

# Yami for Chrome

-- V4L2 wrapper

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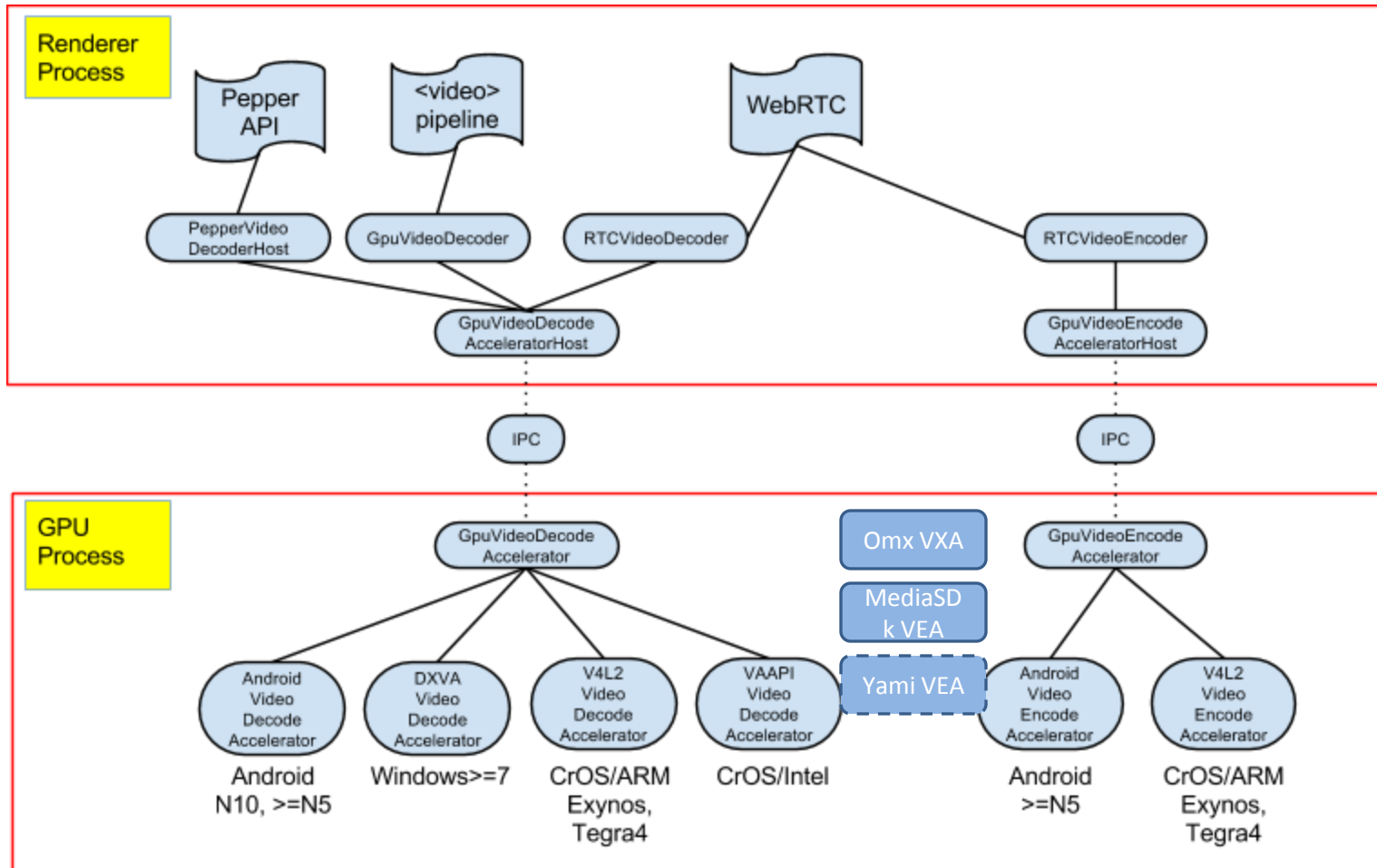
# Agenda

- Chrome VXA (quick)
- V4L2 Codec
- Yami wrapper for V4L2 codec
- Chrome V4L2VEA/V4L2VDA
- Todo

# Chrome VXA

VXA: VDA (Video Decoding Acceleration), VEA (Video Encoding Acceleration)

# Overview picture



More details see backup slides and VXA comparison next

# V4L2 Codec

# Video4Linux2 support ...

- TV tuners
- Webcams
- Video capture
- Video output

v4l2 is the de facto standard

# There is famous v4l2src for camera

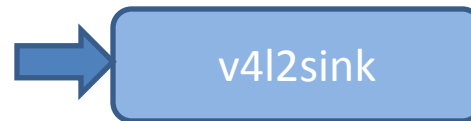


v4l2src →

V4L2\_BUF\_TYPE\_VIDEO\_CAPTURE\_MPLANE

# There is also v4l2sink for video output

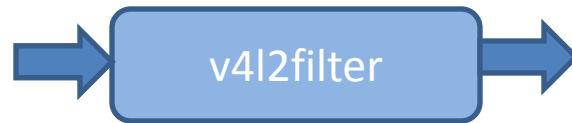
- Independent from Window System (ioctl)



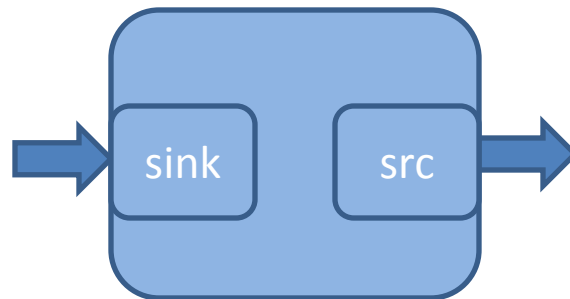
V4L2\_BUF\_TYPE\_VIDEO\_OUTPUT\_MPLANE



# Is there v4l2filter for codec?



# v4l2filter for codec? yes & simple



V4L2\_BUF\_TYPE\_VIDEO\_OUTPUT\_MPLANE

V4L2\_BUF\_TYPE\_VIDEO\_CAPTURE\_MPLANE

NO additional v4l2 interface is required

# v4l2filter for codec? More detail

- [https://events.linuxfoundation.org/images/stories/pdf/lceu2012\\_debski.pdf](https://events.linuxfoundation.org/images/stories/pdf/lceu2012_debski.pdf)
- <http://www.thedirks.org/v4l2/v4l2cod.htm>
- In 2.6.35 support for memory-to-memory (m2m) devices has been added
  - Made possible to add video codecs acting as filters
  - After the introduction of the m2m devices the codec API has been extended
- Multiple plane support

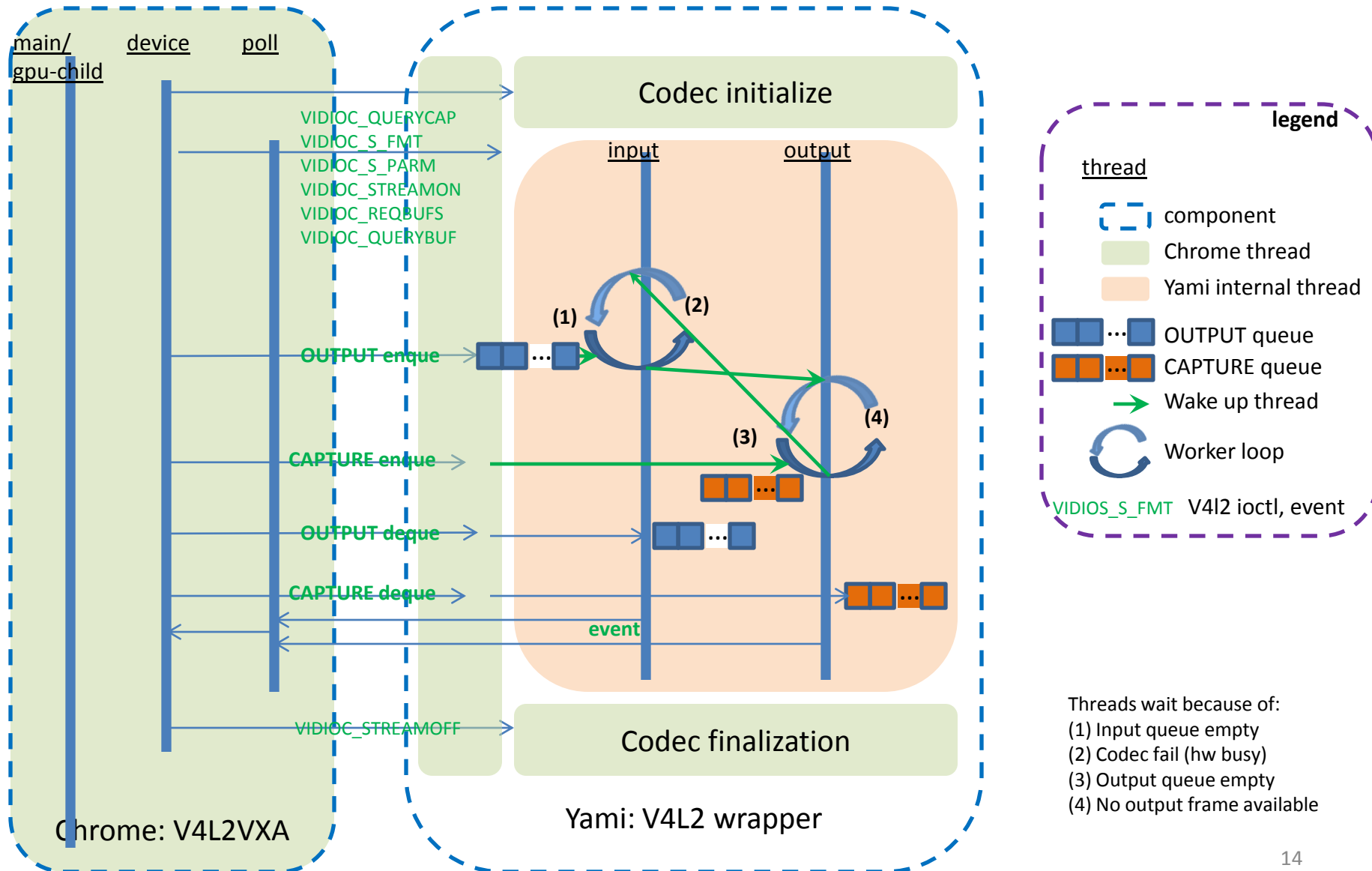
However, samsung said they did something additional, so so

# Yami wrapper for V4L2 codec

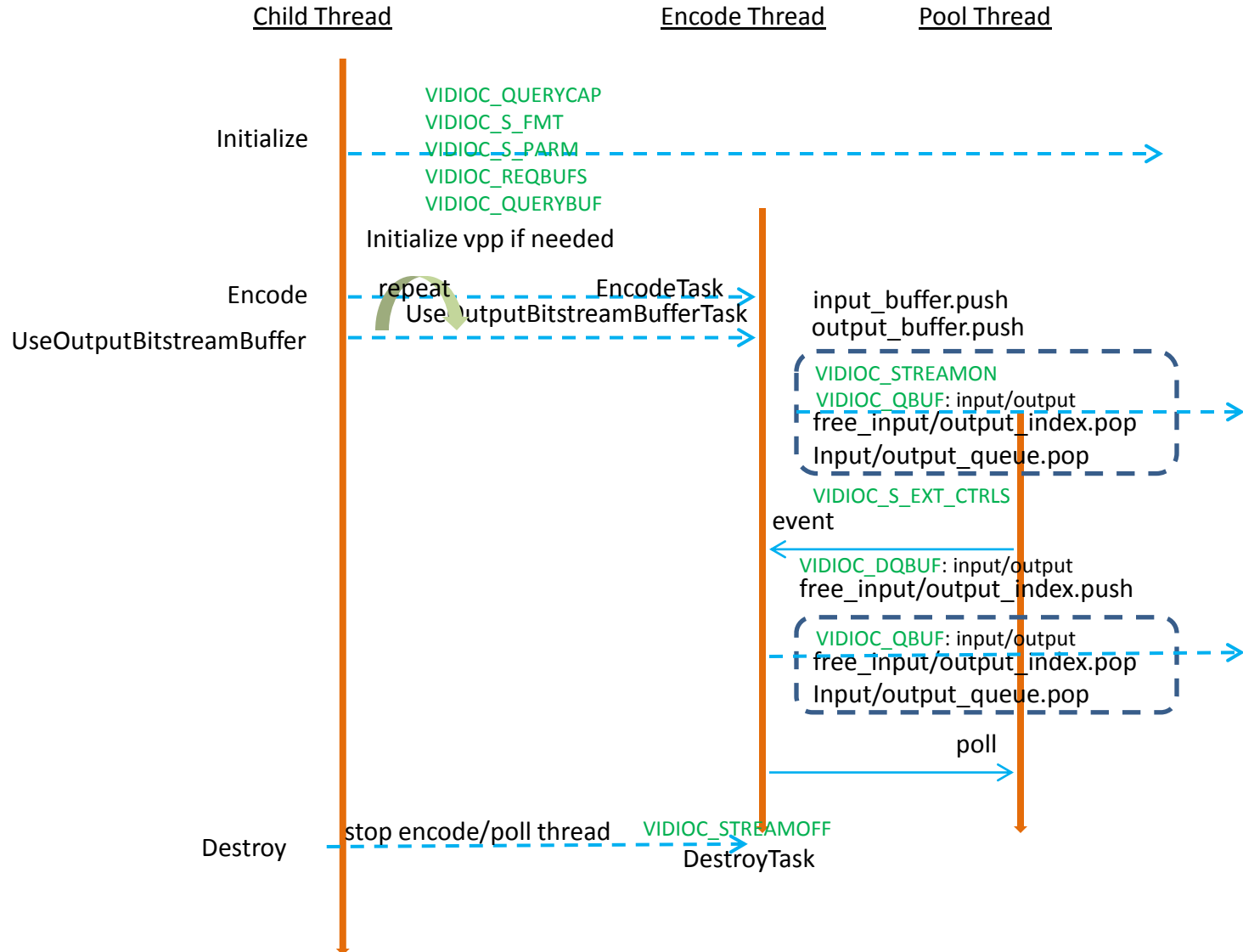
# Why?

- In chrome:
  - Samsung/exynos support video codec with v4l2, 2 years ago
  - Nvidia/tegra simulates v4l2 interface by user libs, 3 months ago
  - Google engineer reject chrome patch to support libyami, they don't like a new implementation while yami API does similar to v4l2 ioctl

# How to simulate v4l2 ioctl



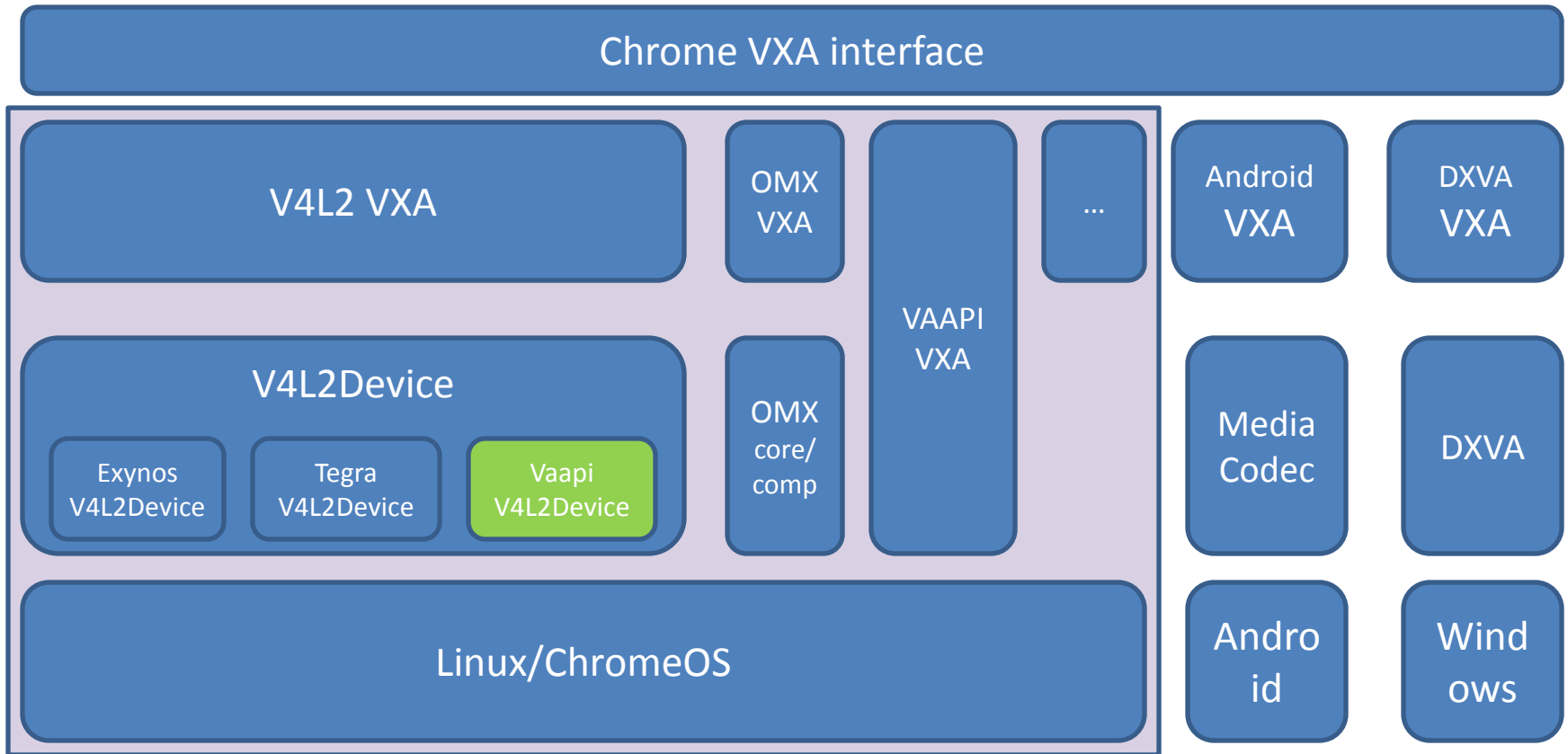
# Chrome v4l2 threads



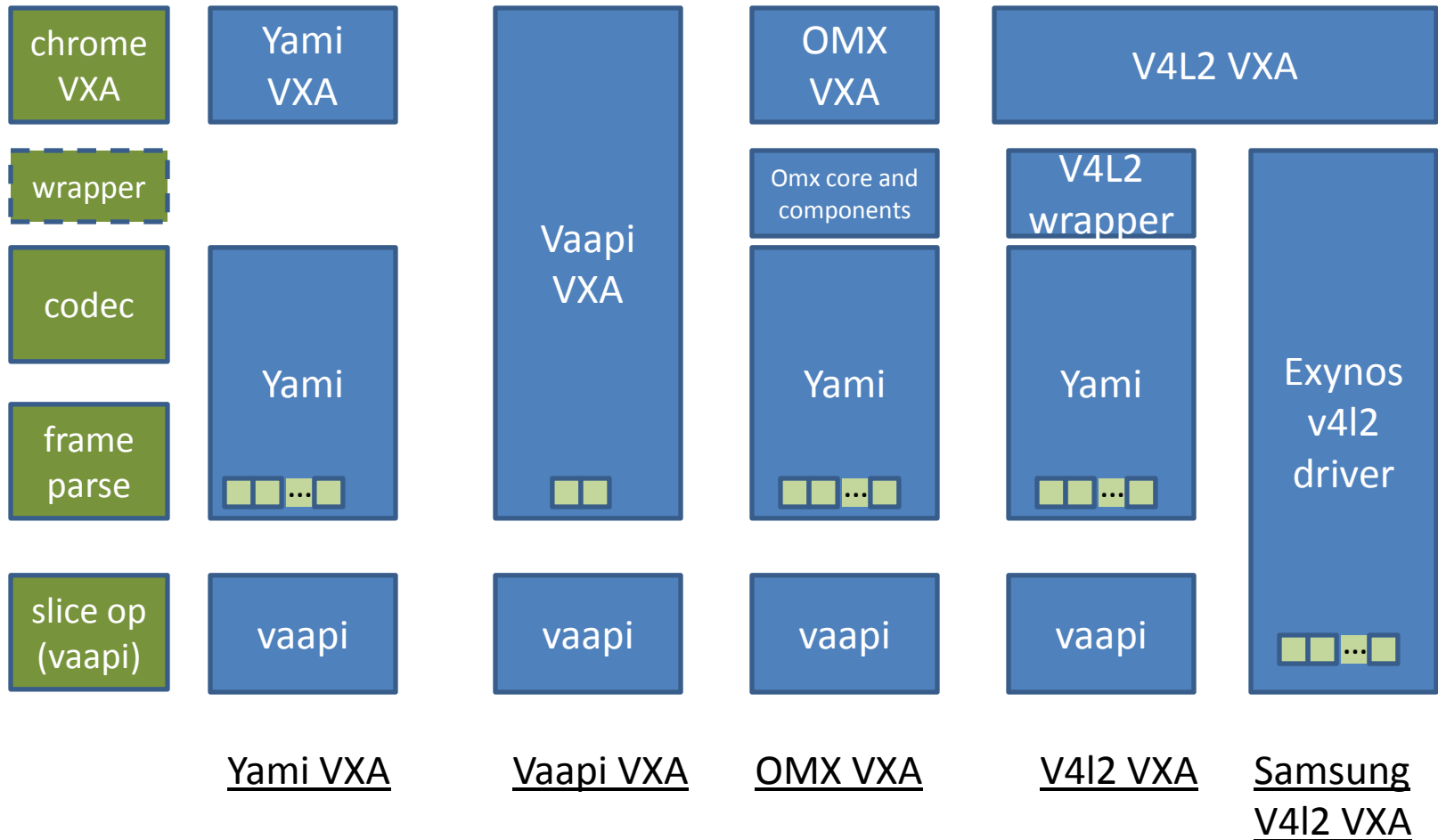
Chrome V4L2VEA/V4L2VDA



# Add V4l2 device for vaapi

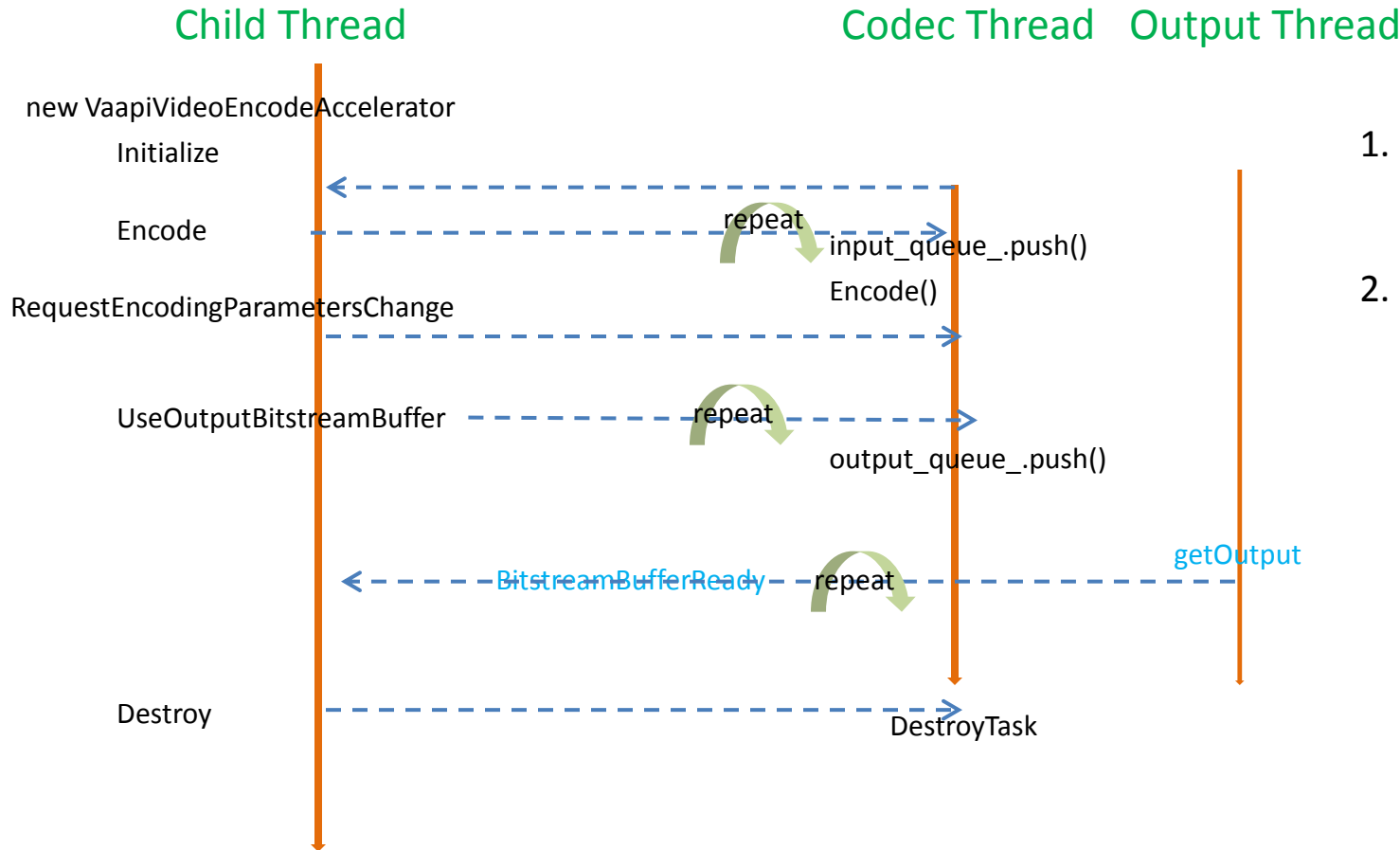


# VXA comparison



Yami API is simple implementation, V4L2 is “the de facto standard” for Linux

# Yami VEA threads



1. encode & output thread are created in chrome
2. Nothing special for yami

# <TBD>

- V4L2VDA and V4L2VEA works with libyami now.
  - Pass the chrome unit tests
  - Video playback inside browser page draftly ok.
  - (update on 2014/11/28)