



**GHENT
UNIVERSITY**

DESIGN OF MULTIMEDIA APPLICATIONS

OVERVIEW

- Assignment 1: GStreamer command line
- Assignment 2: GStreamer application development
Video mixer application
- Assignment 3: GStreamer application development
Security camera
- Assignment 4: Video quality

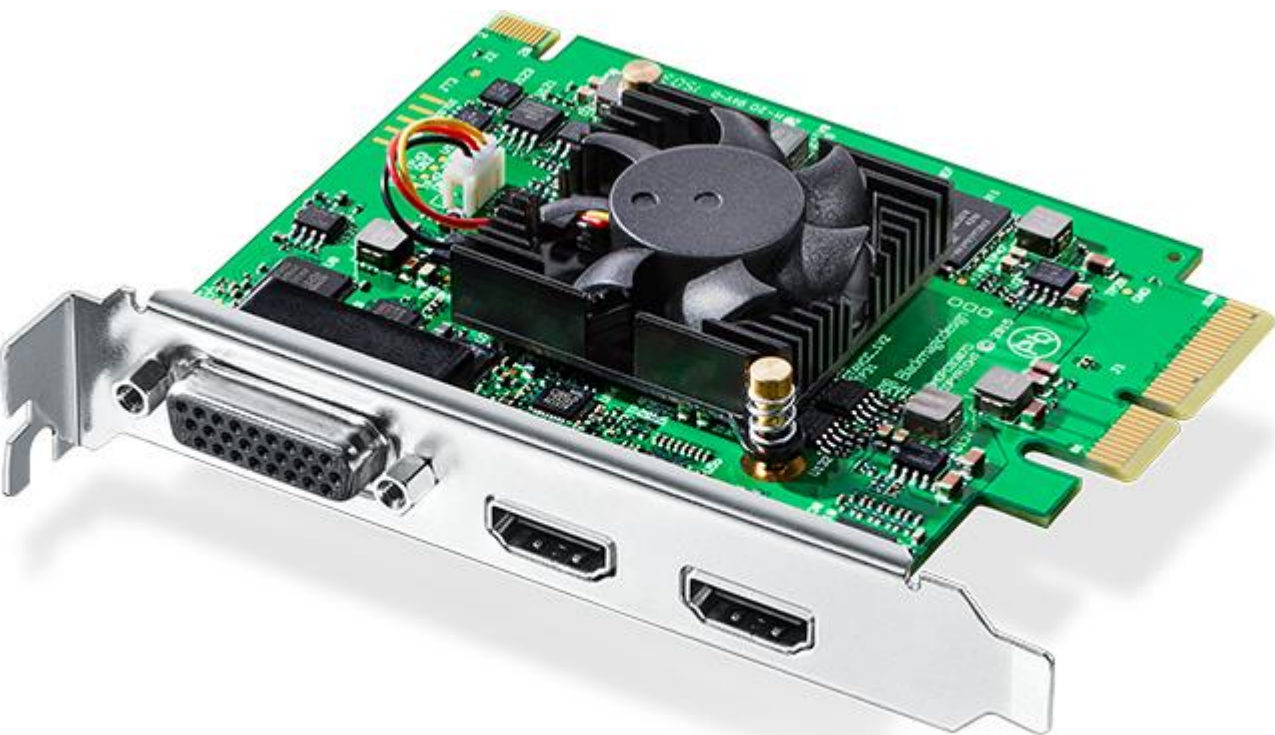
DESIGN OF MULTIMEDIA APPLICATIONS

Assignment 2: GStreamer ! application development

GSTREAMER

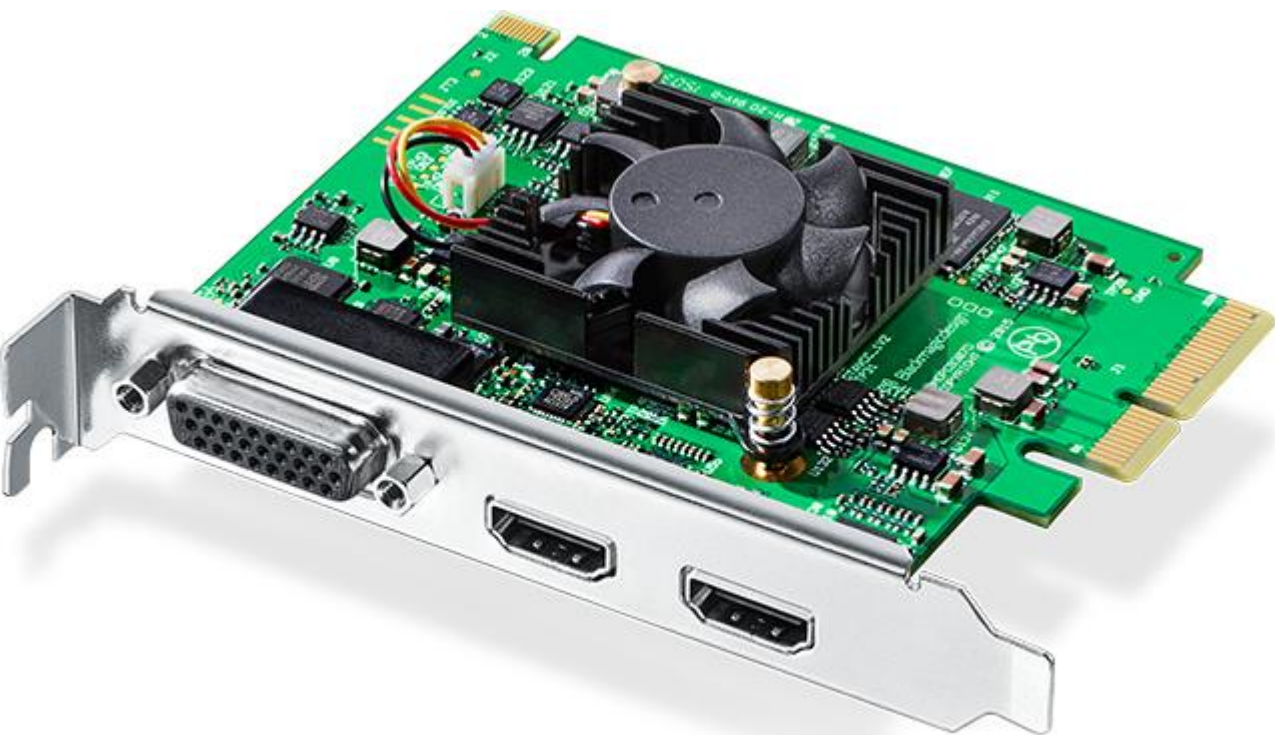
QUEUE

- Buffer data
- Start new thread
- Insert when source and sink elements process data at different speed.
- Audio/video comes in through HDMI
 - Video: 60 fps
 - Audio: 41kHz = 41000 samples per second

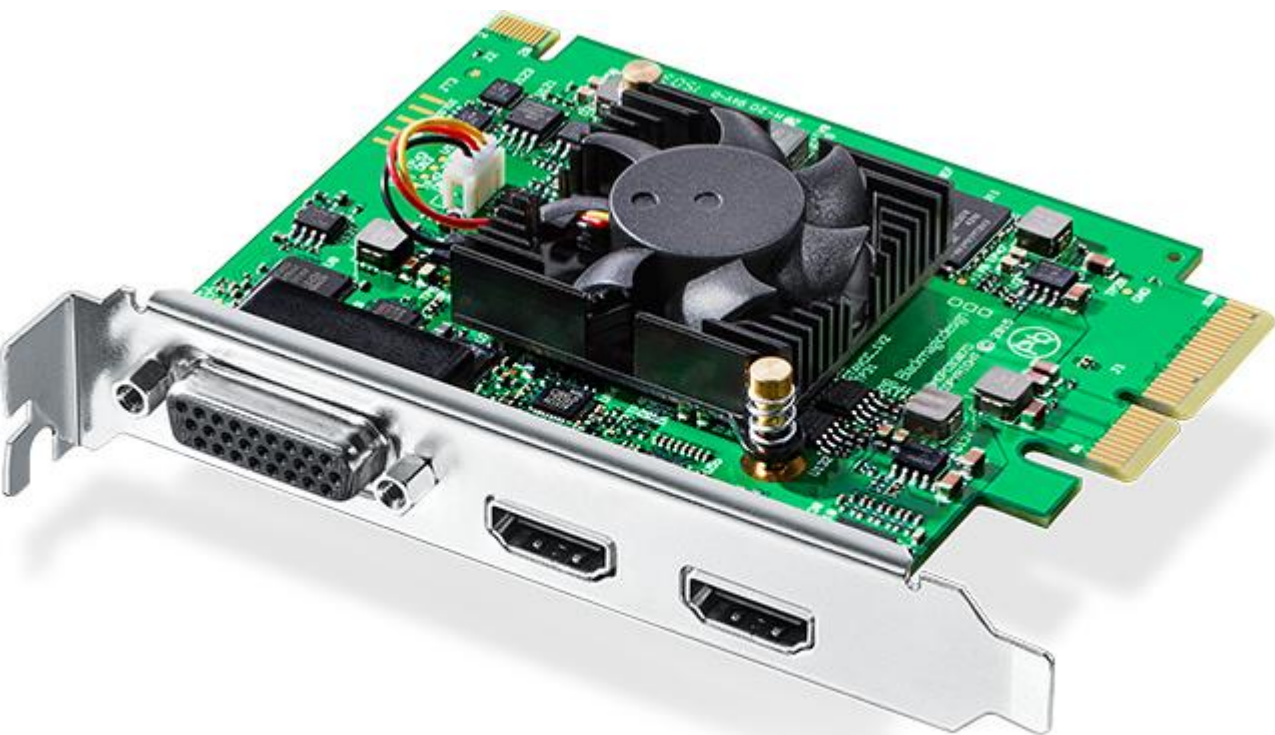
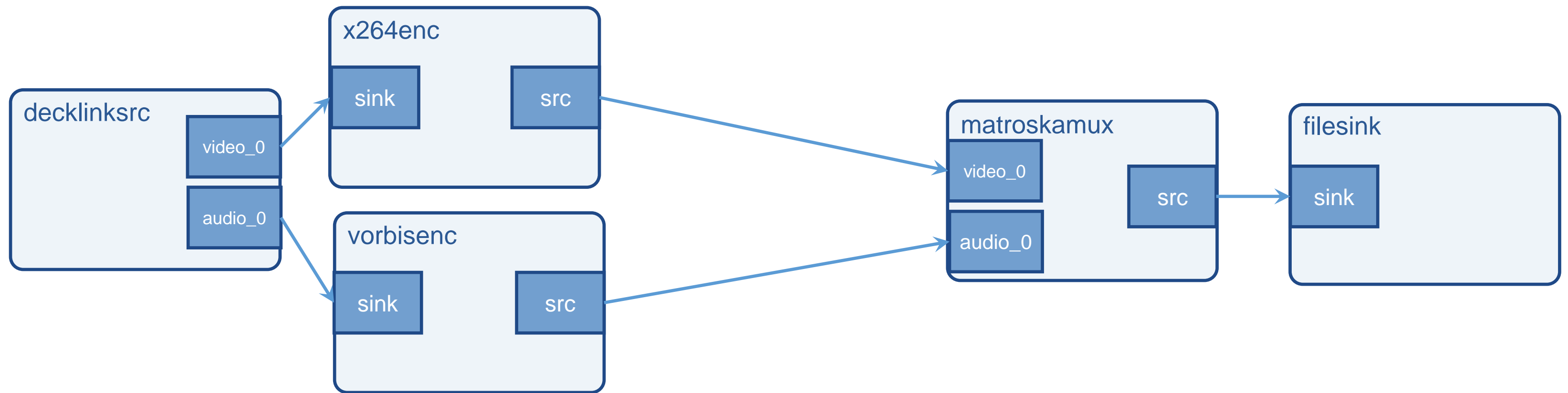


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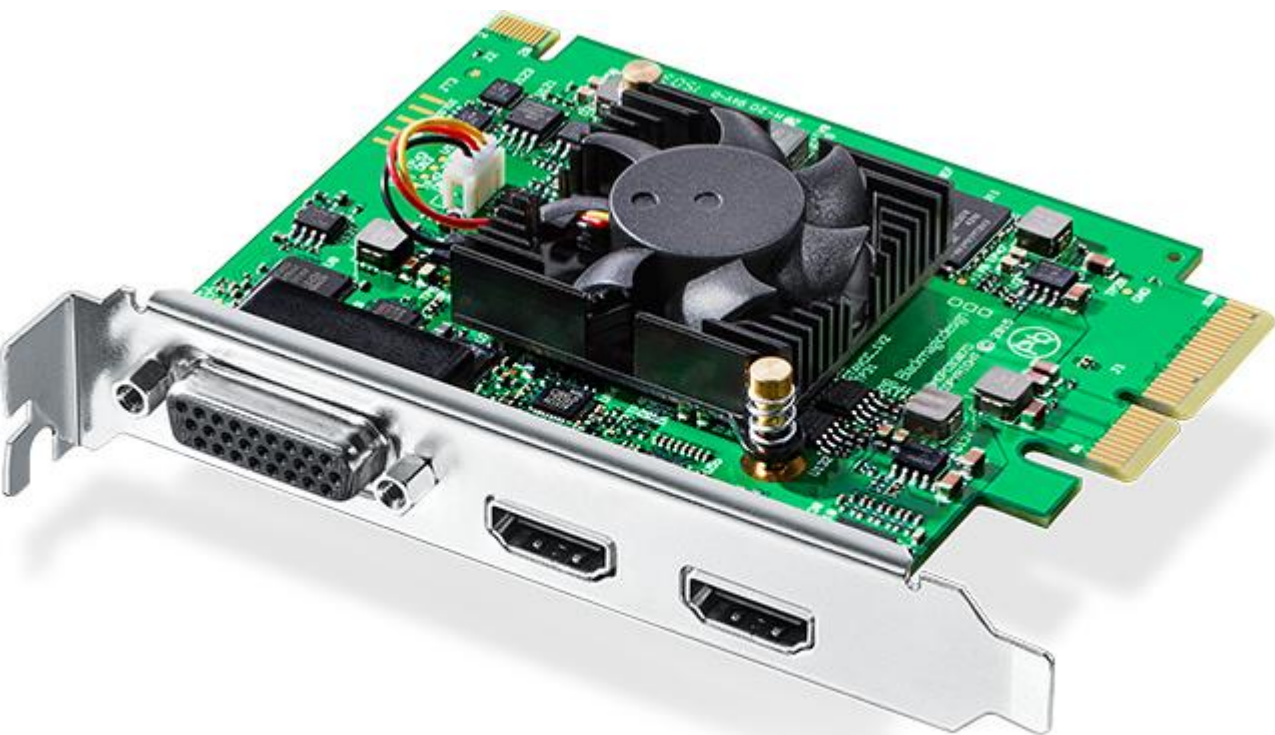
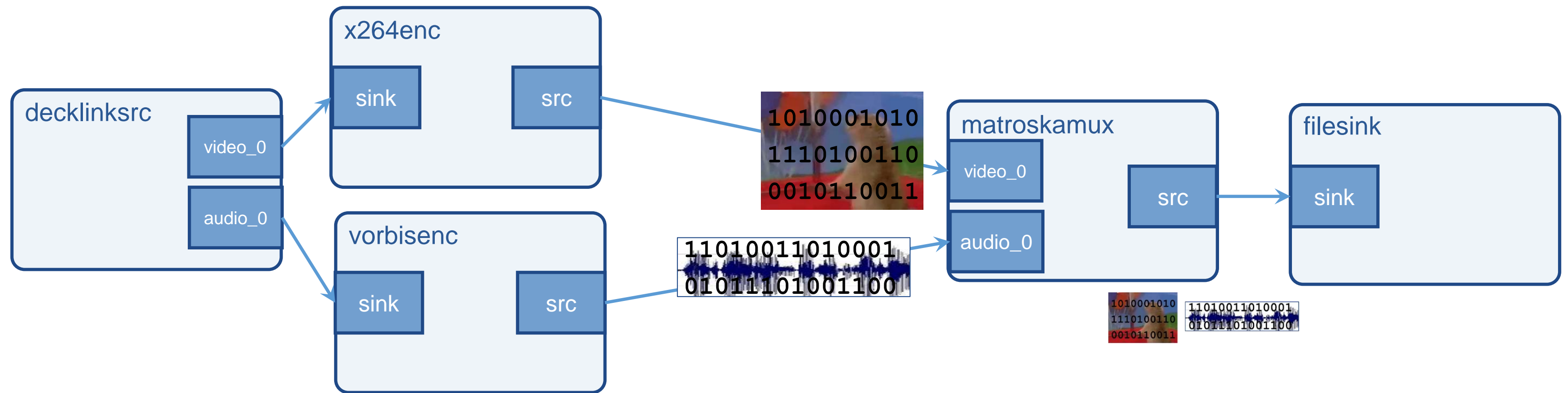
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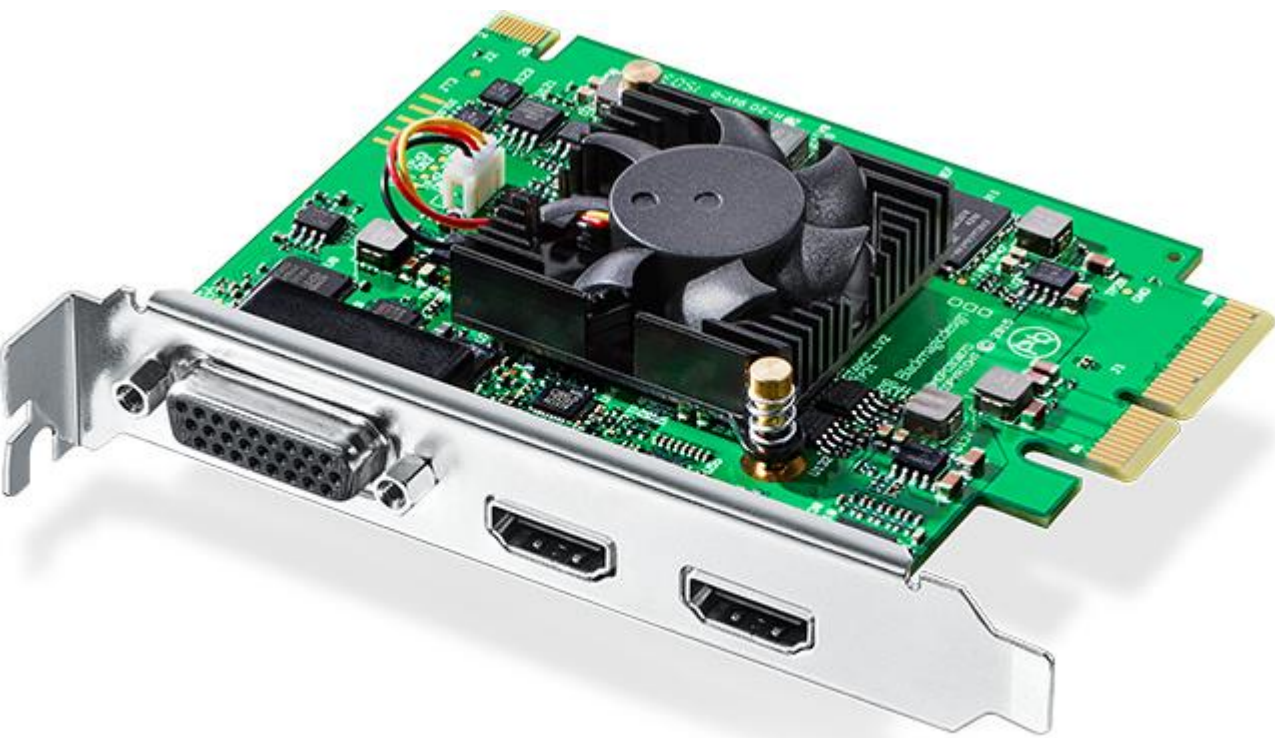
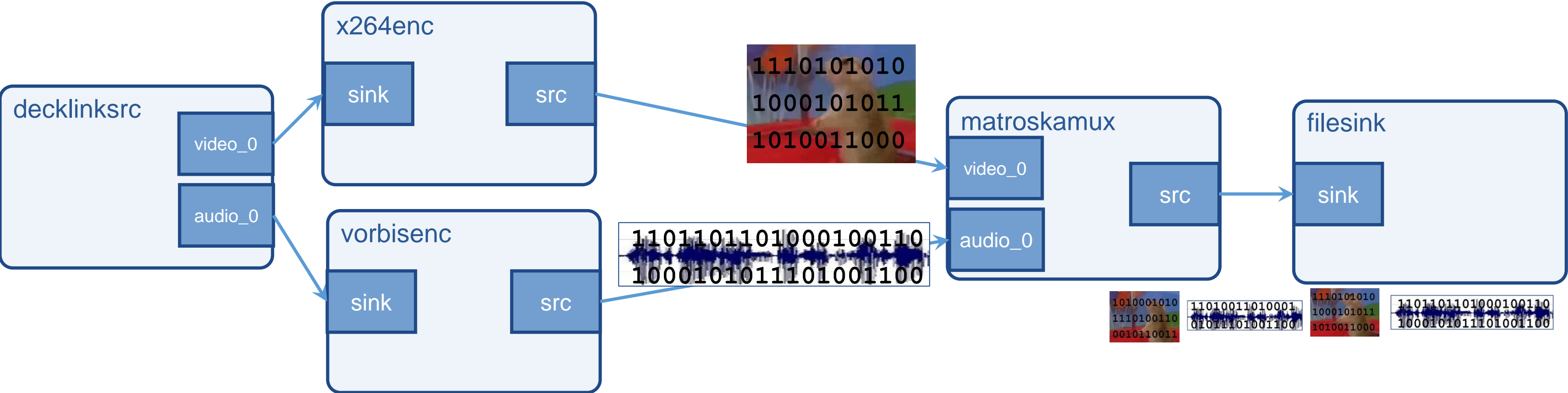
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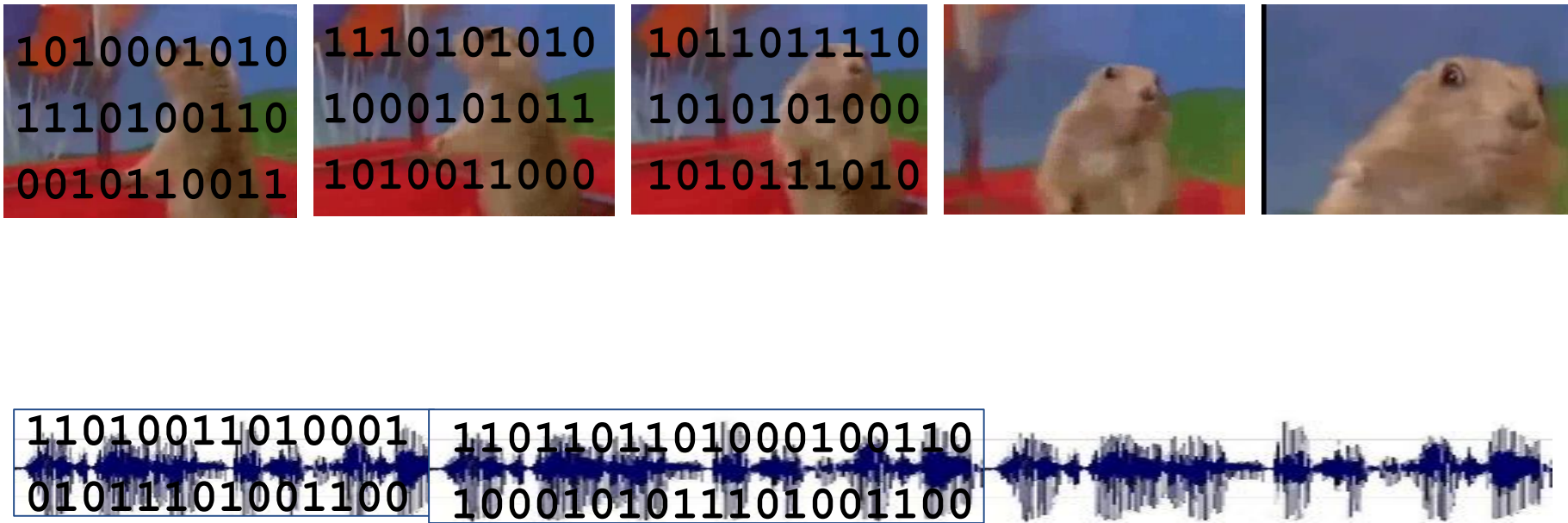
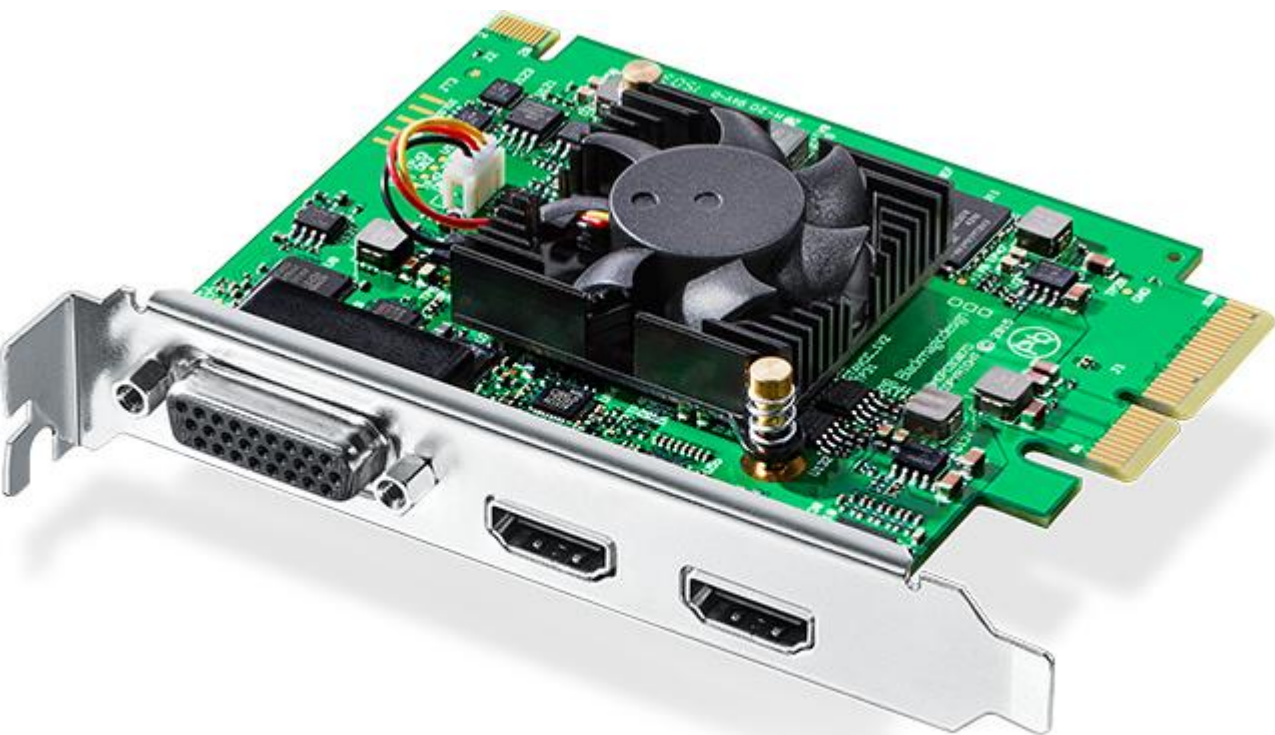
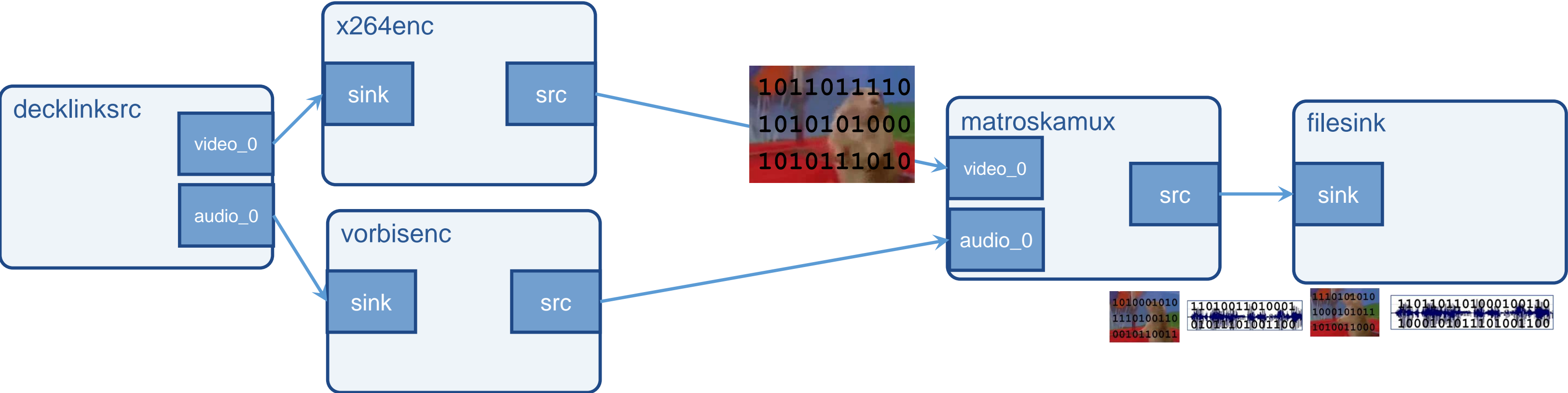
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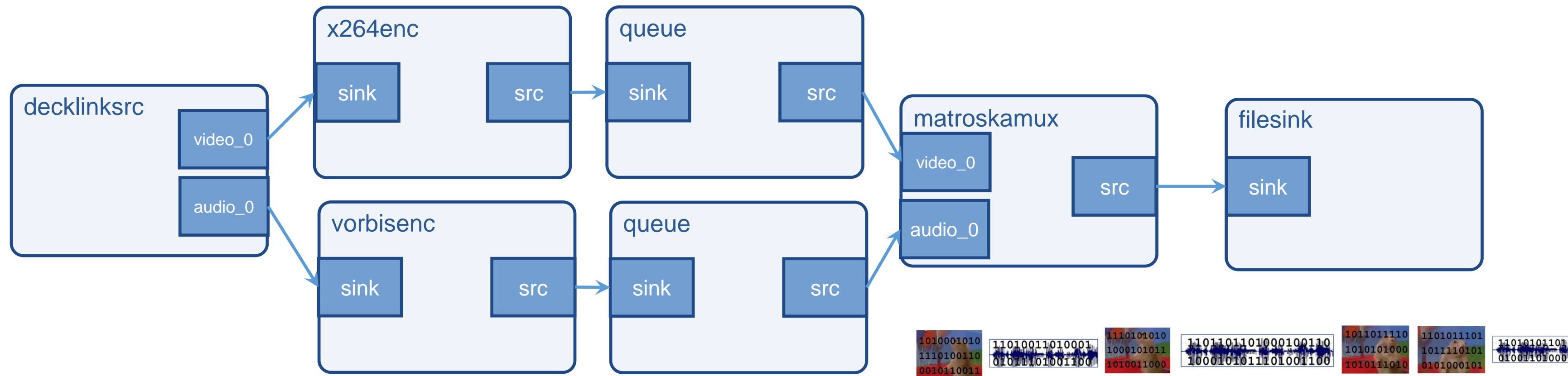
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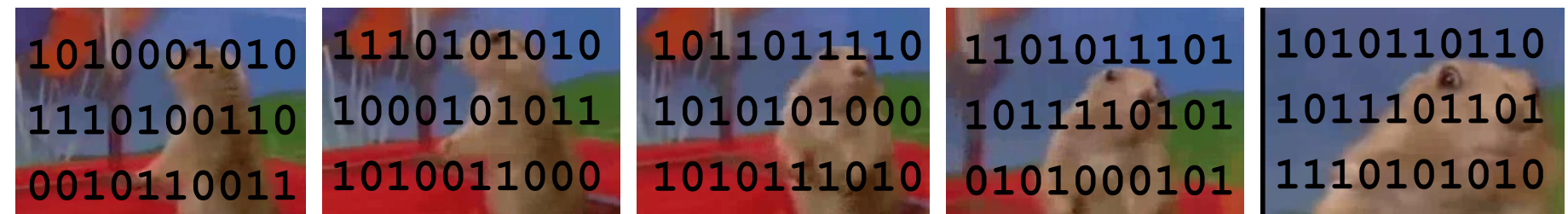
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QUEUE



Muxers choose how to interleave data.



PYGST

gststreamer tools

gst-inspect
gst-launch
gst-editor

multimedia applications

media player

VoIP & video
conferencing

streaming
server

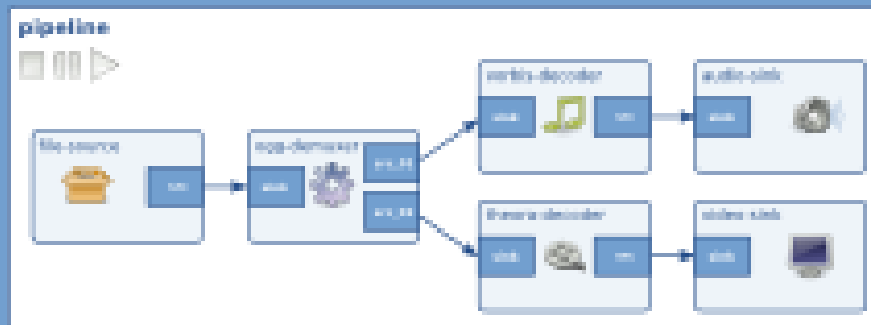
video editor

(...)

API

gststreamer core framework

pipeline architecture



media agnostic
base classes
message bus
media type negotiation
plugin system
data transport
synchronization

protocols

- file:
- http:
- rtsp:
- ...

sources

- alsa
- v4l2
- tcp/udp
- ...

formats

- avi
- mp4
- ogg
- ...

codecs

- mp3
- mpeg4
- vorbis
- ...

filters

- converters
- mixers
- effects
- ...

sinks

- alsa
- xvideo
- tcp/udp
- ...

gststreamer plugins

gststreamer includes over 250 plugins

3rd party plugins

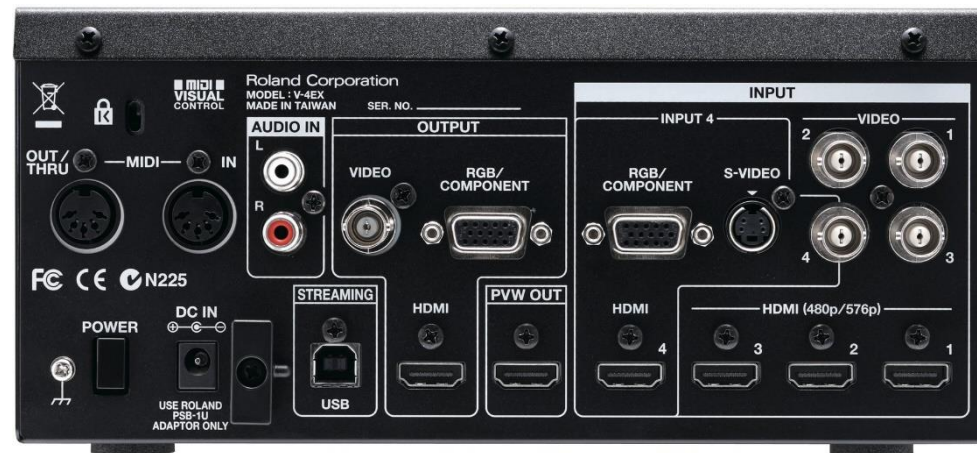
<https://lazka.github.io/pgi-docs/>

EXAMPLE DOCUMENTATION

- <https://gstreamer.freedesktop.org/documentation/tutorials/basic/dynamic-pipelines.html>
- GstVideo.VideoFilter:
https://lazka.github.io/pgi-docs/#GstVideo-1.0/classes/VideoFilter.html#GstVideo.VideoFilter.do_transform_frame

VIDEOMIXER

PROFESSIONAL VIDEOMIXER



- Manually fade between different video channels
 - Add effects to the video stream
- 
- Example: Roland V-4EX:
 - 1900 euro
 - 480p/576p Progressive Processing
 - 4 inputs (HDMI/Composite)

PROFESSIONAL VIDEOMIXER



- Manually fade between 2 video channels
- Add effects to the video stream
- Example: Roland V-02HD:
 - 800 euro
 - 1080p Progressive Processing
 - 2 inputs (HDMI)



OUR VIDEOMIXER

- 2 channels
- fixed resolution (640x480)
- Starting from compressed files
 - A DeckLink card can make it a full fledged solution
- Any effects can be added as long as a logo effect is present



 *gstreamer*

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