

# DEEP LEARNING STREAMER

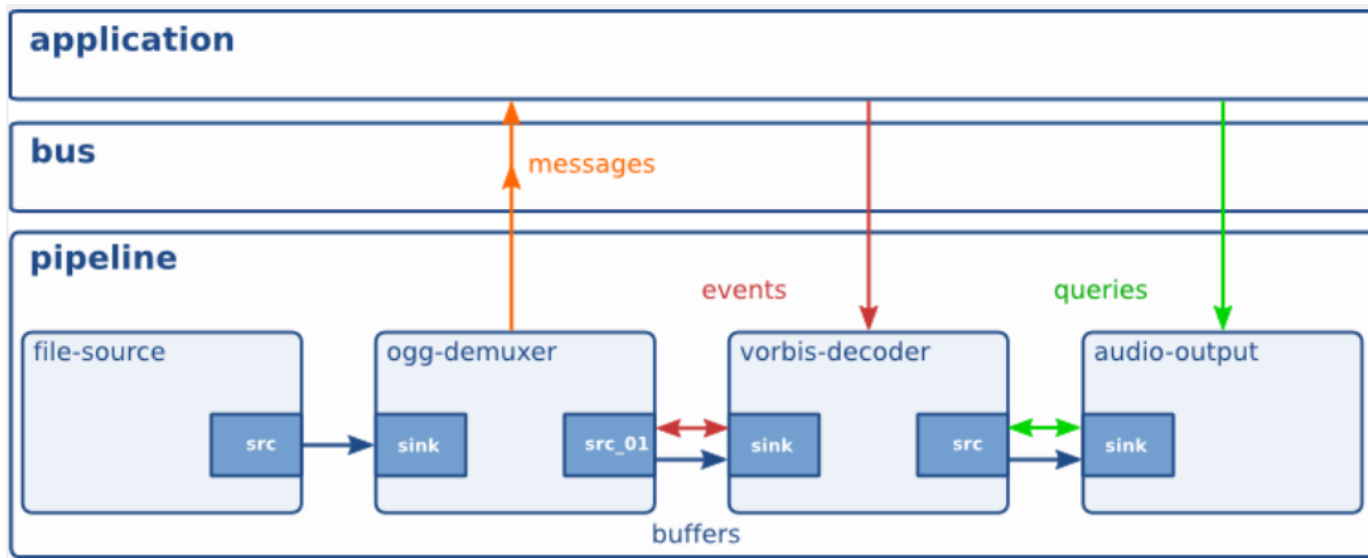
# INTRODUCING.. DL STREAMER

- Intel® Distribution of OpenVINO™ toolkit **Deep Learning (DL) Streamer**, now part of the default installation package
- Enables developers to **create and deploy** optimized streaming media analytics **pipelines** across Intel® architecture from edge to cloud
- Optimal pipeline interoperability with a **familiar developer experience** built using the GStreamer multimedia framework



# WHAT IS GSTREAMER?

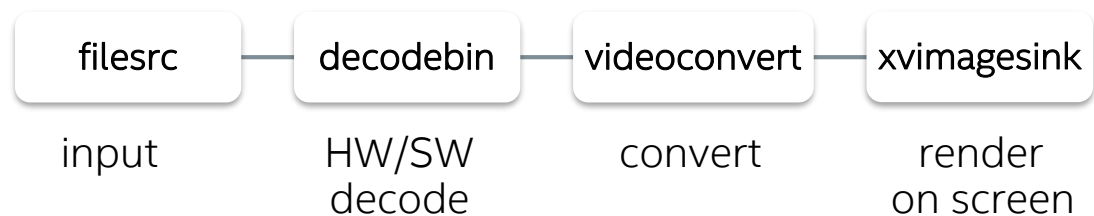
- A pipeline consists of **connected processing elements**
- Each element is provided by a **plug-in** and can be **grouped into bins**
- Elements communicate by means of **pads** – source pad and sink pad
- Data buffers flow **from Source element to Sink element** & from source pad to sink pad



Ref:  
<https://gstreamer.freedesktop.org/data/doc/gstreamer/head/manual/manual.pdf>

# MEDIA PROCESSING PIPELINE

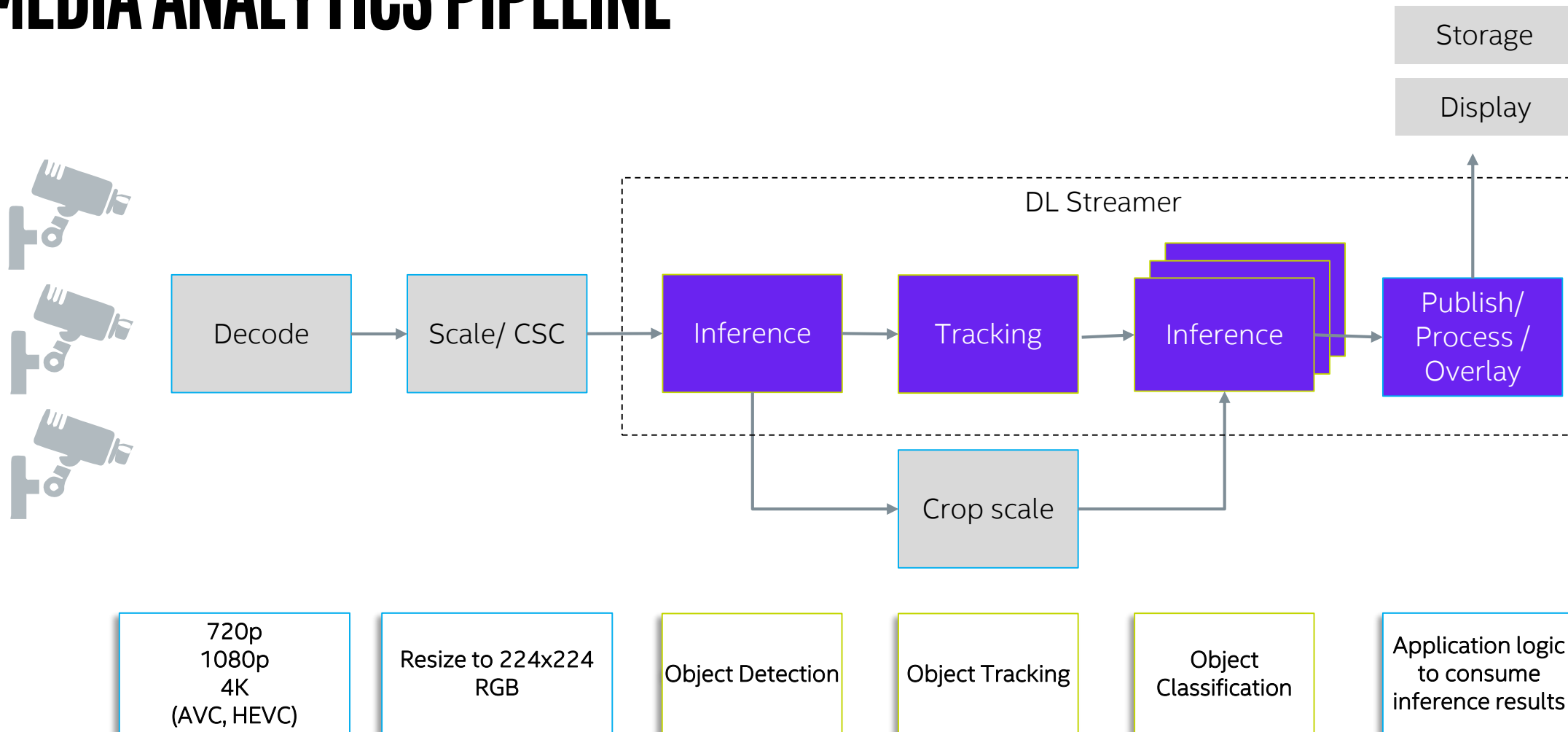
Video Pipeline – decode, convert, render



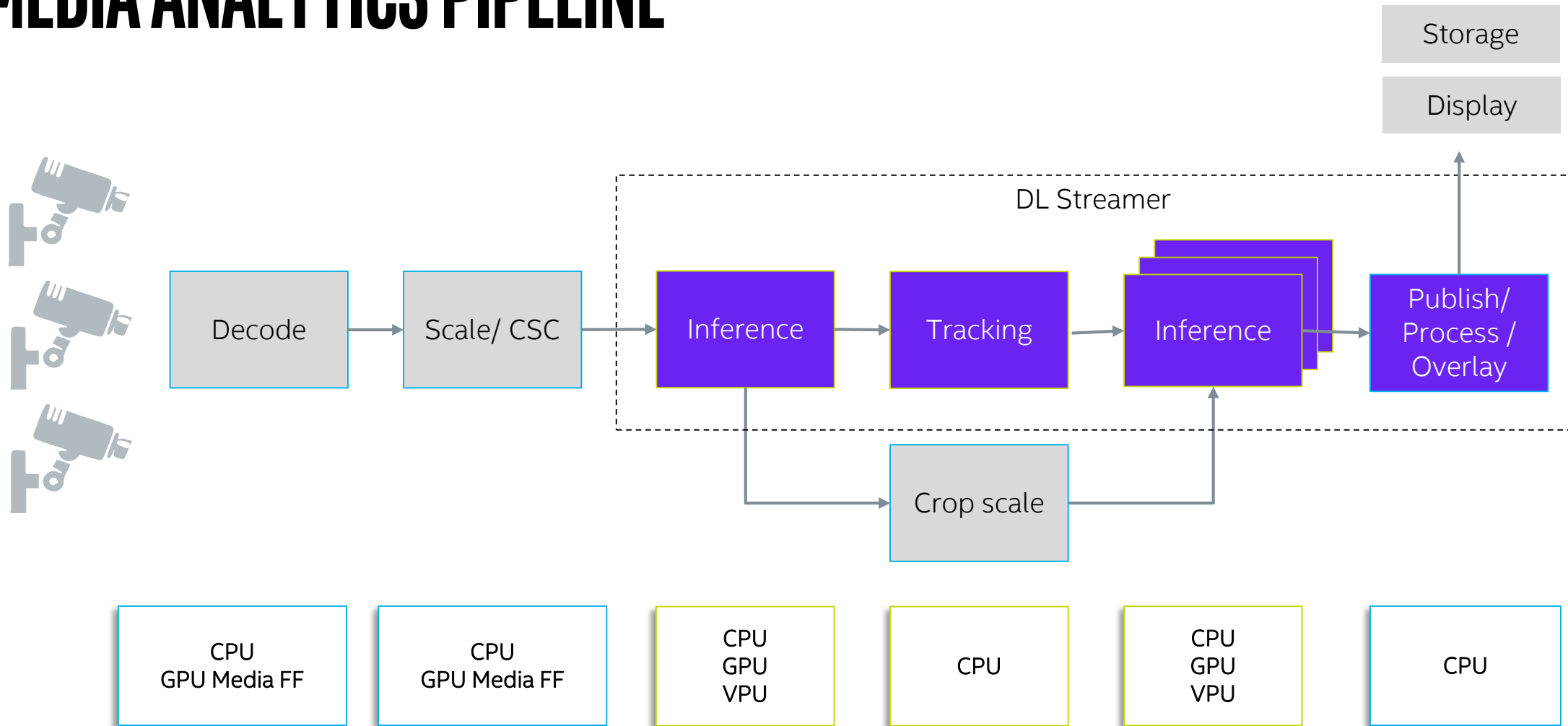
```
gst-launch-1.0 filesrc location=/path/to/video.mp4 ! decodebin ! videoconvert ! xvimagesink
```



# MEDIA ANALYTICS PIPELINE

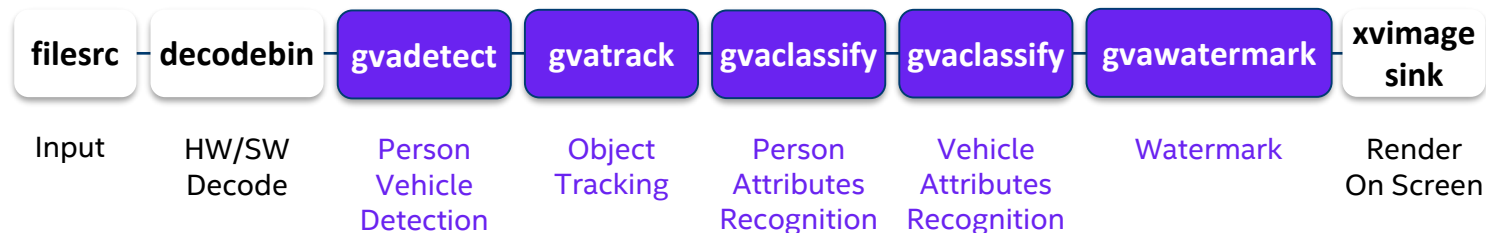


# MEDIA ANALYTICS PIPELINE



# USING THE DL STREAMER

Video Analytics pipeline – person and vehicle detection, person, vehicle attributes classification



```
gst-launch-1.0 filesrc location=/path/to/video.mp4 !
decodebin ! videoconvert ! video/x-raw,format=BGRx ! \
gvadetect model=person-vehicle-bike-detection-crossroad-0078.xml model-proc=person-vehicle-bike-detection-
crossroad-0078.json inference-interval=10 threshold=0.6 device=CPU ! queue ! \
gvatrack tracking-type="short-term" ! queue ! \
gvaclassify model= person-attributes-recognition-crossroad-0230.xml model-proc= person-attributes-recognition-
crossroad-0230.json reclassify-interval=10 device=CPU object-class=person ! queue ! \
gvaclassify model= vehicle-attributes-recognition-barrier-0039.xml model-proc= vehicle-attributes-recognition-
barrier-0039.json reclassify-interval=10 device=CPU object-class=vehicle ! queue ! \
gvawatermark ! videoconvert ! fpsdisplaysink video-sink=xvimagesink sync=true
```

# UNDER THE HOOD: DL STREAMER

Application

Reference Application Designs

GStreamer framework

GStreamer plugins

GStreamer Media Plugins (Standard)

Decode

VPP

Encode

DL Streamer - GStreamer Video Analytics (GVA) Plugin

Detect

Classify

Track

Publish

Runtime Libraries

VA-API

Libav

Intel® Distribution of OpenVINO™ toolkit Deep Learning Inference Engine

OpenCV

MQTT/  
Kafka

Hardware



**WANT TO KNOW MORE: CHECK OUT THE WEBINAR**

[HTTPS://SOFTWARE.SEEK.INTEL.COM/OPENVINO-WEBINAR-SERIES](https://software.seek.intel.com/openvino-webinar-series)

READY, STEADY, STREAM: INTRODUCING INTEL® DISTRIBUTION OF OPENVINO™ TOOLKIT DEEP LEARNING STREAMER



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