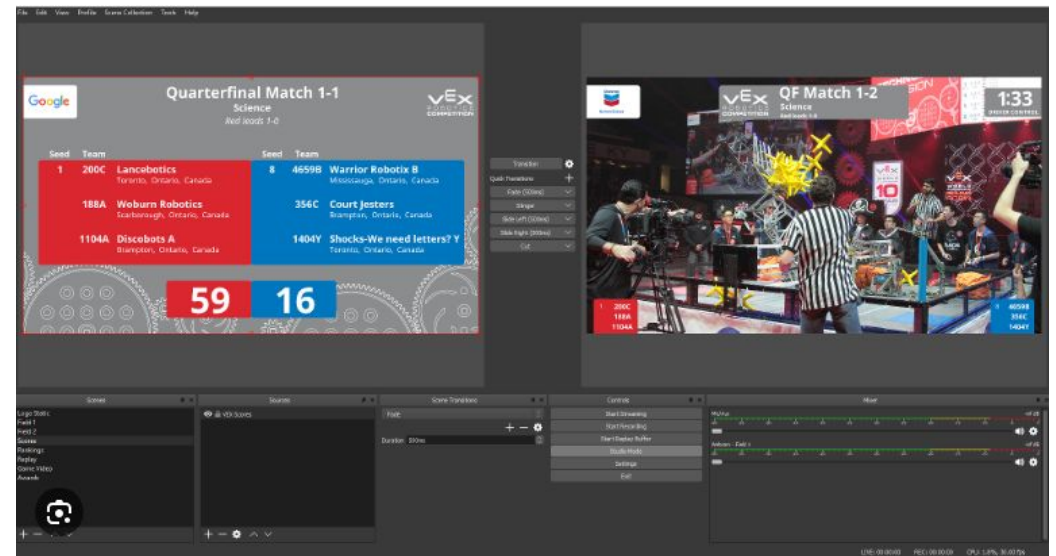
Camera Placement & Overlays
It's the little things.

Best Practices: Plan your camera setup in advance. Make sure that you leave enough space on the <u>audience side</u> of the field for proper camera placement. Tape everything down (tripods & cables).
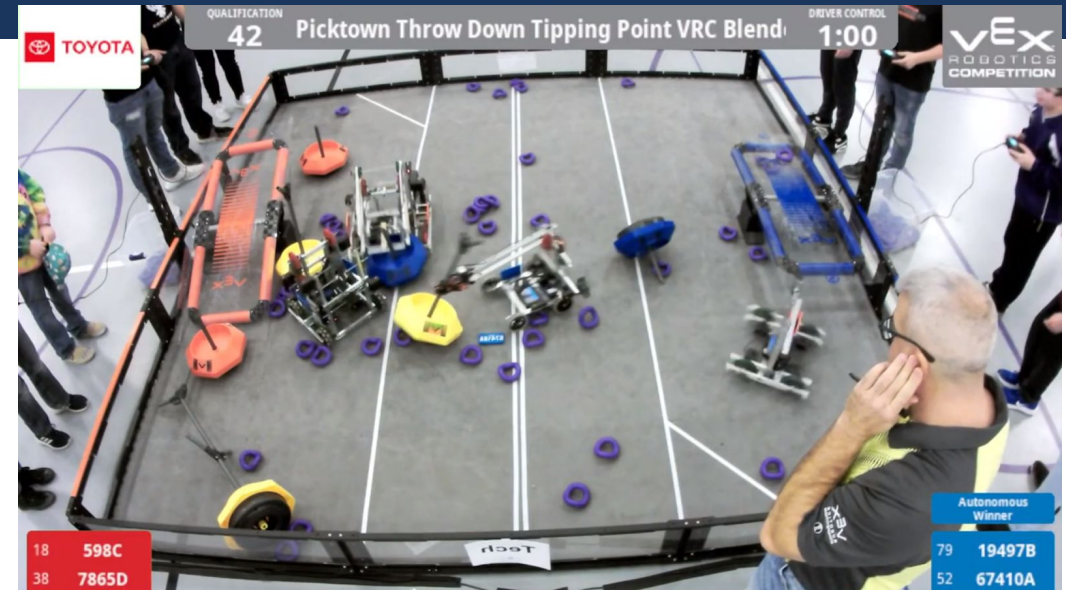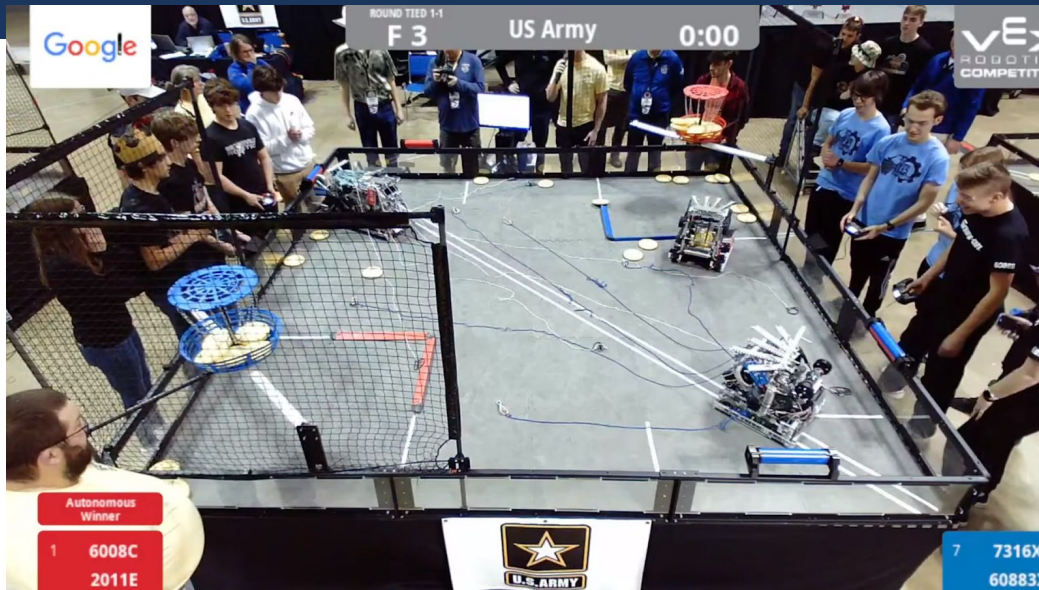
Sure, you can "reverse" the image in OBS, but the result is less than desirable, and will ultimately give you reversed text. If you have watched enough of the game, you can tell that something is off on the incorrect camera placement, and the gameplay just "feels off."

Plan your layout & Document Key Information Planning Is Key

Best Practices: Color-code & label livestream cables (Different from the Network). Map out your camera placements, and document necessary IP addresses, passwords, API Keys, Livestream channel keys.
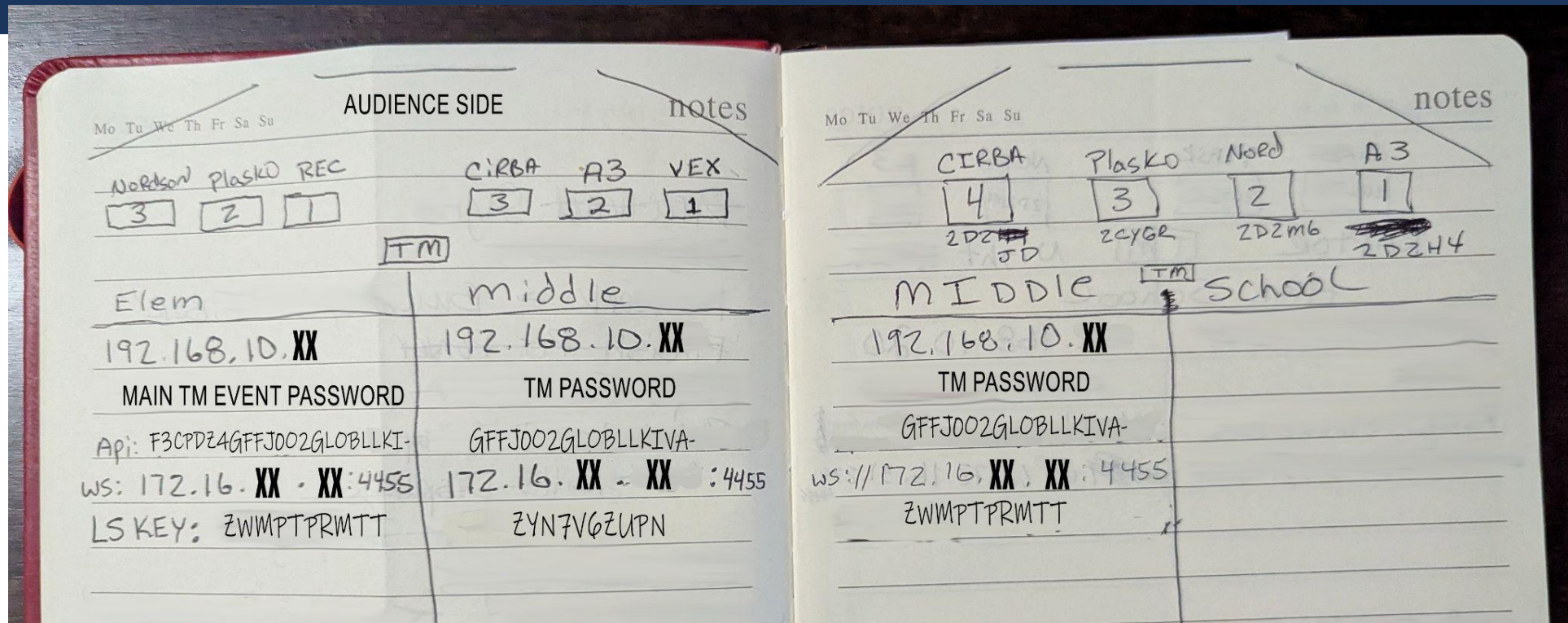
Two Divisions   **Single Tournament**

Things to Think About Beyond the Equipment

- 1st Priority… RUN THE EVENT! Livestream is secondary!

- Volunteers

- Network/Internet Speed

- Space & Setup Time - Plan accordingly

- Divisions - Twice the equipment

- Field sets - Complicate livestreams

- Network Restrictions - (Don't try to run on a hot spot)

- If necessary, record locally and upload recording later. (CEDAR POINT)

- Splash Screens - Canva, Fiver, etc.

OBS Plug-Ins & Extras

- **OBS TM SWITCHER** - Automatically switches OBS scenes for each match - Brendan McGuire - RECF RSS

- **vextm-obs-source** - TM Overlays (Better Resolution)

- **OBS CAM Mobile** - Turn your Smartphone into a Mobile Camera, Android & Apple apps available

TM SWITCHER

Don't get your stream shut down Livestreaming & Music

One of the fastest ways to have your livestream taken down is to play copyrighted music.

When streaming music be sure to use royalty-free music.

Sources to consider https://soundimage.org/ YouTube:NoCopyrightSounds

"(video name)" This video is no longer available due to a copyright claim by (company).
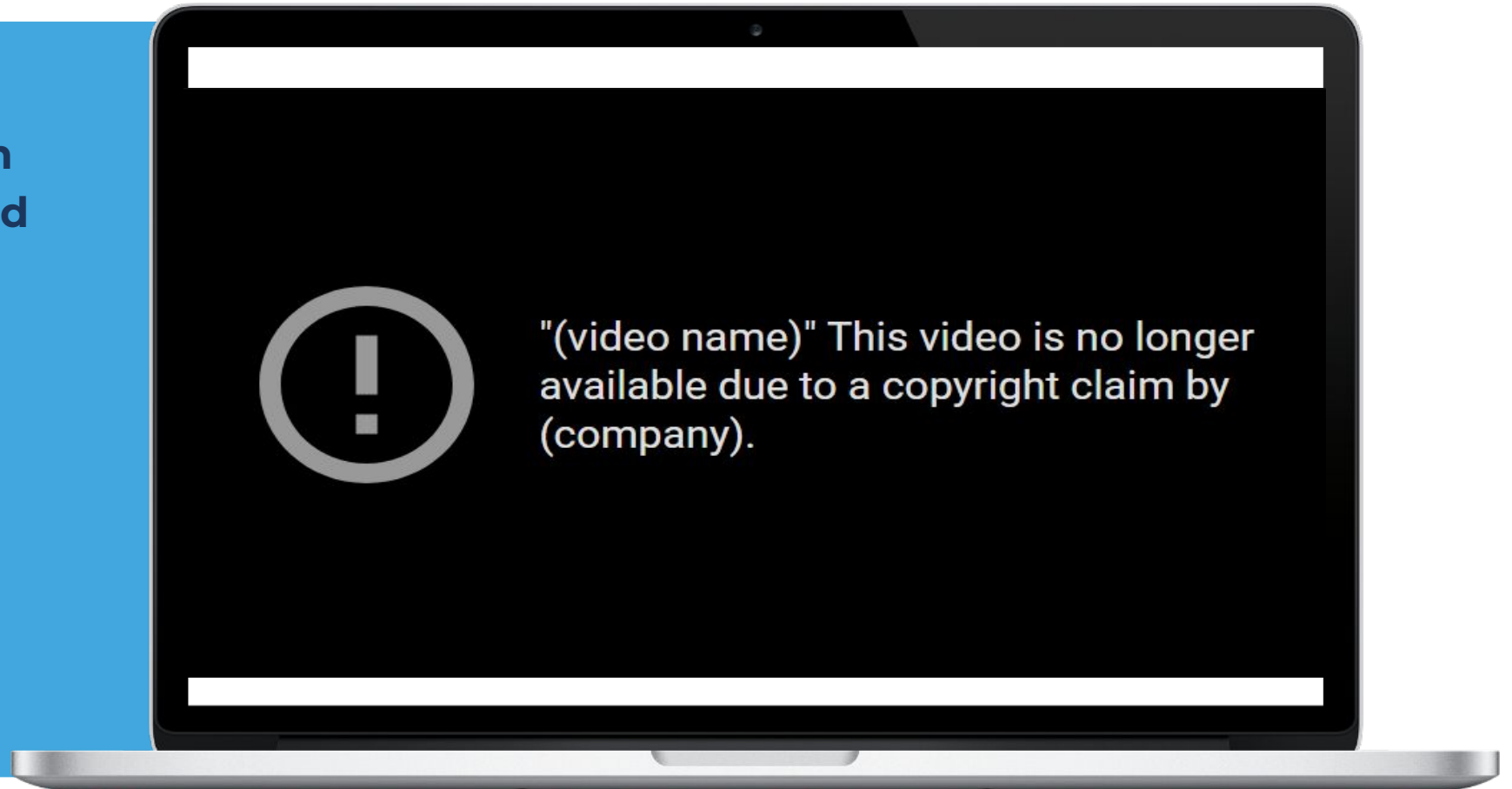
Resources Beyond The RECF Summit
A Great Community of Livestreamers

RECF Knowledge Base Article

How to Livestream Your Robotics or Drone Tournament

Youtube Tutorial:
Livestreaming for VEX Robotics Events

Contact

We are here for you

Event Partners and Coaches are the core of our competition program here at the REC Foundation. Please reach out to us with any questions or concerns. Thank you for all of your support.

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Resources

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