media decode and 2D composition

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http://fooishbar.org
not dmabuf ...
presentation issues for media
formats
atomicity
timing
misc
current video state of the art
combine EGLImage and OpenMAX
display with GLES, or X11's Xv
EGL is a disaster

image_external prevents useful scaling

no timing information

conversion/filtering not as good as overlays
let's use overlays everywhere
(or planes, sprites, cursors)
... but how?
format negotiation

how hard can it be?
GStreamer: MIME type and FourCC

V4L: FourCC

DRM: different FourCC
Wayland formats are per-protocol

e.g. wl_drm uses DRM FourCC
esoteric tiled planar YUV
YUV full vs. clamped range
RGB colourspaces
MIME type is really handy for these
atomicity

think: scrolling content with video
Wayland supports this with subsurfaces 'lock' a surface tree for atomic updates
KMS nuclear pageflip

implementation extant, not merged

next steps unclear
timing

queuing / feedback / domains
accuracy is crucial in media/broadcast

one frame out every 24 hours
queuing

provide list of future flips & target times

cancel queued flips (requires event)

or supercede / revise?
some hardware provides a 'carousel'
automatic switching between slots every 16ms
cannot reliably implement this w/o carousel
frame miss penalty: jump backwards
prior art: EGL_NV_present_video

target timing ranges

arbitrary range of 'video slots'

only GLX/WGL
nothing in Wayland or KMS for this (yet)
nuclear pageflip could be a good base?
feedback

assuming the worst: we will miss sometimes

crucial to mitigate impact
current DRM vblank events suffice
work underway in Wayland
EGL has none at all (and no events)
domains

which time domain do we use?

hardware time bases are useless w/o query

light queryable timer required for A/V sync
currently require CLOCK_MONOTONIC

would be brilliant to get hw timers ...
wildcard: colourkeying
falling back when you open a menu sucks
required for STB
wildcard: interlaced video

?!?

perhaps nuclear pageflip again?
wildcard: sync/fences

discussed tomorrow in Android Graphics

need query/event to avoid blocking compositor
wildcard: carousels

strict 16ms switching between slots
thanks