

STATE OF THE UNION

GStreamer Conference

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INTRODUCTION

WHO AM I ?

WHAT IS GSTREAMER ?

Most of you know this, so key points only.

Framework for multimedia processing.

Cross-platform, toolkit agnostic.

Any and all use cases.

Set of libraries and plugins.

Abstract API, very extensible.

We often wrap other libraries.

Low-level API and high-level API:
playbin, encodebin, RTSP server,
non-linear editing, VoIP etc.

Integration with other frameworks and projects

e.g. WebKit/Blink, Clutter, Cogl, OpenGL,
Windows, OS X, Android, iOS

Goal is to adapt to and integrate with
other platforms and frameworks
(inputs, outputs, decoders, DSPs/GPUs..)

SO, WHAT HAVE WE BEEN UP TO ?

RELEASES!

- 6-monthly(ish) release schedule
 - still going strong(ish)
 - 1.10: Nov 2017
 - 1.12: May 2017
 - 1.14: ???

- sticking to the 6-monthly schedule
 - but shifting it a little
 - 1.14: ~January 2017
 - 1.16: ~July 2018

SOME THINGS THAT LANDED IN 1.12 ...

New msdk plugin for Intel's Media SDK
(in gst-plugins-bad)

Also: `gst-mfx`

X264ENC

Support for multiple bit depths.

Dynamically chosen at runtime.

VIDEOSCALE + VIDEOCONVERT

Multi-threaded scaling and conversion.

RTPBIN

Bundle support
for incoming streams
(WebRTC)

TIMED TEXT MARKUP LANGUAGE (TTML)

New ttml plugin.

Supports the EBU-TT-D profile for now.

Has potential as general intermediary representation for text subtitles.

SPLITMUXSINK

Buffer collection and scheduling rewritten.

Splitting should be deterministic now.

New "format-location-full" signal allows file name to be based on metadata of first buffer in chunk.

Can also split based on time code meta.

Automatically starts new chunk if caps change.

DASH TRICK MODE PLAYBACK

GSTREAMER OPENGL INTEGRATION

Supports Vivante EGL FB windowing system now:

--> better perf with the proprietary driver on Freescale
iMX.6

GSTREAMER VA-API

New features.

Lots of fixes.

Encoders now have a rank and are autoplugged.

KMSSINK

Proposes dmabuf-based bufferpool now.

More formats.

More devices.

More stability.

DMABUF SUPPORT EVERYWHERE

--> Zero copy.

**SOME COOL THINGS THAT WILL LAND IN
1.14 ...**

IPCPIPELINE

Split pipelines across multiple processes!

Isolate demuxers, parsers, decoders.

--> lightning talk later!

GSTREFERENCETIMESTAMPMETA

Attach alternative timestamps to buffers.

RING BUFFER FOR DEBUG LOGS

Useful for long running tasks.

Or disk space constrained environments.

Retrieve log lines when things fail.

TEE

Allocation query aggregation:

Aggregates allocation params, pool and will keep all metas without parameters.

TRACING FRAMEWORK IMPROVEMENTS

LEAK TRACER:

- more reliable (wasn't 100% thread-safe)
- new ref/unref hooks to get stack traces
- snapshotting
- dump list of live objects
- need to make this all work properly on Windows too!

**LATENCY TRACER IMPROVEMENTS ARE ALSO IN THE
PIPELINE**

VIDEO4LINUX

Much faster webcam probing with v4l2src

Video Encoder support

Fixed element names now, no longer random

dmabuf support

HLSSINK2

Takes elementary streams as input

Uses splitmuxsink internally

Can handle transmuted files, without encoder.

RTSP 2.0

Client + server.

--> lightning talk

GSTREAMER OPENMAX WRAPPER

gst-omx has seen a fair bit of work.

Esp. for Tizonia + Xilinx UltraScale+

QUALITY ASSURÄNCE

Much improved coverage in validation test suite.

Especially for DASH + RTSP

MISSION: PLUGIN MOVES AND MODULE CONSOLIDATION ...

Ongoing effort to move things from -bad into other
modules.

Going strong!

DATAURISRC HAS MOVED TO CORE

MAD MP3 DECODER WAS REMOVED

(GPL + unmaintained)

MP3 PATENTS HAVE EXPIRED!

mpg123 mp3 decoder -> good

LAME mp3 encoder -> good

twolame mp2 encoder -> good

AC-3 PATENTS HAVE EXPIRED!

a52dec has to stay in -ugly

liba52 is GPL :(

COMING SOON (HOPEFULLY!)

- aggregator base class -> core
- audiomixer + audioaggregator -> base
incl. audiomixer conversion support
- compositor + videoaggregator -> base

**LET'S MOVE OPENGL INTEGRATION TO -
BASE !**

(libs and plugins)

MISSION: IMPO^HDOCS

Docs consolidation into single module ongoing.

Manual, Plugin Writer's Guide, Tutorials: DONE

API reference manuals, plugin docs: TODO

ALSO

Let's add 'bad-reason' tags to all -bad elements !

Let's add skeleton docs to all -bad elements !

THE FUTURE ...

WEBRTC

("How do I stream to my web browser?")

\o/ \o/ \o/

GSTPLAYER

High-level player abstraction API.

Continues to be fleshed out.

Stabilise once it has everything GNOME Video Player
needs ?

KLV METADATA SUPPORT

Generic per-frame KLV metadata

Muxing / demuxing KLV meta per frame

PERFORMANCE OPTIMISATIONS..

Everywhere, of course.

Lots of things in the pipeline.

BETTER RTMP ELEMENTS ?

--> lightning talk

SRT - "SECURE, RELIABLE, TRANSPORT"

Elements in bugzilla.

Seems well-placed to replace RTMP.

WHAT ELSE ?

MESON BUILD SYSTEM STATUS UPDATE:

Mostly complete, a few things still missing:

- full set of options
- static build untested
- iOS/Android untested
- cerbero integration

We will move away from autotools
once the Meson build is ready.

There will be a transition period.

But it won't be forever.

Be prepared.

RUST

Let's talk about Rust !

("Fast, safe and productive - pick three.")

RUST

No plans to switch to it in the short run.

No plans to make it a hard dep in core components.

We can do a lot without breaking GStreamer backwards compat.

We're playing with it, experimenting, gaining experience.

Something for the longer term.

GSTREAMER RUST BINDINGS

Should be in pretty good shape now.

--> Sebastian's talk tomorrow

GSTREAMER C# BINDINGS

Have also been resurrected and updated.

--> Lightning talk later

ROOM FOR IMPROVEMENT ?

ADAPTIVE STREAMING (DASH, HLS, ETC.)

Really need to improve our creation story!

MAKE IT EASIER TO WRITE "SIMPLE SERVERS"

- `souphttpserversink`
- `rtspserversink`

STREAM API

Implement in all / more demuxers !

Support stream deactivation.

WINDOWS, IOS, ANDROID

More sink elements that work
with the native UI toolkits
like qmlglsink/gtksink etc.

Windows: should move to newer APIs
(no more need to support XP \o/)

ANDROID + IOS + MACOS NEED SOME LOVE

Catch up with latest versions.

WHAT ELSE SHOULD BE ON OUR RADAR?

- SDI-over-IP standards
- ONVIF RTSP extensions (audio back channel, special modes)
 - OpenCV integration
 - VR

**HOW CAN WE BETTER ENGAGE WITH
OUR USERS ?**

PULL REQUESTS INSTEAD OF PATCHES?

--> Gitlab ?

SHOULD WE HAVE A PROPER FORUM ?

Not just mailing lists and IRC.

NIGHTLY BUILDS (SOON HOPEFULLY!)

THAT'S ALL FOLKS
THANK YOU AND ENJOY THE
CONFERENCE !
QUESTIONS? COMMENTS?