

Xilinx - Smart World Solutions

Alexey Popov

Alexey.Popov@avnet.eu



Agenda

- > Xilinx
- > Xilinx Alveo cards and Vitis overview
- > Xilinx Video Surveillance Solutions
- > VMSS - Video Machine Learning Streaming Server

We Are Xilinx

Founded in 1984



\$3.16B
Revenue
(FY20)



~4,500
Employees Worldwide



60K+
Customers



60+
Industry Firsts



4,400+
Patents

Our Customers are Innovators in...



Aerospace &
Defense



ProAV &
Broadcast



Automotive



Consumer



Data Center



Industrial &
Vision



Healthcare &
Sciences



Test & Measurement,
and Emulation



Wired
Communications



Wireless
Communications

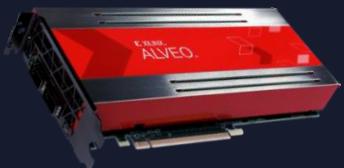


Xilinx Alveo cards and Vitis overview

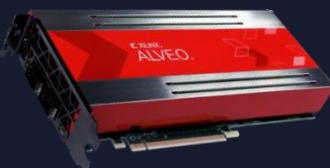


► Xilinx Alveo Product Lineup

ALVEO™ U200



ALVEO™ U250



ALVEO™ U280



ALVEO™ U50



ALVEO™ U25



UltraScale+ Architecture

1,182k LUTs

Dual slot, FH3/4L

64GB DDR, 77GB/sec

PCIe Gen3

2x QSFP 28 (100GbE)

< 225W

UltraScale+ Architecture

1,728k LUTs

Dual slot, FH3/4L

64GB DDR, 77GB/sec

PCIe Gen3

2x QSFP 28 (100GbE)

< 225W

UltraScale+ Architecture

1,304k LUTs

Dual slot, FH3/4L

8GB HBM2, 460GB/sec

PCIe Gen3, Gen4, CCI-X

2x QSFP 28 (100GbE)

< 225W

UltraScale+ Architecture

872k LUTs

Single slot, HHHL

8GB HBM2, 460GB/sec

PCIe Gen3, Gen4, CCI-X

1x QSFP 28 (100GbE)

< 75W

UltraScale+ Architecture

520k LUTs

Single slot, HHHL

6GB DDR4

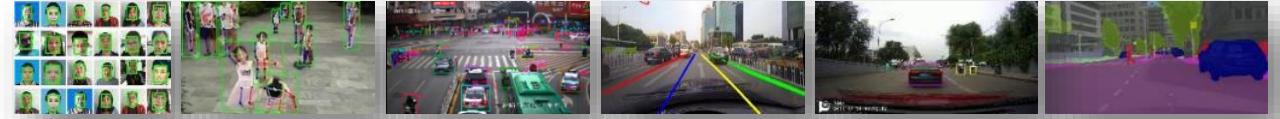
2x PCIe Gen3x8

2x SFP28 (2x10/25GbE)

< 75W

Vitis AI: Unified AI Inference Solution Stack

User Applications and Demo Zoo



Frameworks



Caffe

Vitis AI Models

Model Zoo

Custom Models

Vitis AI Development Kit

AI Optimizer

AI Quantizer

AI Compiler

AI Profiler

AI Library

Deep Learning Processing Unit (DPU)

DPU

CNN-Zynq

CNN-Alveo

LSTM-Alveo

CNN-AIE

LSTM-AIE

...

- > Support both edge and cloud
- > Support AI model zoo
- > Several releases before this Vitis AI release



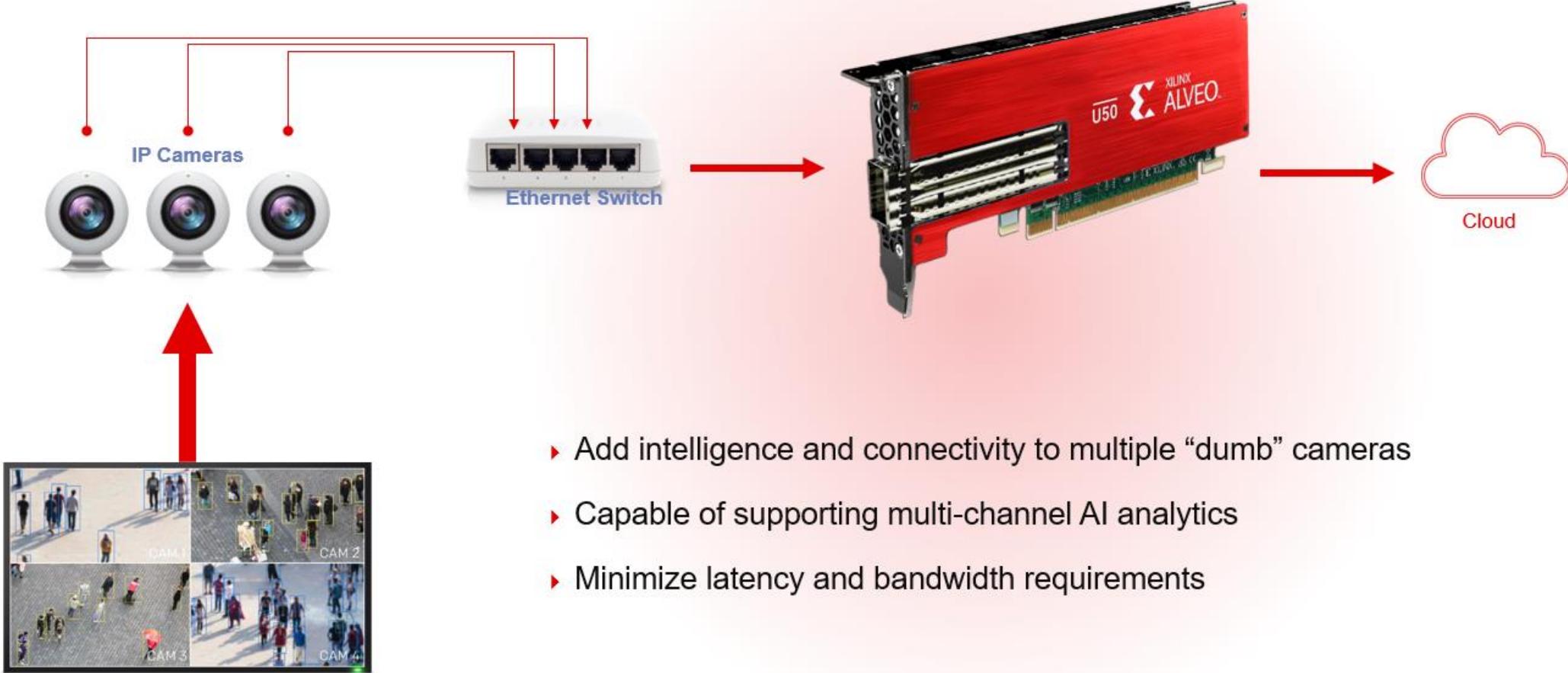
Xilinx Video Surveillance Solutions



► Smart City Applications



Alveo U50 Accelerator Cards — Adding AI at the Edge



Smart World Solution Target Market

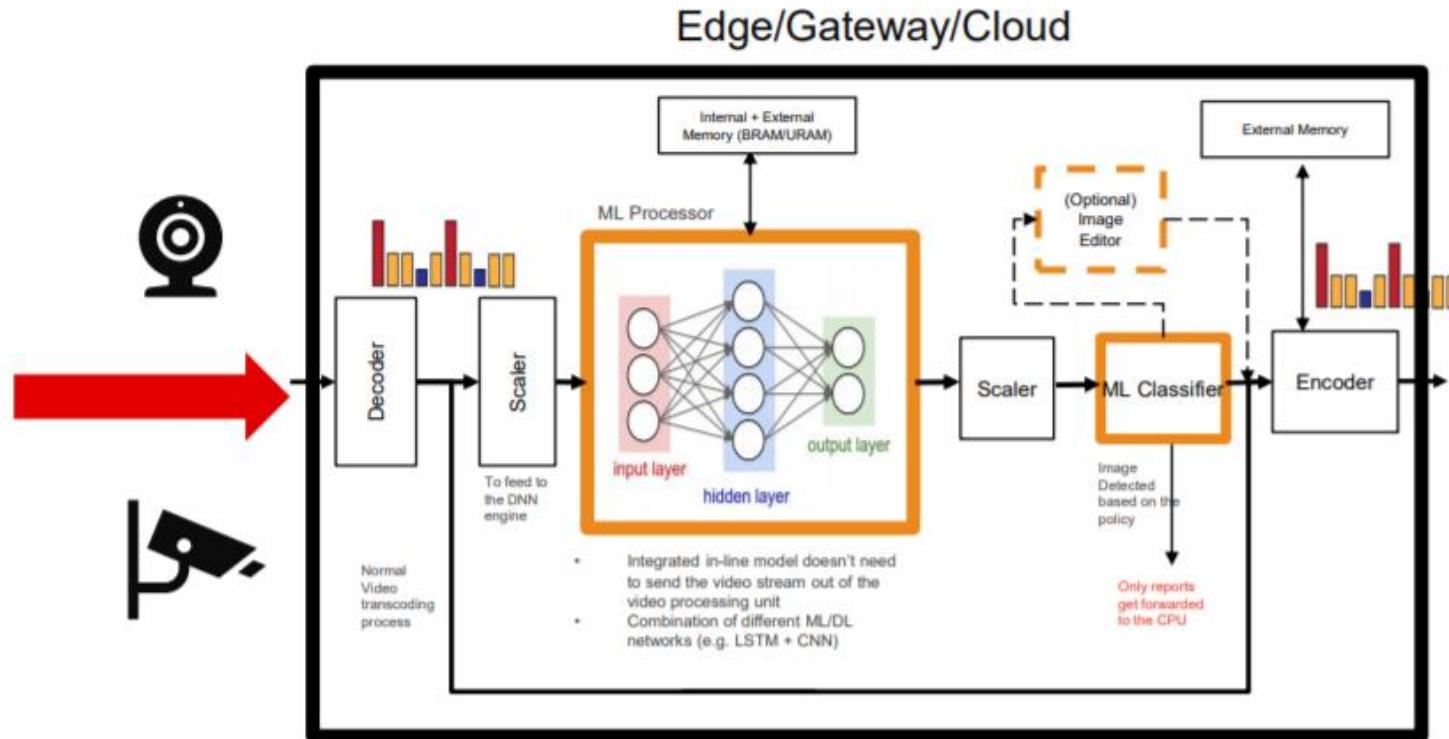
Smart Retail



Smart City

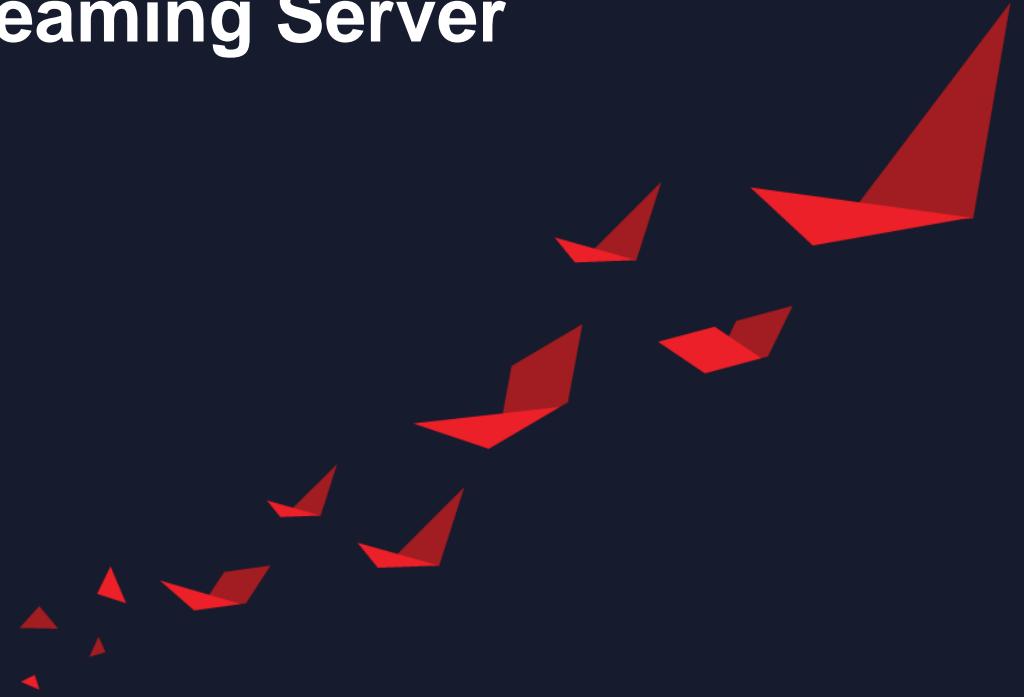


Smart Hospital



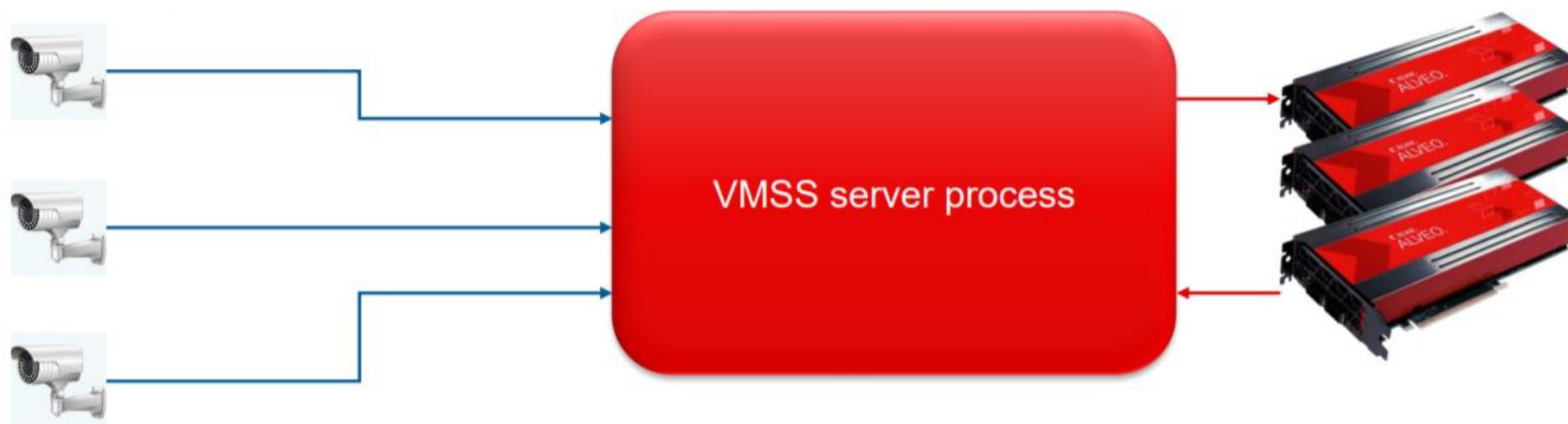


VMSS - Video Machine Learning Streaming Server

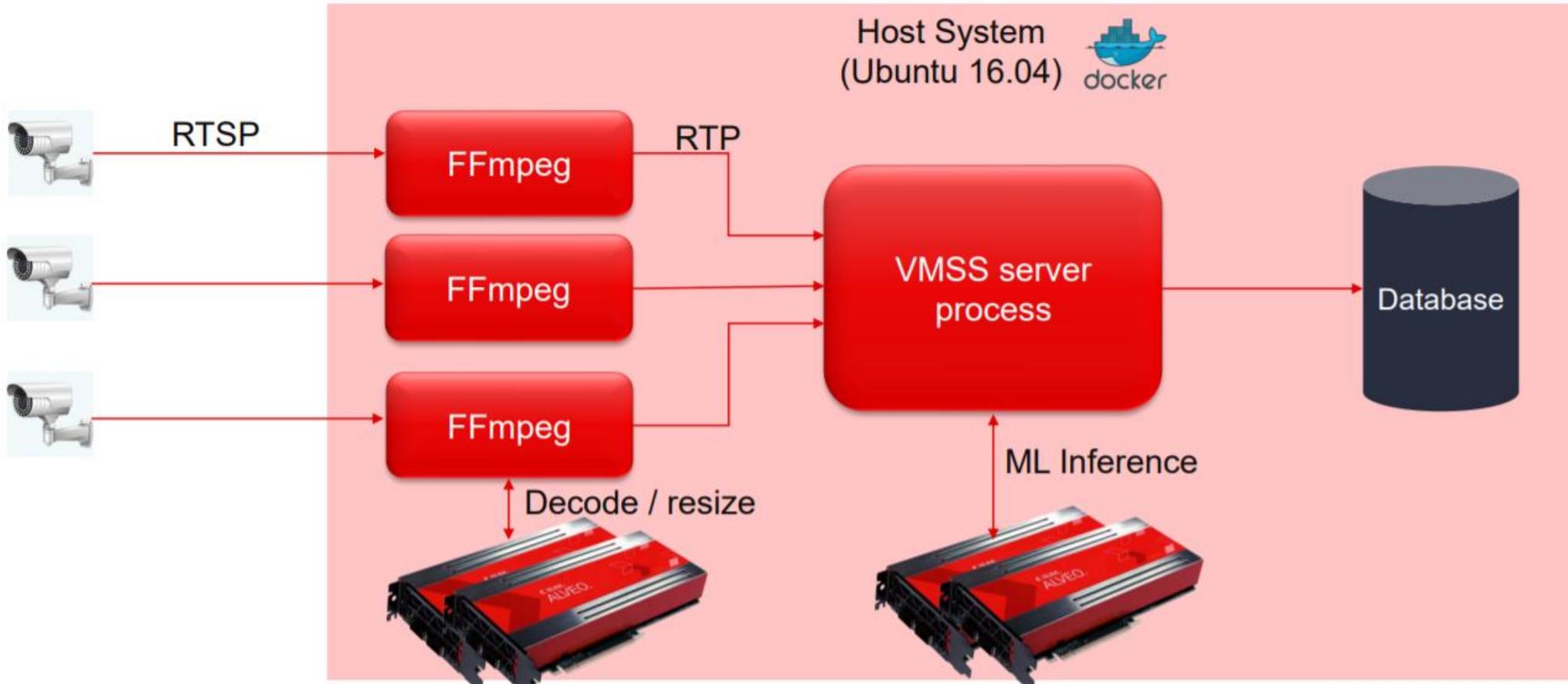


What is VMSS?

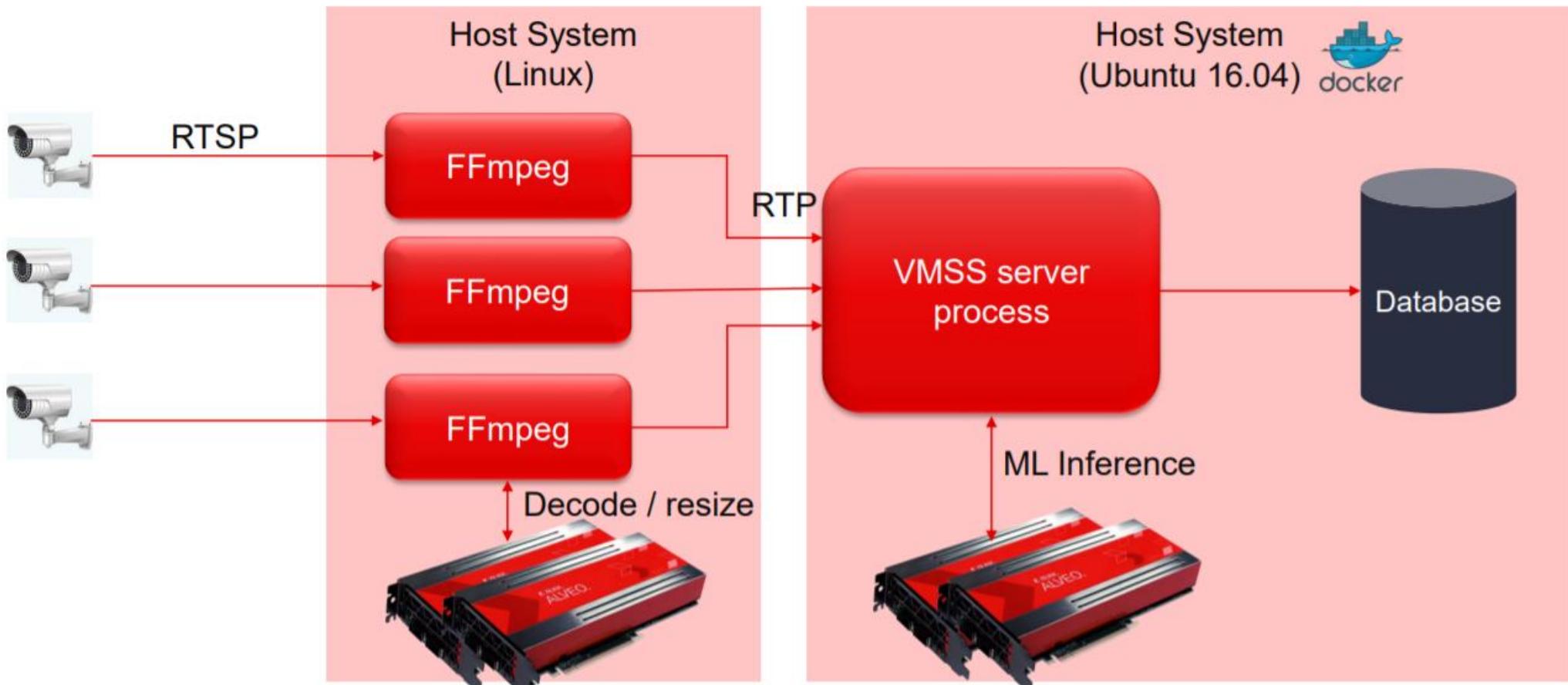
- ▶ VMSS stands for “Video Machine Learning Streaming Server”
- ▶ A software application designed to function as a ‘server’ process to provide video analytic services to multiple video streams and efficiently utilize multiple FPGA resources on a server system



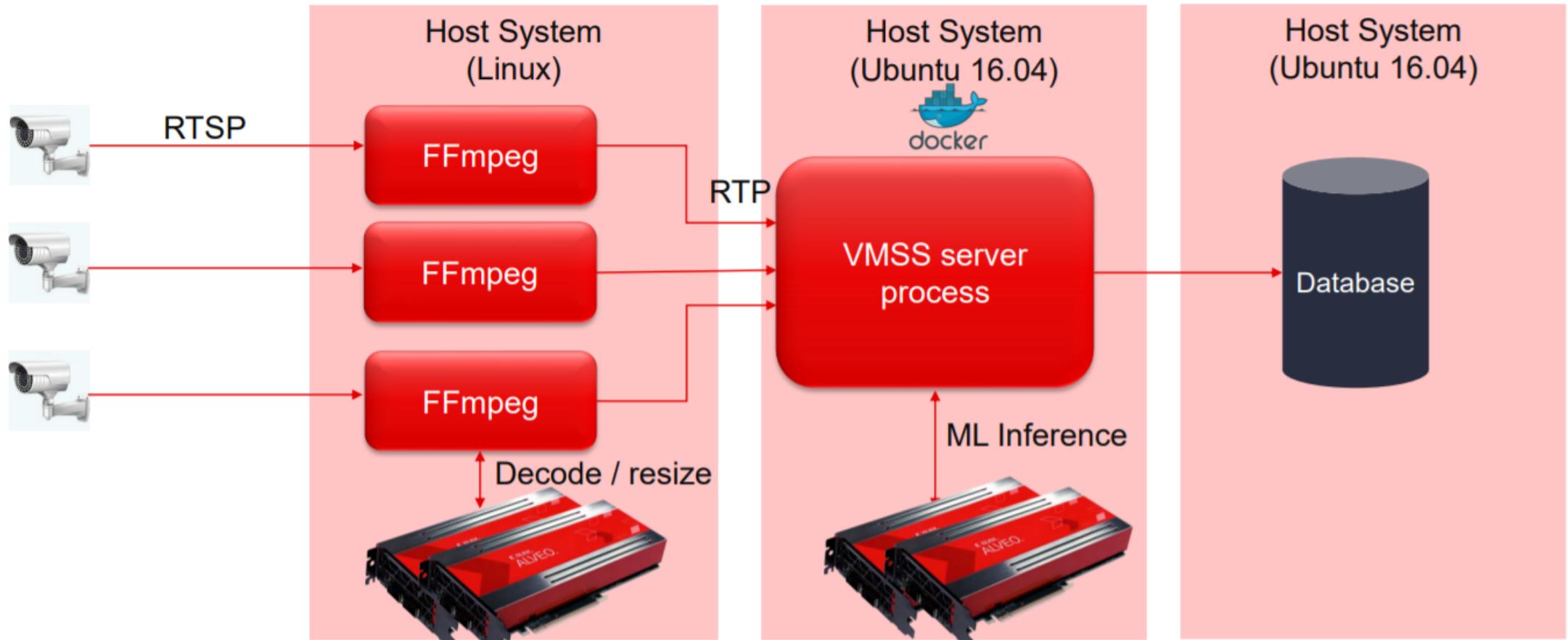
Deployments of VMSS - Single Server



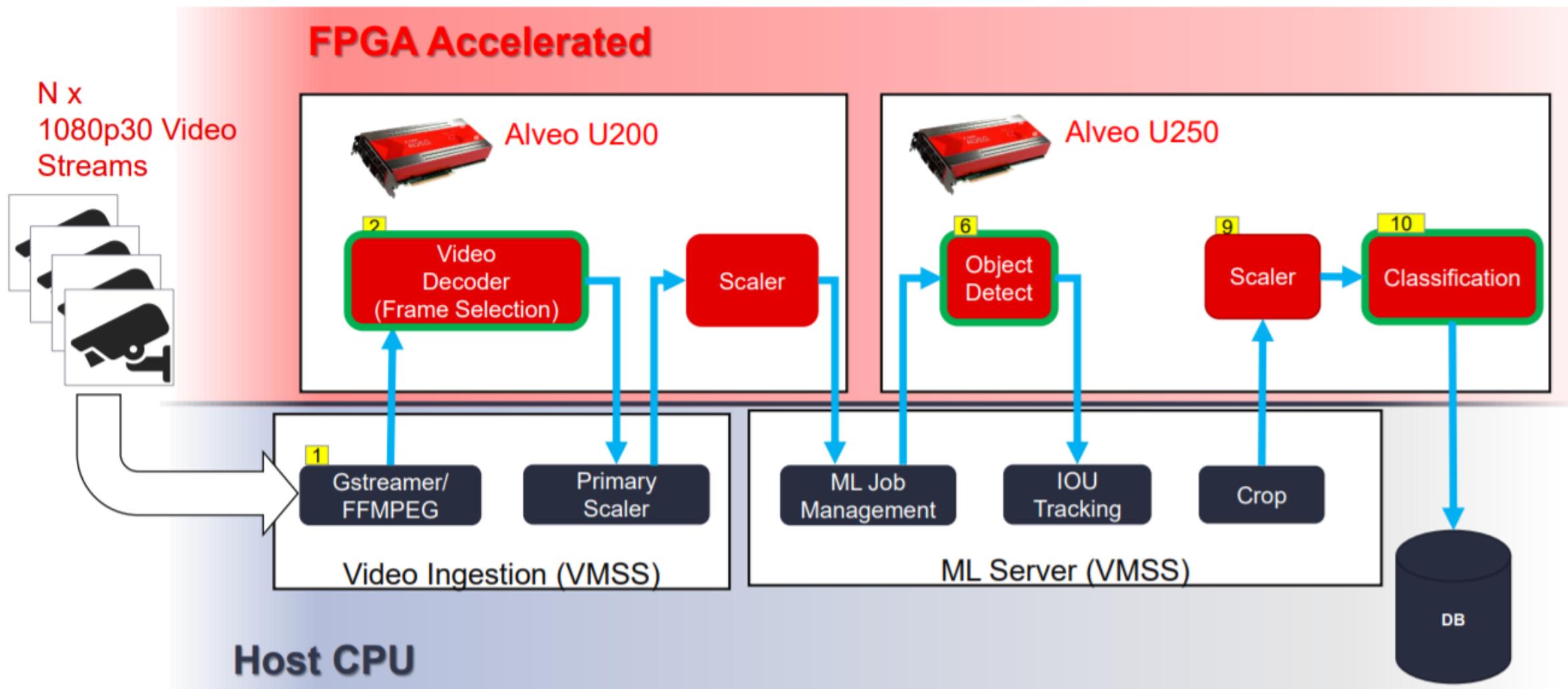
Deployments of VMSS - Two Systems



Deployments of VMSS - Three Systems



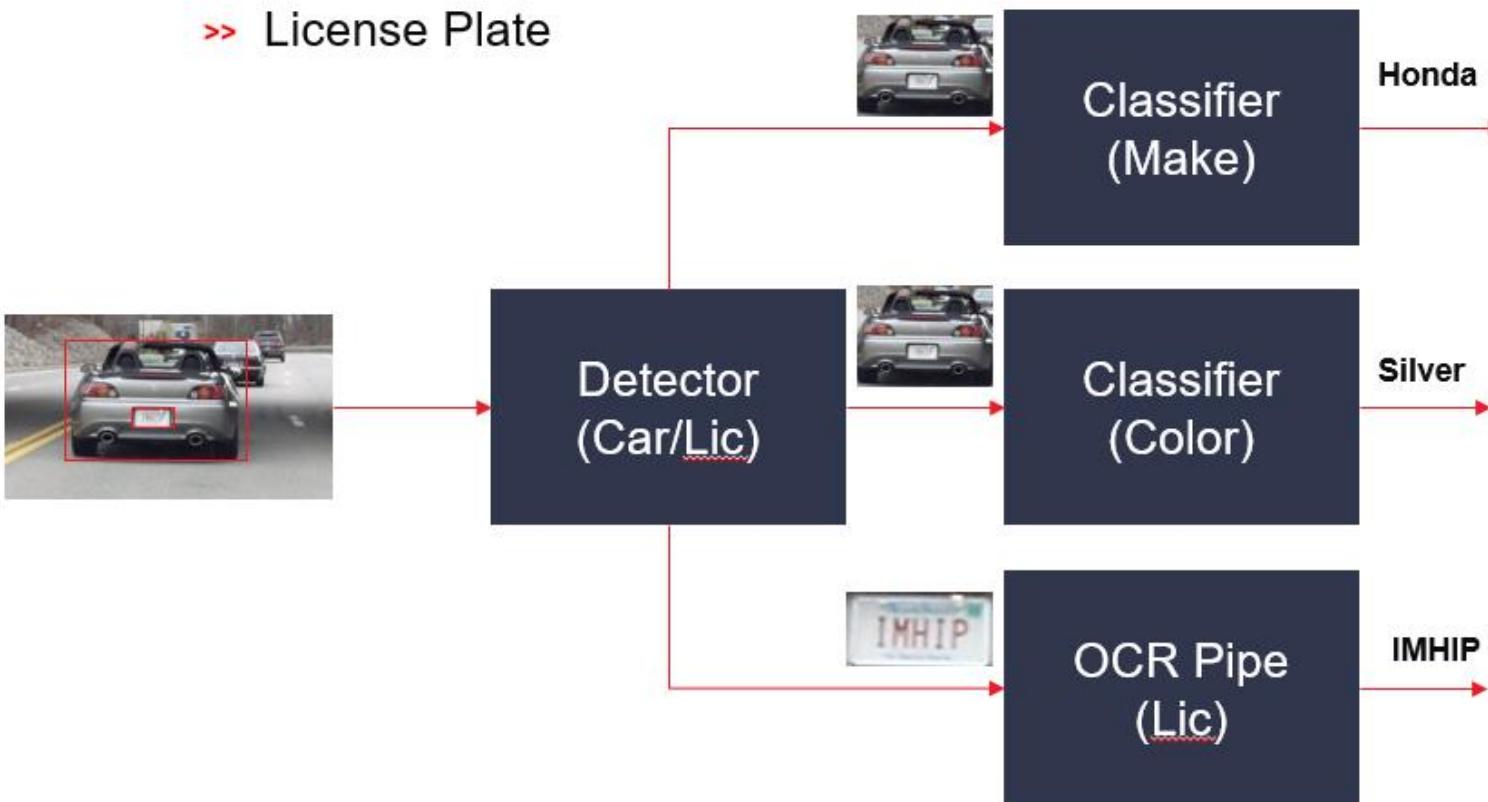
VMSS Dataflow Model



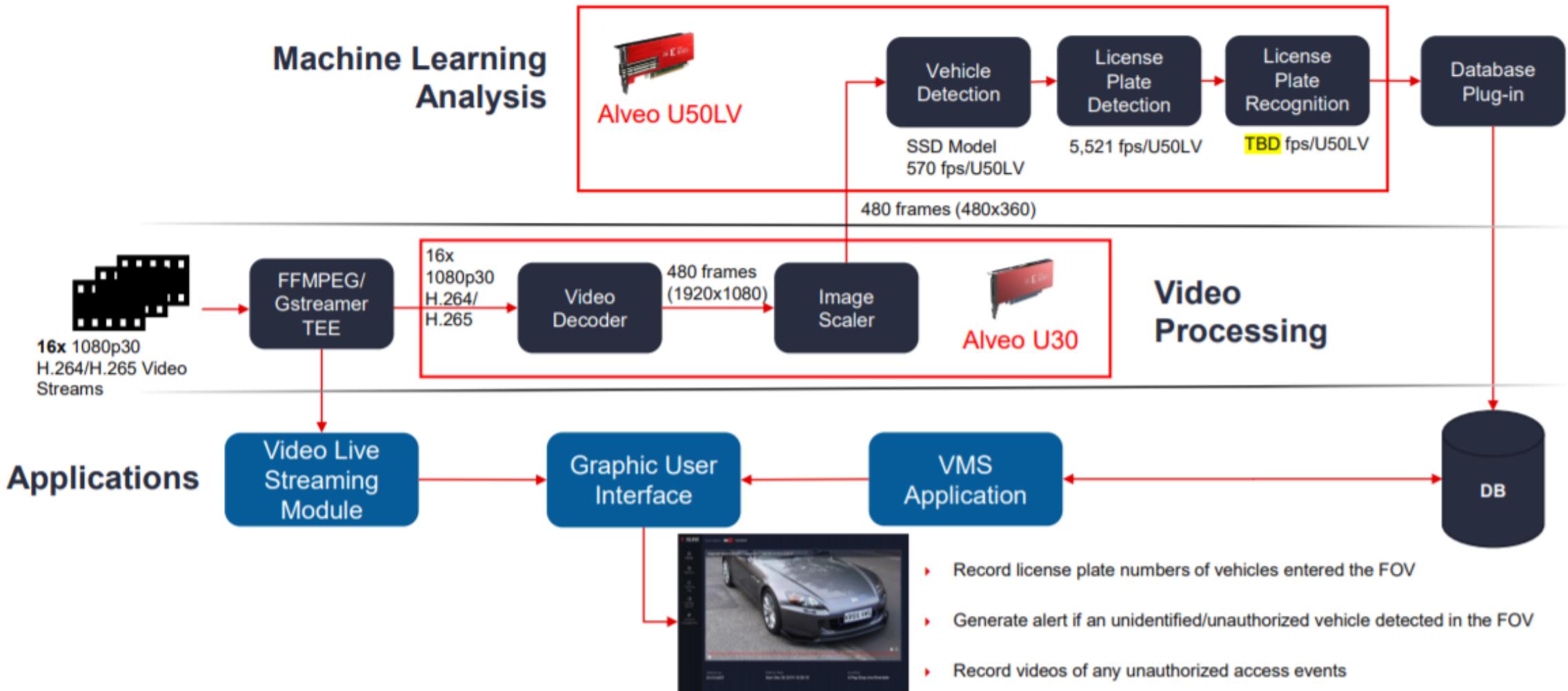
Amber Alert Application

- > Typically identifies a suspect's vehicle information

- >> Make/Model
- >> Color
- >> License Plate



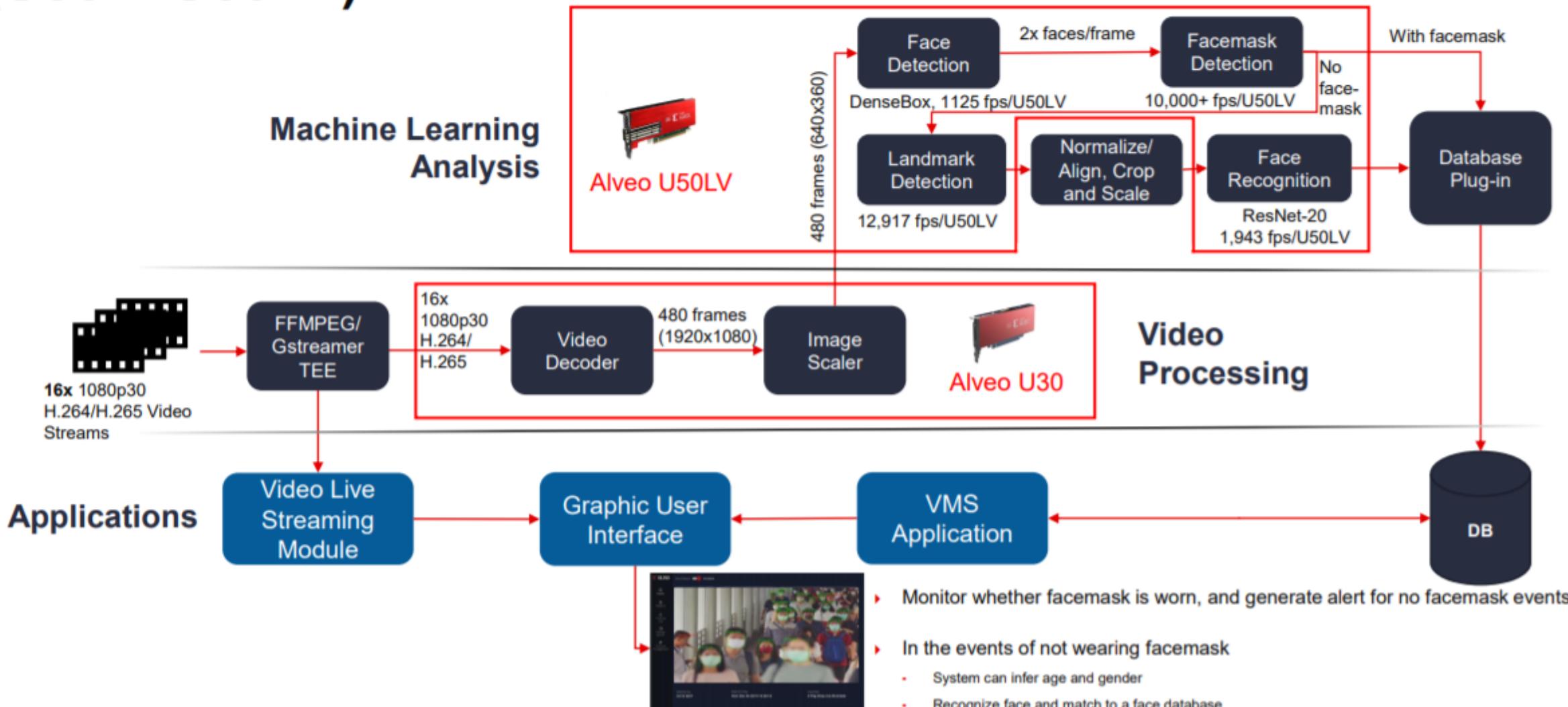
Access Control and Suspicious Vehicle Detection Pipeline (U30 + U50LV)



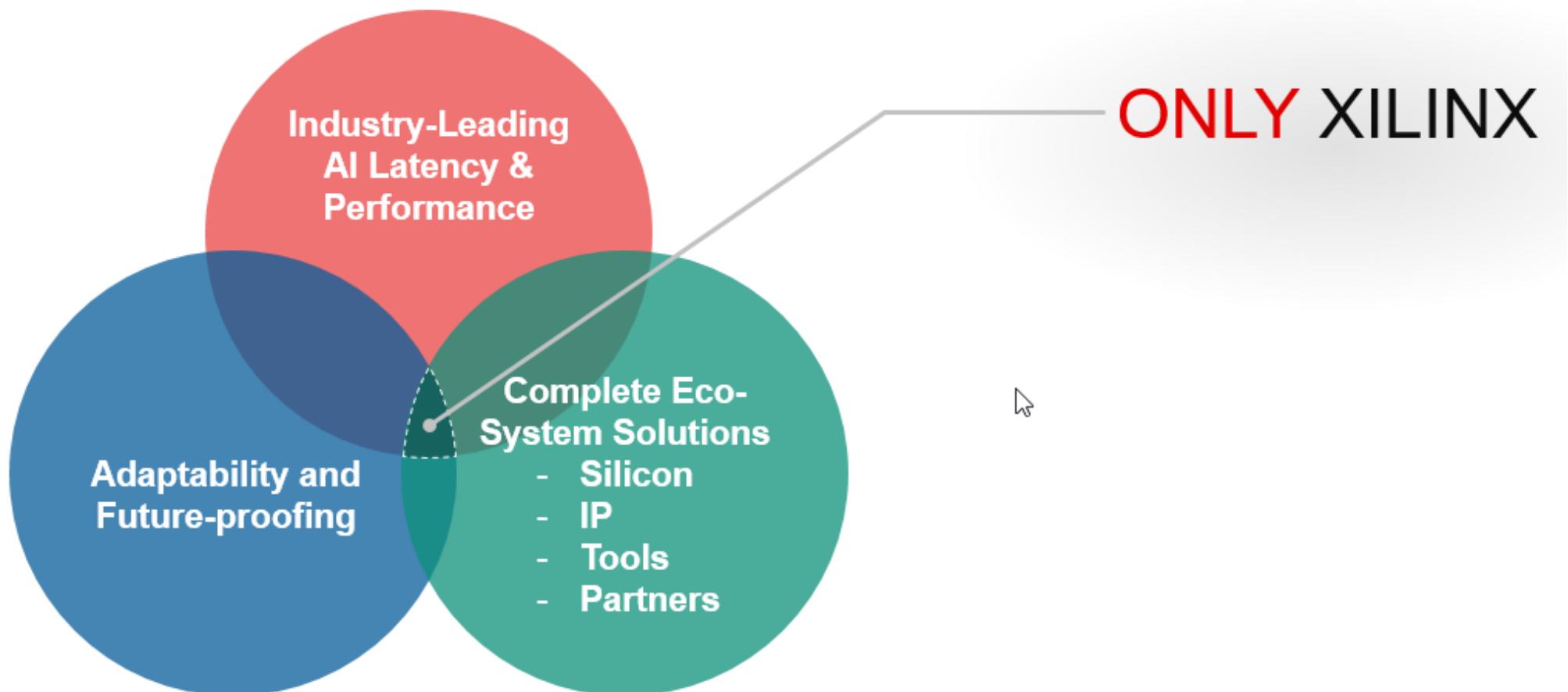
Face mask detection



Face & Facemask Detection and Face Recognition Pipeline (U30 + U50LV)



Why Xilinx for Your Vision Application?



**Adaptable.
Intelligent.**

