GStreamer
State of the Union
2023 Edition

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COLLABORA

Two recent releases

- 1.20
  - February 2022
  - 2309 merge requests

- 1.22
  - January 2023
  - 1586 merge requests + 648 🦀
  - 2531 commits + 1541 🦀

One git to rule them all

- A single git repository
- Release in separate tarballs
  - No change for distributors

- Except Rust
  - Synced with gtk-rs

Smaller builds: Just enough GStreamer

- GStreamer & dependencies in one library

- Bundle only specific elements

WebRTC

- Congestion Control
  - Google Congestion Control (GCC)
- webrtcsink: An easy sink with encoding
  - Includes congestion control
- WHIP / WHEP elements
  - Single HTTP request WebRTC connection, replacing RTMP

RTP

- SMPTE 2022-1 2D Forward Error Correction

- Header extension plugin system

  - Client-to-Mixer Audio Level Indication (RFC6464)

  - Color space / HDR for VP9

  - Many more...

- AV1 payloader / depayloader

RTP

- H.264 and H.265 timestamp correction elements

- RFC 6051 Rapid synchronization using RTP extensions

- Decoder base class:
  - Packet loss
  - Corruption
  - Key-frame request

Adaptive Streaming Client v2

**DASH
HLS**

New elements

- Fewer threads

- Better download control

- Internal buffering and parsing

Decoding

- Sub-frame decoding
  - ffmpeg H.264
  - OMX for Xilinx
- WebM Alpha
- Direct3D 11 library
- D3D11 now preferred on Windows

CUDA

- Now with a library!

- A Converter!

- A Scaler!

- Direct3D 11 integration
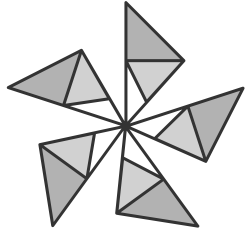
- Zero-copy encoding!

VA-API: va plugin

- Modern GStreamer framework use

- Decode: AV1, H.264, H.265, MPEG 2, VP8, VP9

- Encode: H.264, H.265

- Compositor

- Deinterlacer

- Post processor

AV1 Everywhere !

- Legacy VAAPI

- New va

- AMD Advanced Media Framework (AMF)

- Direct3D11

- NVIDIA nvcodec

- Intel QuickSync & MediaSDK

An element for object detection

UI development

- GTK+ 4 paintable

- Qt 6 QML item

- GTK+ 3 direct to Wayland sink

- Touch event navigation

Tracers

- Buffer lateness 🦀
    - Which buffers are late ?

- Queue levels 🦀
    - How full are my queues ?

- Pipeline snapshot 🦀
    - Draw my pipelines... on cue !

- Factories
    - Which elements are really used ?

Thank you!

We are hiring - col.la/careers