GStreamer Status Report: The Road Ahead

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Introduction

- who am I ?
- what is GStreamer ?
- 0.10, 0.11, 1.0 and all that
- structure of this talk

What is GStreamer ?

- set of libraries

- pipeline-based: elements, components, pads, data flow

- plugins, abstract API

- often wrap other libraries (decoders, encoders, filters, etc.)

What is GStreamer ? (cont'd)

- low-level API and high-level API

    - playbin, decodebin, encodebin, gst-editing-services,
      gst-rtsp-server, soon gst-stream-server

    - (and farstream, telepathy etc.)

- integration with other frameworks and projects

    - e.g. webkit, clutter, Windows/OSX/Android/iOS

    - goal is to adapt to platform/framework
      (inputs, outputs, decoders, DSPs/GPUs etc.)

Versions and all that

- stable API/ABI, backwards compatibility

- stable: 0.6.x, 0.8.x, 0.10.x, 1.x.y, 2.x.y

- development: 0.9.x, 0.11.x, 1.99.x, 2.99.x

  - 0.9 --> 0.10
  - 0.11 --> 1.0 (0.12)

Structure of this talk

- ~~Introduction~~

- Past, Present, Future

    - what's new and improved in GStreamerland

    - where are we at ?

    - future work

But first, a public service announcement

We need to talk about 0.10

0.10 is dead

(sorry)

0.10 is ~~dead~~ end-of-life

Aaargh!

- what does it mean ?

  - for you
  - for 0.10

Understanding the 0.10 → 1.0 transition

- evolution, not revolution (no CADT)

- most things are still the same

- application interfaces mostly the same

- make things more generic (caps, pad functions),
  i.e. just reshuffling some bits

- split ops that are not related,
  e.g. buffer alloc + negotiation

- overall complexity has not hugely increased

  - threading model is the same and well-understood

  - scheduling remains the same

  - most complex elements (e.g. demuxers) were
    barely changed

Past: Last Year

- February 2012: last 0.10 release

- March 2012: switched git master to 0.11

- 0.10 in 0.10 branch, feature frozen(-ish)

- adjusted all API/ABI bits of 0.11 to "-1.0"

- 0.11 activity picked up, porting and testing picked up, wider community involvement

Past: what have we been up to ?

- audio base classes used almost everywhere now

- new video decoder and video encoder base classes !

- audio visualization base class (not public yet)

Past: what have we been up to ? (cont'd)

- renegotiation support for all pipeline configurations

- dynamic pipelines should be much easier [citation needed]

- Table of Contents (TOC) support (♥)

Past: what have we been up to ? (cont'd)

- GStreamer Editing Services (GES)

- VP8 support will move to -good (rsn)

- camerabin will move to -good (rsn)

Past: what have we been up to ? (cont'd)

- VA-API hardware-accelerated video decoding

- video overlay composition API

Past: what have we been up to ? (cont'd)

- much better windows/OSX plugins

- SDK

Current 1.0 status

- core/-base/-good/-ugly/-libav almost completely ported

- many elements from -bad ported

- many apps ported and working: totem, sound-juicer, transmageddon...

- porting apps was really easy

So it compiles, but does it work ?

- *"it works great, even better than 0.10"* Bastien Nocera

No, seriously, does it work ?

- three weeks of intensive playback testing

- found lots of little silly bugs, mostly one or two
  line fixes, everything is in really good shape

- much better than expected

- it's basically not much different than 0.10 git was
  after a couple of months of hacking, before release
  freezes

What's left to do ?

- the hard work has been done

- conceptually, API-wise it's finished

- just some tinkering around the edges

- almost everything has been ported

- one or two playbin issues need fixing, but we know about those and they're at the top of our list

- DVD menus ?

Future: Release Management

- New Versioning Scheme

    - 1.0.0, 1.0.1, 1.0.2, 1.0.3... bug fix point releases
    - 1.1.0, 1.1.1, 1.1.2, 1.1.3... pre-releases
    - 1.2.0, 1.2.1, 1.2.2, 1.2.3... bug fix point releases

    - 2.0.0 after next ABI break, with "-2.0" as majorminor

- More frequent bug-fix releases:

    - cherry-pick fixes into a stable branch

Ongoing and Future Work

- In-Vehicle Infotainment (IVI)

- In-Flight Entertainment (IFE)

- DVB support / STBs

- connectivity (DLNA, SmartTV, etc.)

- MPEG-TS

Ongoing and Future Work (cont'd)

- subtitles

    - use overlay composition API everywhere

    - more application control,
      e.g. about positioning of subtitles

    - output-surface resolution dependent
      subtitle rendering

    - more formats, e.g. XSUB, external SSA/ASS

Ongoing and Future Work (cont'd)

- VDPAU hardware-accelerated video decoding

- better, more natural OpenGL integration

- generic context sharing / distribution

- multiview (3D) video: signalling is mostly there now implementation missing, and integration and porting of 3D operation elements from 0.10 GSoC

Ongoing and Future Work (cont'd)

- DASH (client and server)

- gst-stream-server library

- make GES rock even more

- optimisations: use all the nifty new
  features we've added to GStreamer in 0.11

- video parsing libs, move to -good,
  use more widely

Ongoing and Future Work (cont'd)

- better device discovery and probing (GstPropertyProbe replacement)

- smooth as butter stream switching, and stream activation/deactivation

- playlist support

- gst-plugins-bad module split ?
  Add gst-plugins-staging ?

- bluetooth plugins move to GStreamer

Ongoing and Future Work (cont'd)

- development tools / debugging

  - better error reporting

  - tools collection

  - ideas floating about about something like "dot file" dumps, but more interactive

Questions?

Thank You!

Pictures

The Rush by Daniel Ighisan (http://www.fotocommunity.com/pc/pc/display/28714643)
A Curve Ahead by Andrew Faulk (http://fc-foto.com/11564782)
White Lines by Keven Law (http://www.flickr.com/photos/kevenlaw/3015820074/)