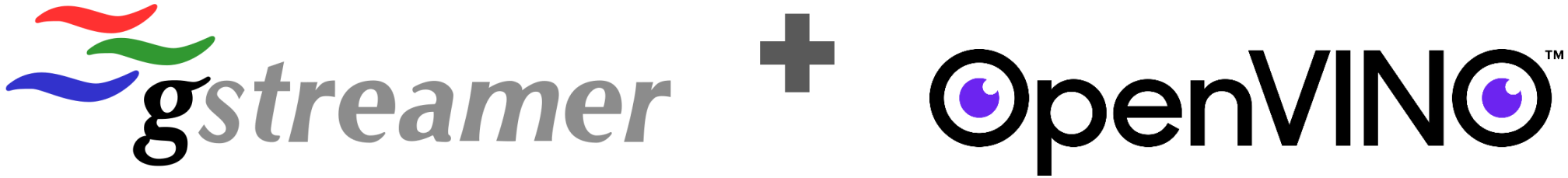
Deep Learning Streamer

intel®

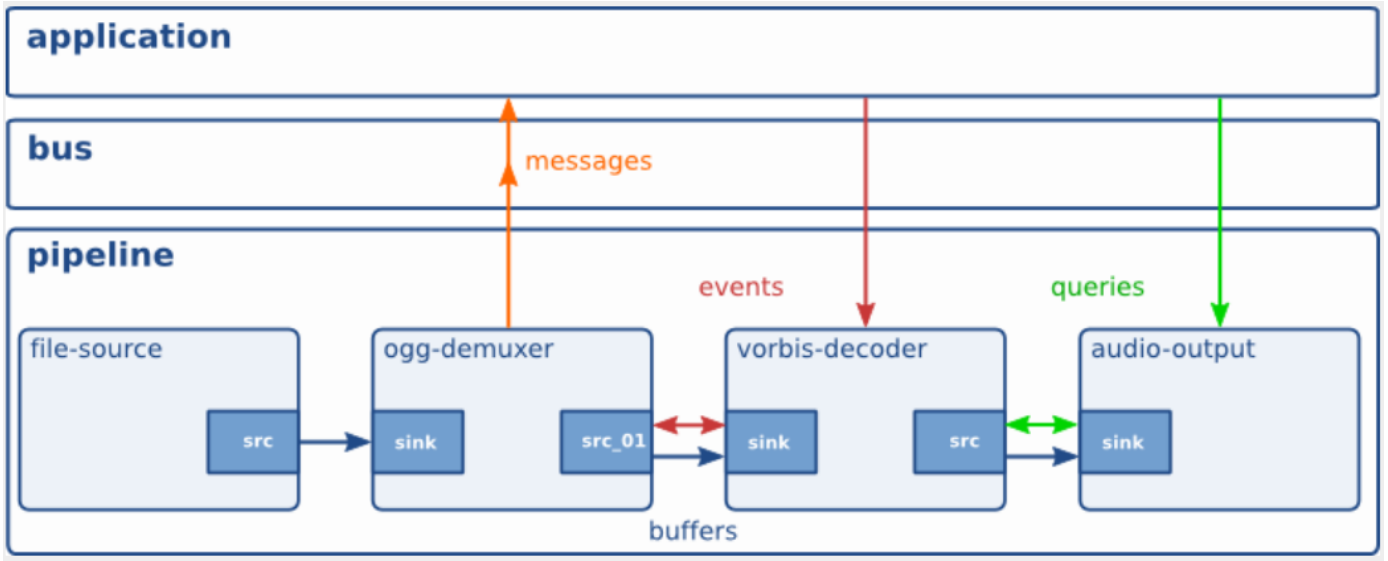
Introducing.. Dl streamer

- 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

filesrc — decodebin — videoconvert — xvimagesink

input | HW/SW decode | convert | render on screen

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

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

VAAPI | Libav | Intel® Distribution of OpenVINO™ toolkit Deep Learning Inference Engine | OpenCV | MQTT/ Kafka

Hardware

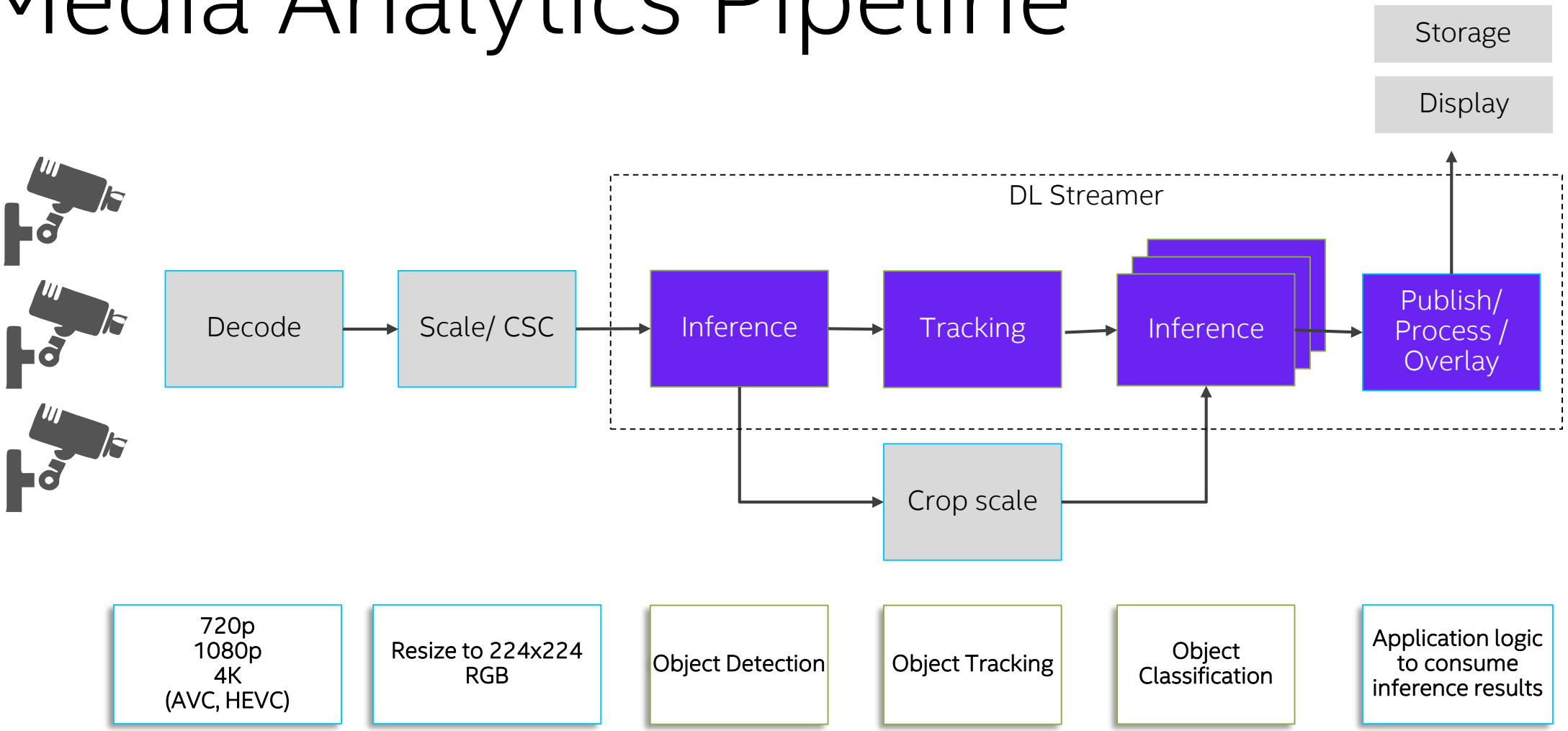
intel IRIS Pro GRAPHICS

WANT TO KNOW MORE: CHECK OUT THE WEBINAR

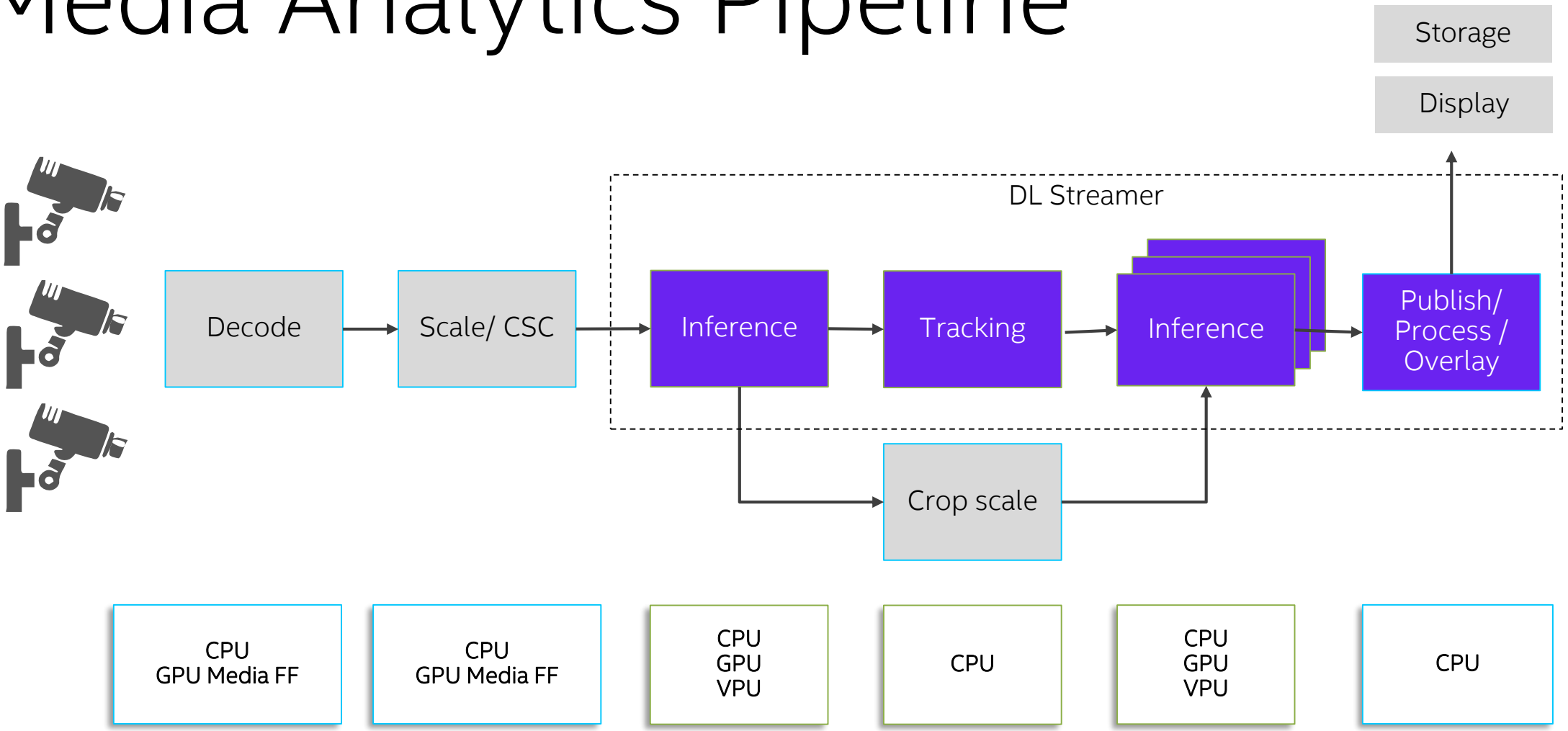
HTTPS://SOFTWARE.SEEK.INTEL.COM/OPENVINO-WEBINAR-SERIES

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

Media Analytics Pipeline

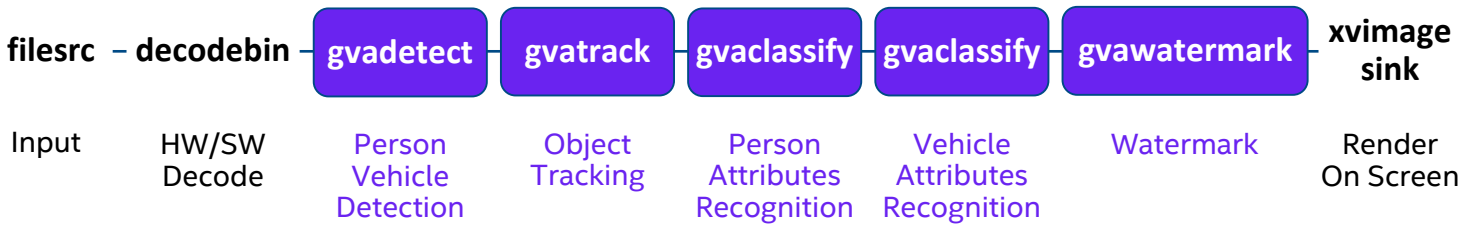


Media Analytics Pipeline



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
```

Audio Processing

DL Streamer for end-to-end audio analytics pipeline

- Intel® Distribution of OpenVINO™ toolkit Deep Learning (DL) Streamer, 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
- Introduces gvaaudiodetect for audio event detection
  - Can be paired with alcnet public model for end-to-end audio analytics pipeline

DL Streamer Elements:

- gvaaudiodetect for audio event detection using ACLNet
- gvametaconvert for converting ACLNet detection results into JSON for further processing and display
- gvametapublish for printing detection results to stdout