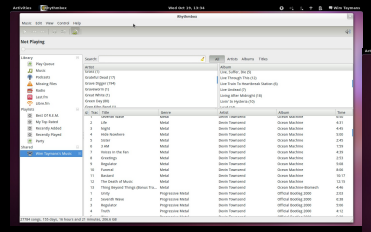
GStreamer
The road to 1.0

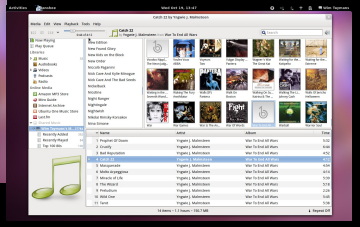
Wim Taymans

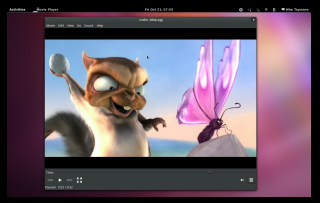
27 aug 2012 – GStreamer Conference
San Diego, US

A Library to make it easy to develop multimedia applications

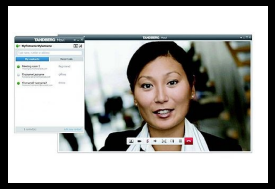
gstreamer

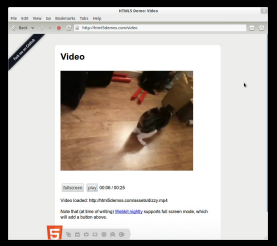






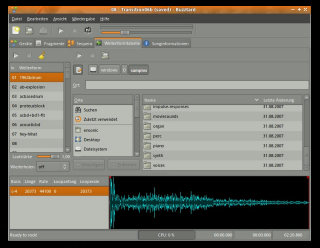
playback

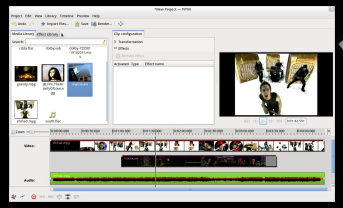


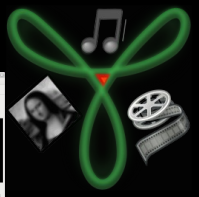


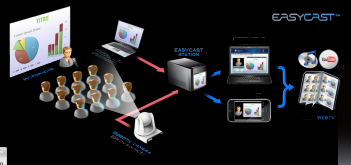
integration

clutter



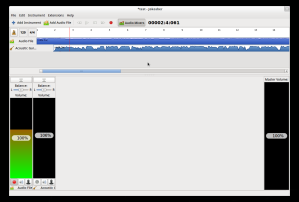


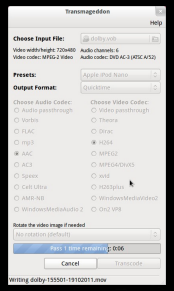


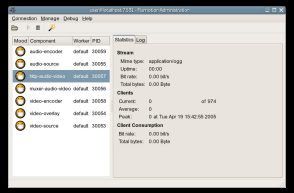


server

communication







creation

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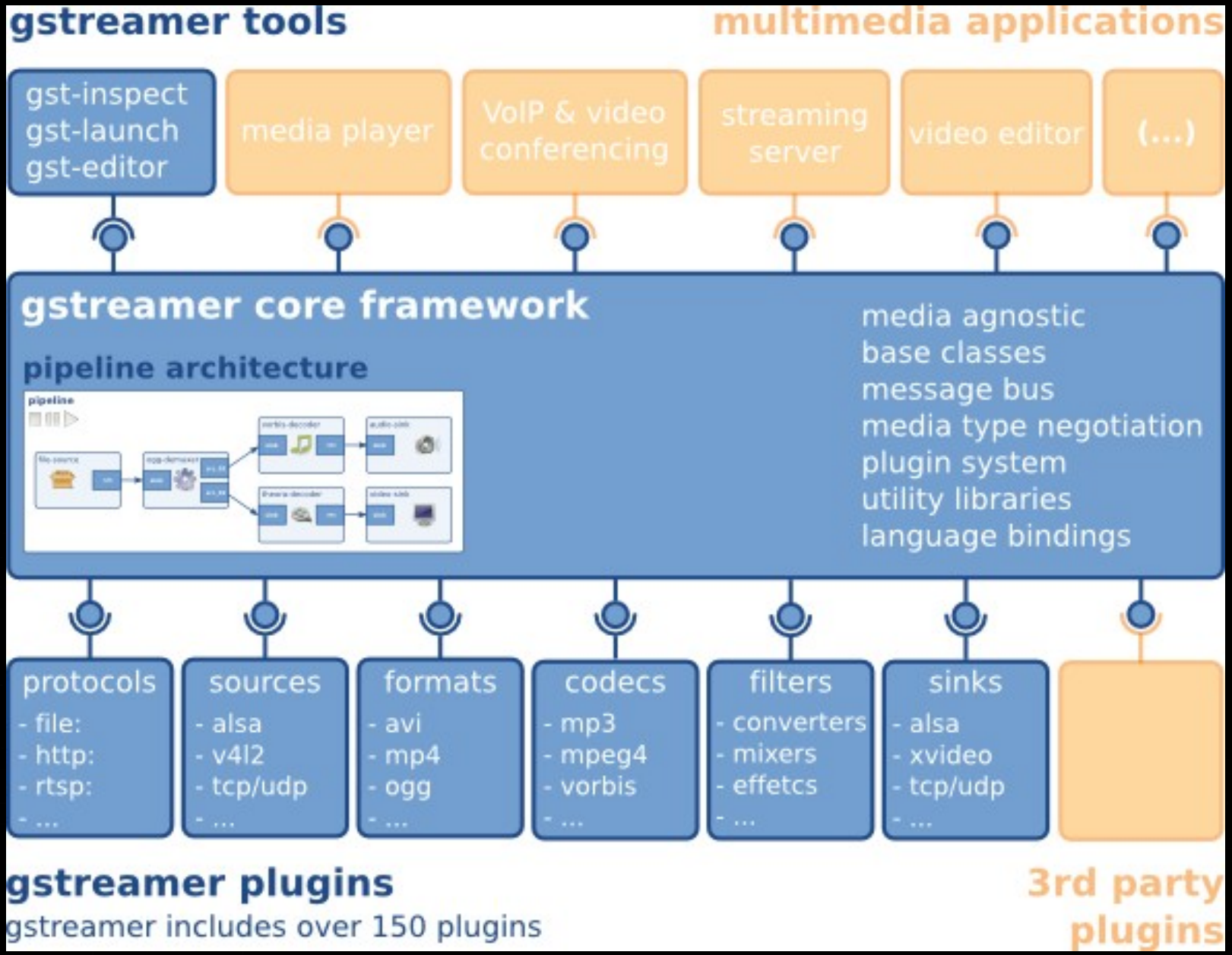
gstreamer tools
multimedia applications
gst-inspect
gst-launch
gst-editor
media player
VoIP & video conferencing
streaming server
video editor
(...)
gstreamer core framework
pipeline architecture
media agnostic
base classes
message bus
media type negotiation
plugin system
utility libraries
language bindings
protocols
- file:
- http:
- rtsp:
- ...
sources
- alsa
- v4l2
- tcp/udp
- ...
formats
- avi
- mp4
- ogg
- ...
codecs
- mp3
- mpeg4
- vorbis
- ...
filters
- converters
- mixers
- effetcs
- ...
sinks
- alsa
- xvideo
- tcp/udp
- ...
gstreamer plugins
gstreamer includes over 150 plugins
3rd party plugins

To GStreamer 1.0

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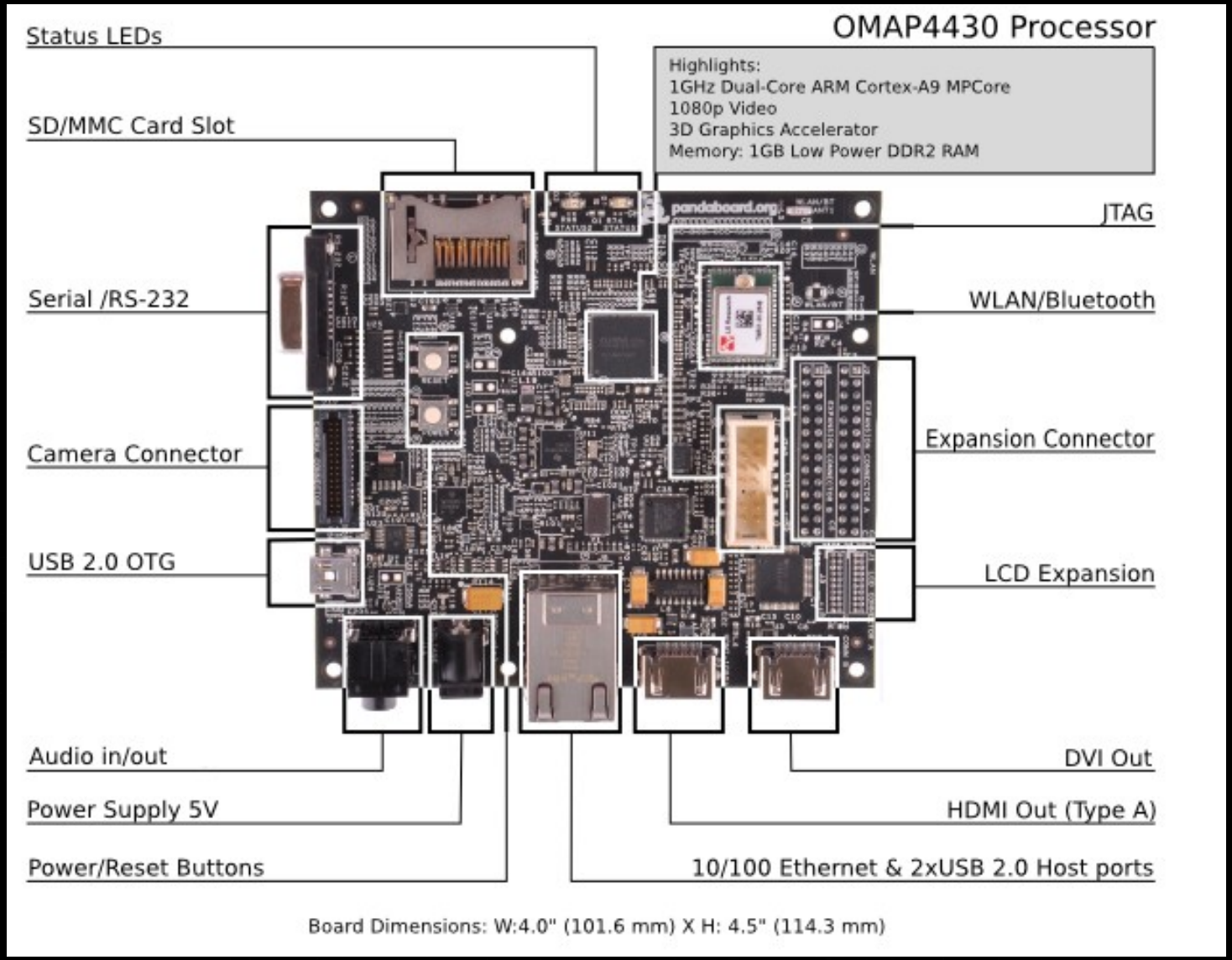
(New) challenges



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(New) challenges

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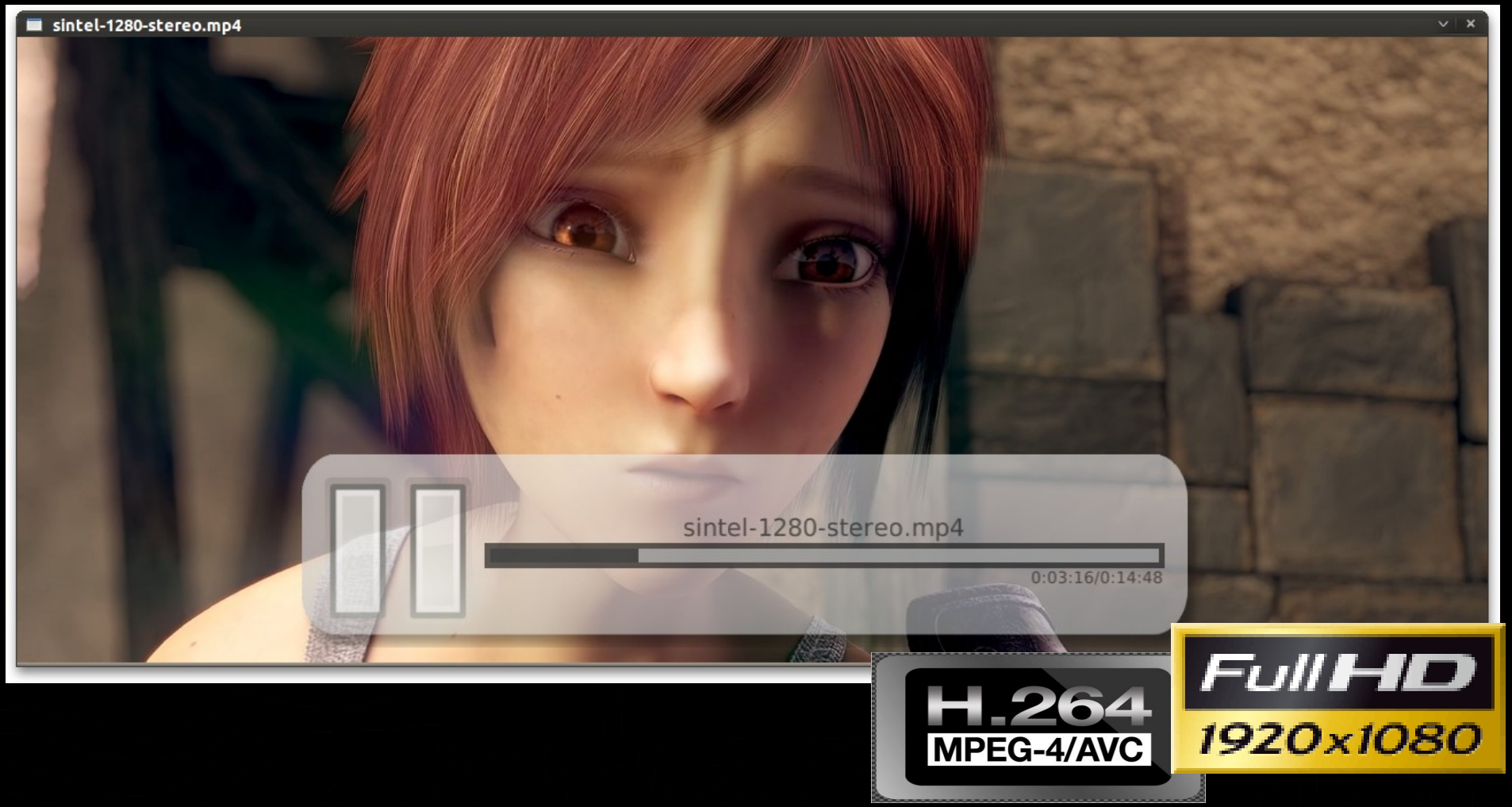
GPU decoding



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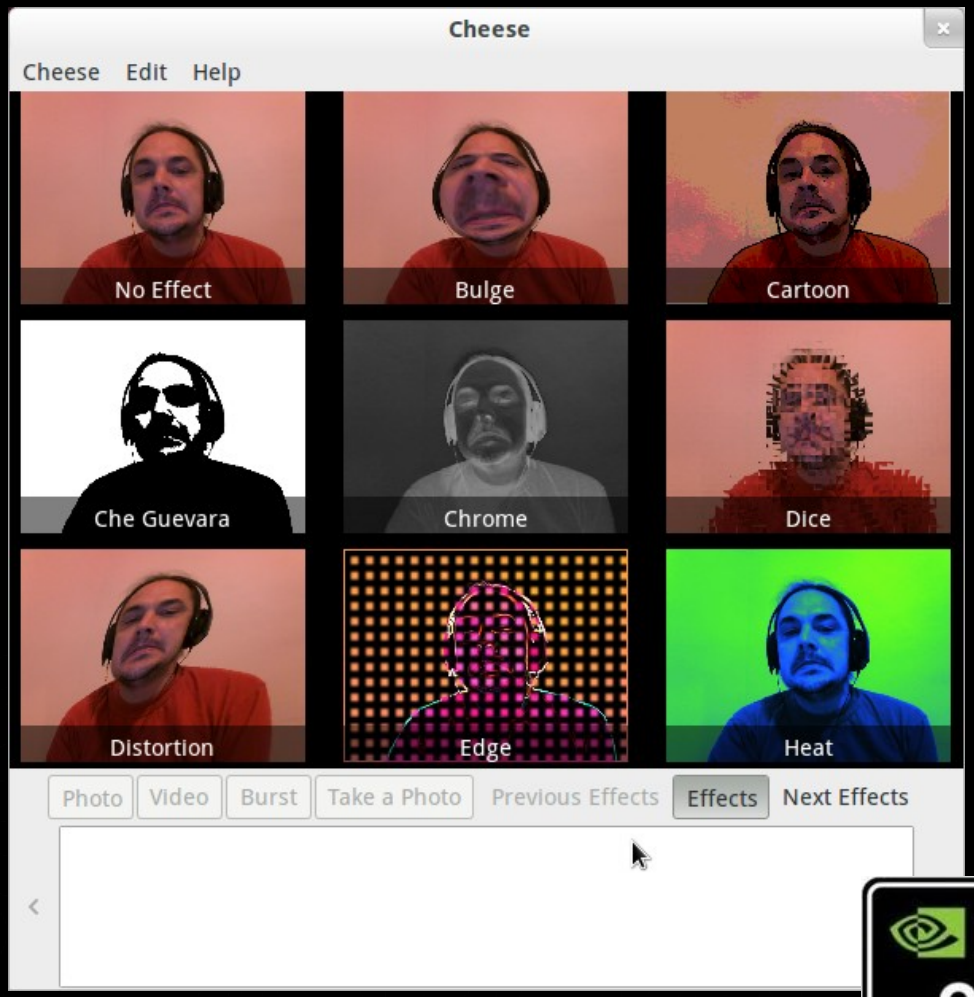
GPU processing



NVIDIA CUDA

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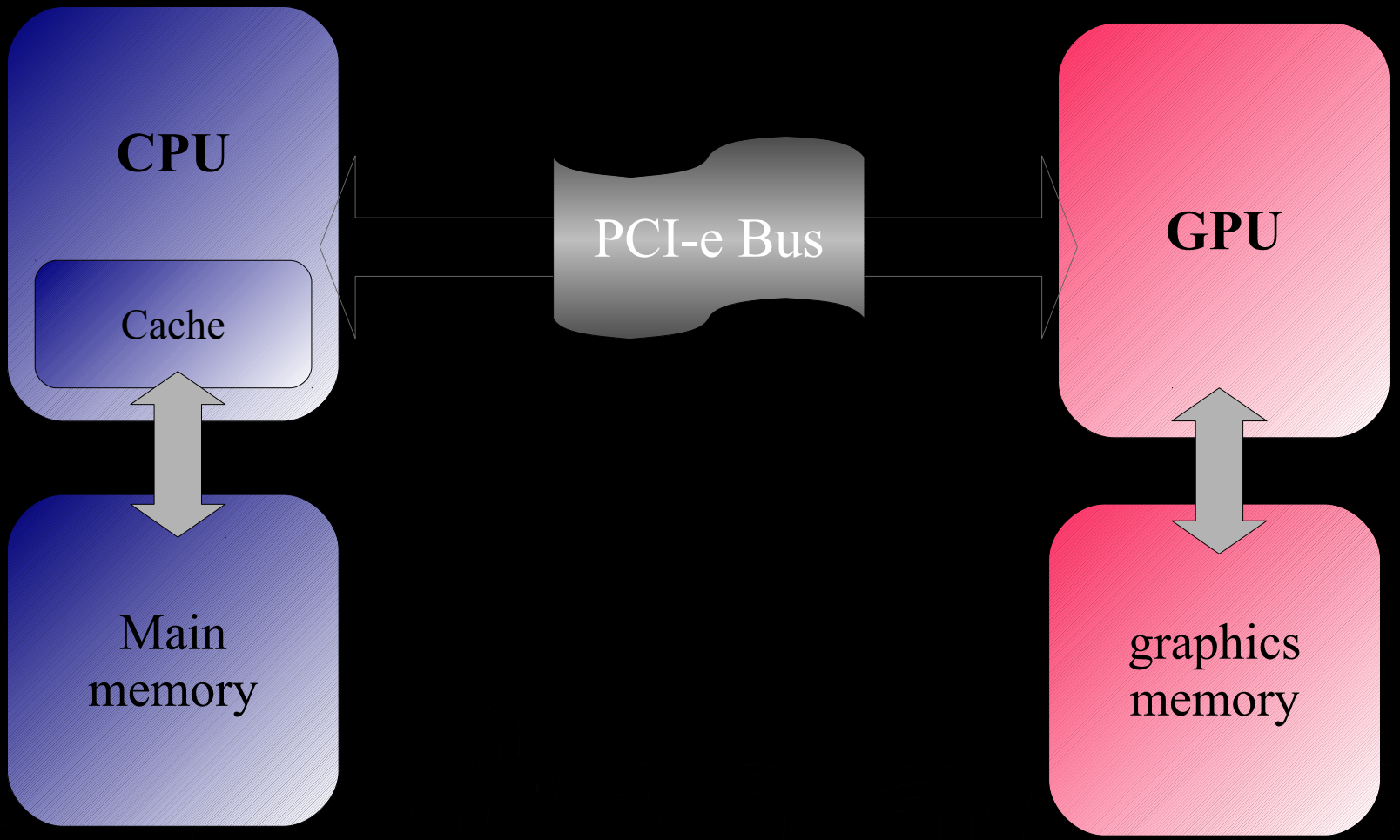
Memory management



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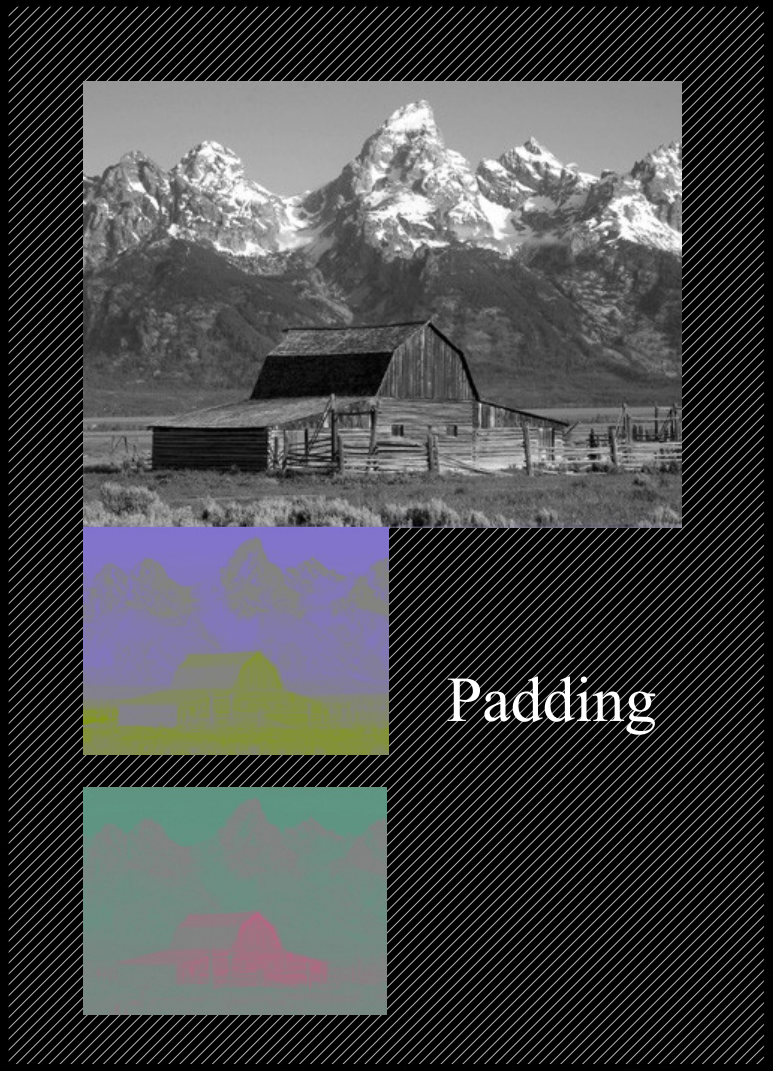

Better memory management =
Better integration +
increased performance

Extra buffer information

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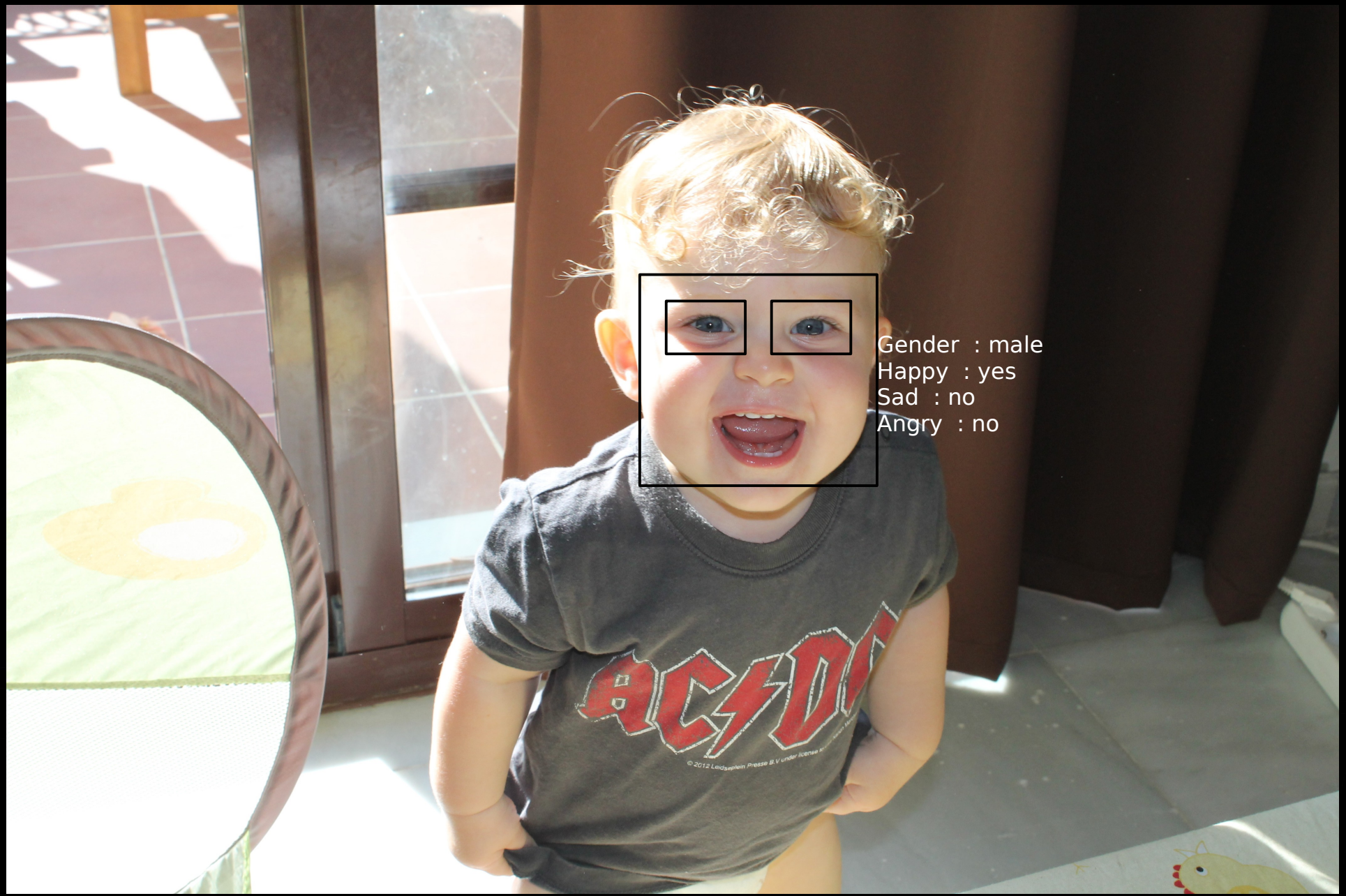

Delayed processing

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Easier dynamic pipelines

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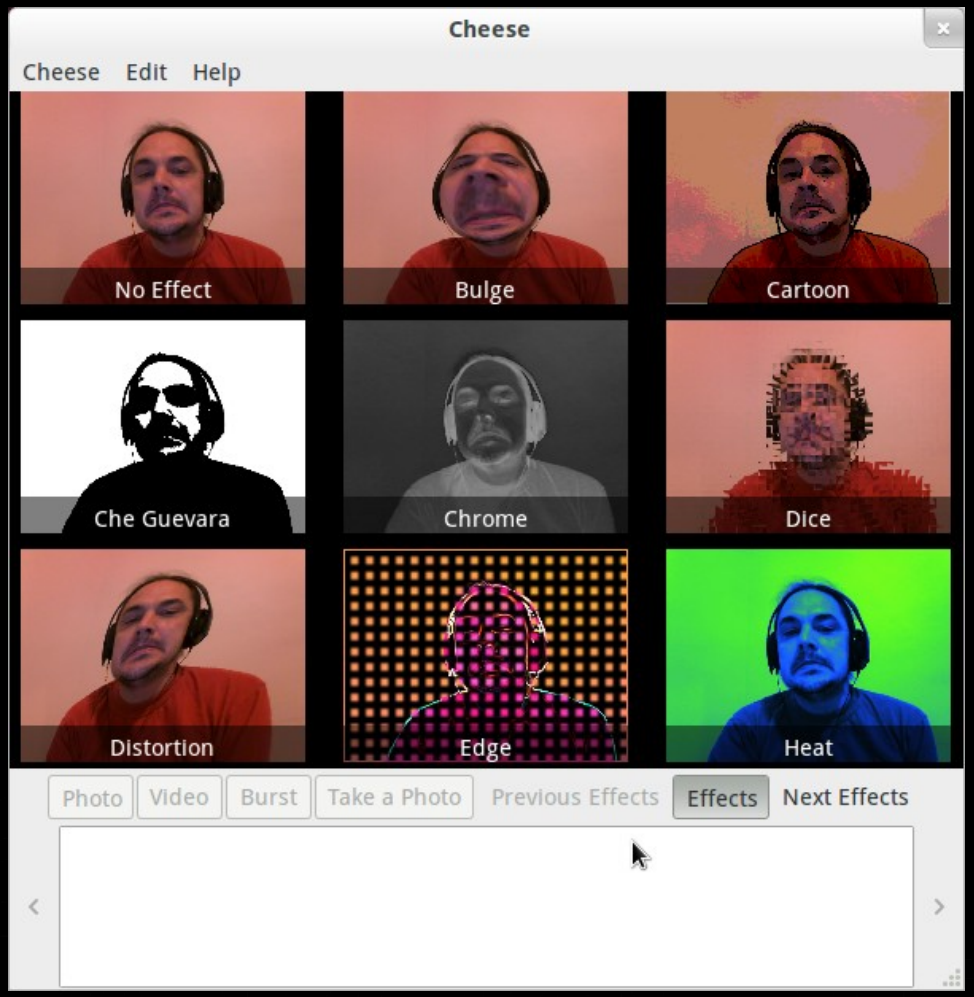
Cheese
Cheese Edit Help
No Effect
Bulge
Cartoon
Che Guevara
Chrome
Dice
Distortion
Edge
Heat
Photo Video Burst Take a Photo Previous Effects Effects Next Effects

Pulseaudio passthrough

Refcounted GstMemory object

- Explicit read/write access
- Control exclusive access
- Allocated with GstAllocator
- Allocation with prefix/padding and alignment

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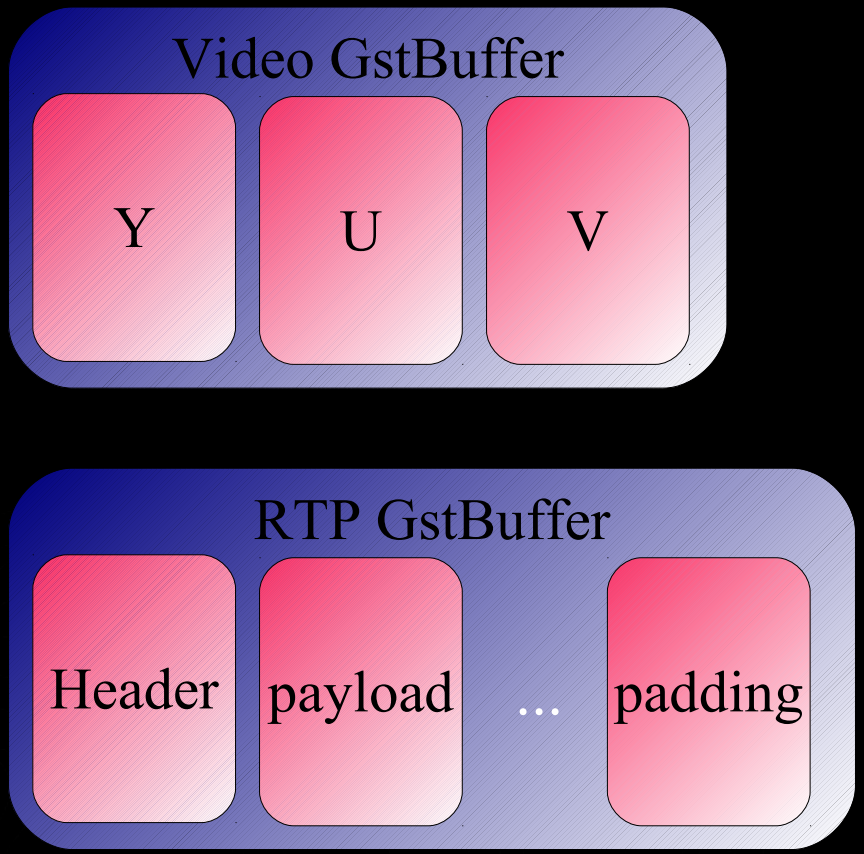
GstBuffer contains multiple GstMemory



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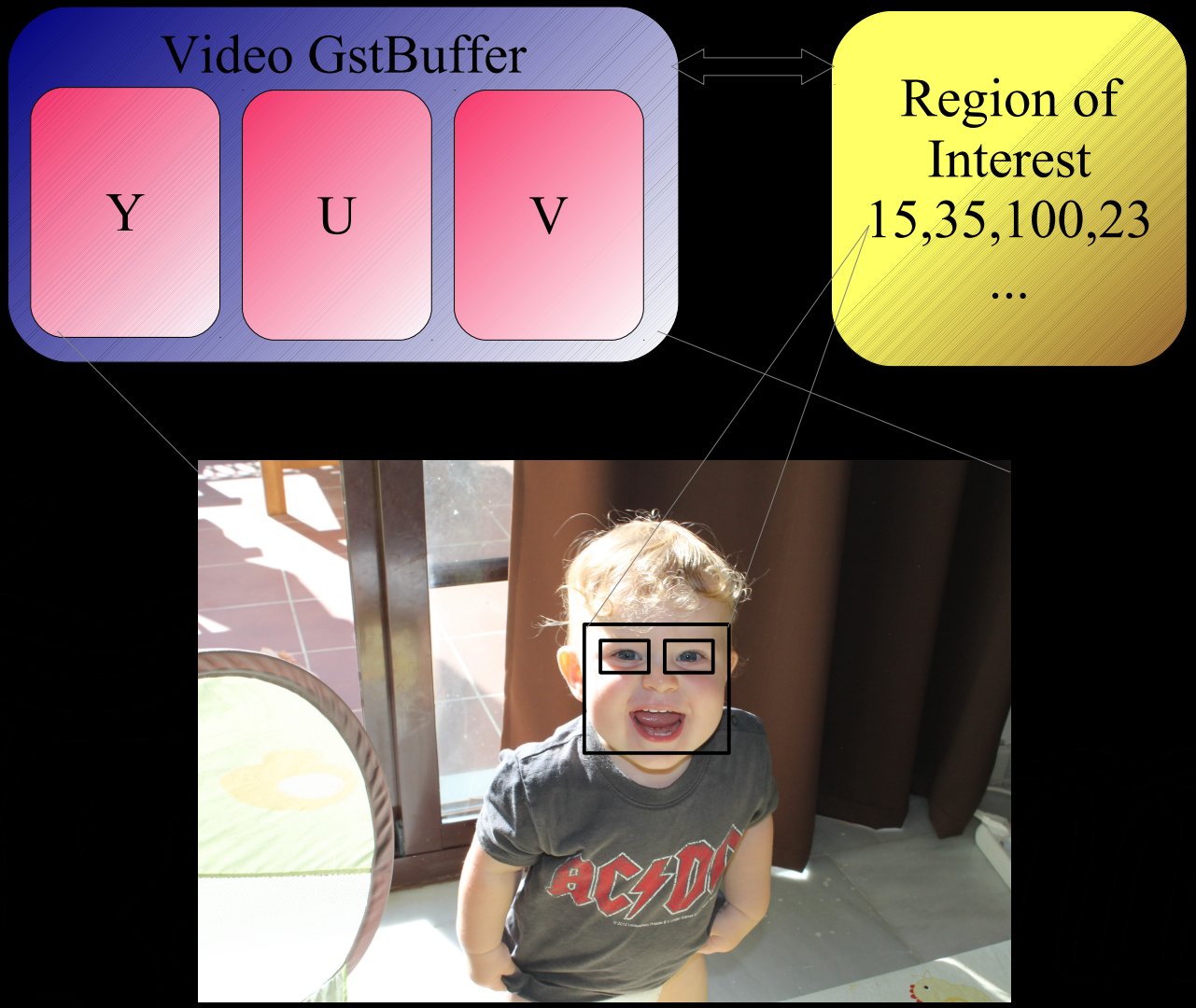
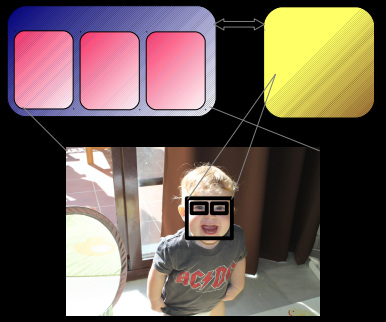
GstMeta with extra info





GstMeta

- Extra properties on buffers
- Extra methods on buffer
- Operations on buffers
- Well defined API, multiple implementations

Other enhancements

- GstBufferPool
- Can query supported memory
- Can query supported metadata
- Arbitrary video strides and padding

Dynamic pipelines

- Context is kept on pads (events)
- When linking, context is passed to next pad
- Renegotiation with event event

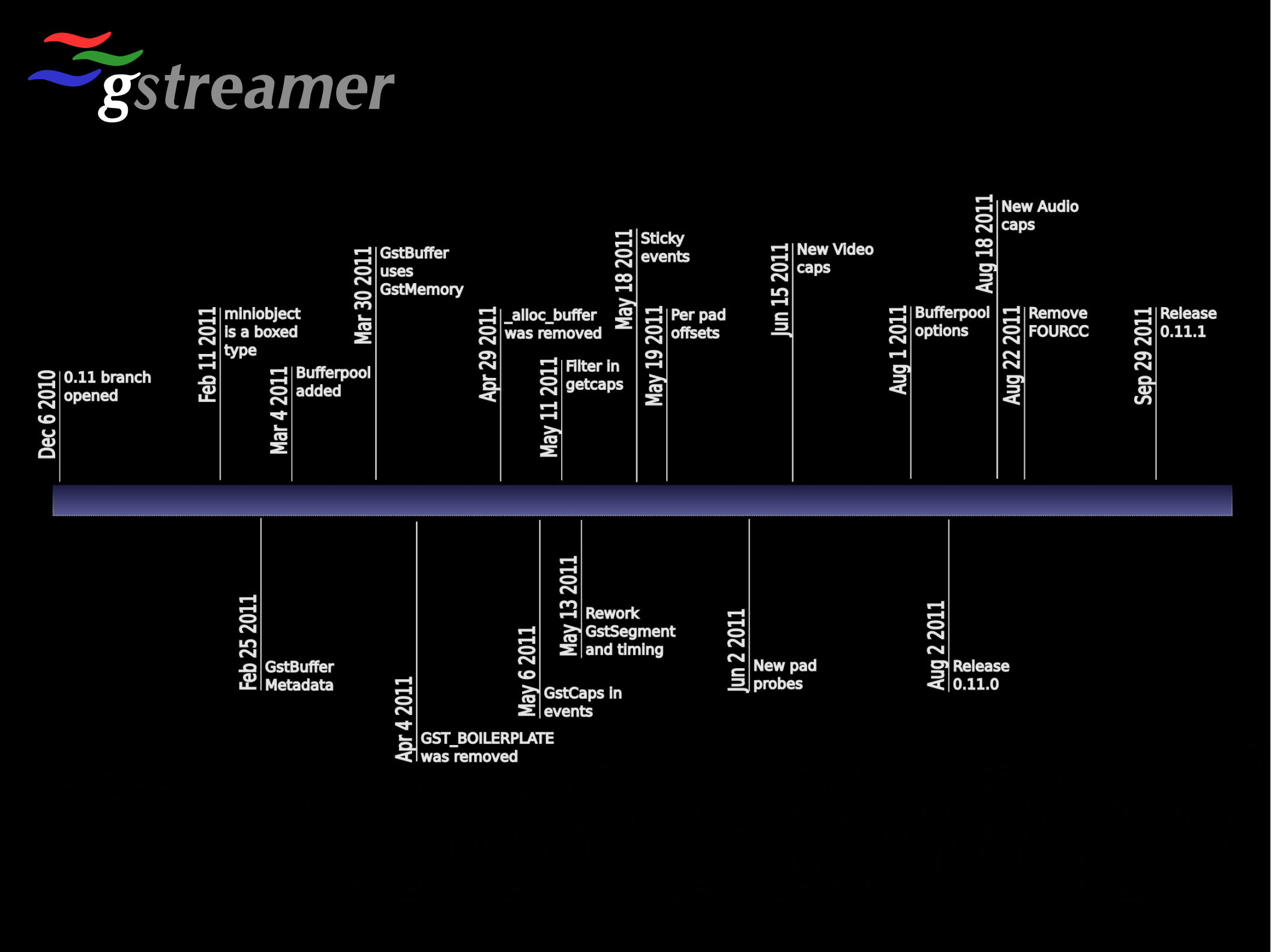
Improved pad probes

- Can probe and modify all dataflow/events/queries
- Merged pad block
- Also get notify when no dataflow

Improved audio/video caps

- Video/x-raw-rgb,bpp=16, depth=15,
  endianness=1234,
  red_mask=31744, green_mask=992,
  blue_mask=31

  => video/x-raw, format=RGB15


gstreamer
Dec 6 2010
0.11 branch opened
Feb 11 2011
miniobject is a boxed type
Mar 4 2011
Bufferpool added
Mar 30 2011
GstBuffer uses GstMemory
Apr 29 2011
_alloc_buffer was removed
May 11 2011
Filter in getcaps
May 18 2011
Sticky events
May 19 2011
Per pad offsets
Jun 15 2011
New Video caps
Aug 1 2011
Bufferpool options
Aug 18 2011
New Audio caps
Aug 22 2011
Remove FOURCC
Sep 29 2011
Release 0.11.1
Feb 25 2011
GstBuffer Metadata
Apr 4 2011
GST_BOILERPLATE was removed
May 6 2011
GstCaps in events
May 13 2011
Rework GstSegment and timing
Jun 2 2011
New pad probes
Aug 2 2011
Release 0.11.0

Oct 28 2011 PTS/DTS on buffer

Nov 4 2011 controller in GstObject

Nov 7 2011 Probe rework

Nov 14 2011 CAPS and ACCEPT_CAPS query

Nov 22 2011 Rework sticky events

Dec 1 2011 GstSample

Dec 16 2011 channel-mask bitmask

Dec 21 2011 video bufferpool

Jan 6 2012 Nested mapping

Jan 18 2012 port to GIO

Jan 24 2012 Stepped Ranges

Jan 25 2012 GstMapInfo

Jan 30 2012 Allocator in query

Feb 17 2012 Release 0.11.2

Feb 24 2012 metadata transform

Mar 15 2012 ALLOCATION query rework

Mar 22 2012 Release 0.11.3

Mar 26 2012 Replace master with 0.11

Apr 2 2012 TOC support

Apr 12 2012 Release 0.11.90

Apr 24 2012 video base classes

May 13 2012 Release 0.11.91

May 28 2012 Taglist as miniobject

Jun 4 2012 Correct colorspace conversion

Jun 7 2012 Release 0.11.92

Jun 14 2012 memory as miniobject

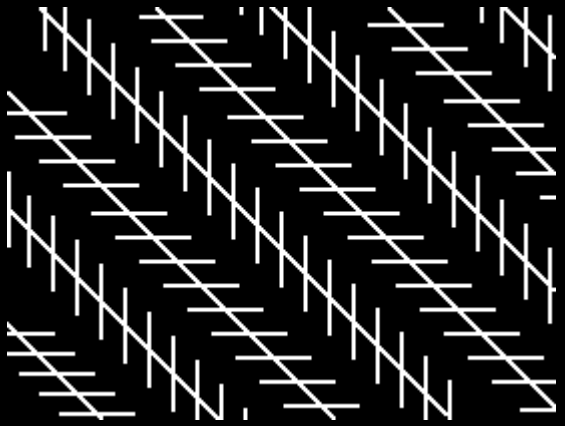
Jul 4 2012 Locking in miniobject

Aug 8 2012 Release 0.11.93

Applications are (being) ported

Biggest changes for plugin developers

We're trying to release 1.0 soon



We expect 0.10 and 1.0 to run in parallel for a while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