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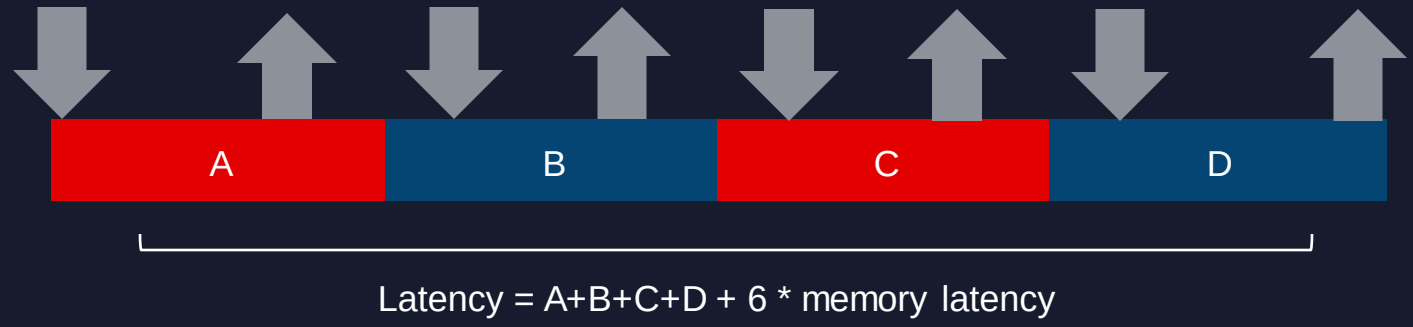
Making Adaptive Computing Mainstream

Ramine Roane
VP Software & AI

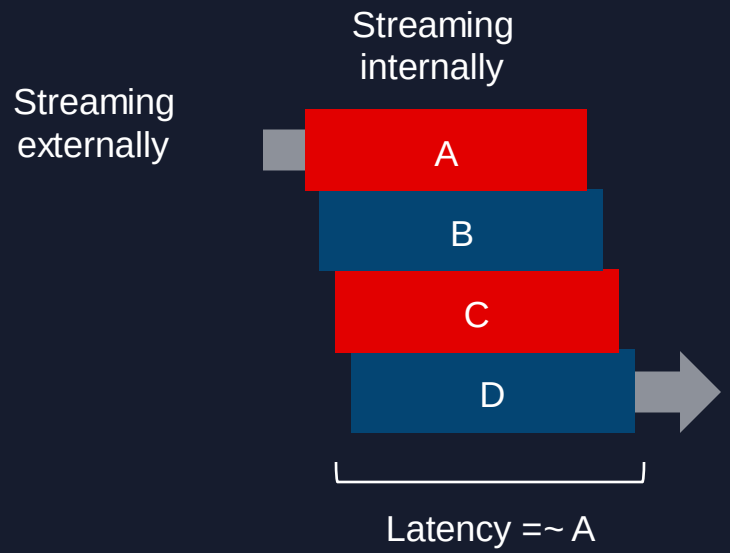
Xilinx Adapt – Software & AI
December, 2020

Why Adaptive Computing?

CPU & GPU: Memory Map



FPGA: Streaming



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Development Platforms


Data Scientist


SW Developer


HW Developer

XILINX VITIS AI — Frameworks — TensorFlow, PyTorch, Caffe, Spark, FFmpeg, mxnet

XILINX VITIS — C++, Python

VIVADO — VHDL, Verilog

Embedded Run-Time	HW IP & Accelerated Libraries	Accelerated Libraries
Scalar Engines (PS)	Adaptable Engines (PL)	Intelligent Engines (AIE)

VERSAL™ ACAP

Focusing on Developer Productivity

HW Developer

Iterations: O(day)
- 3x-10x in 5y

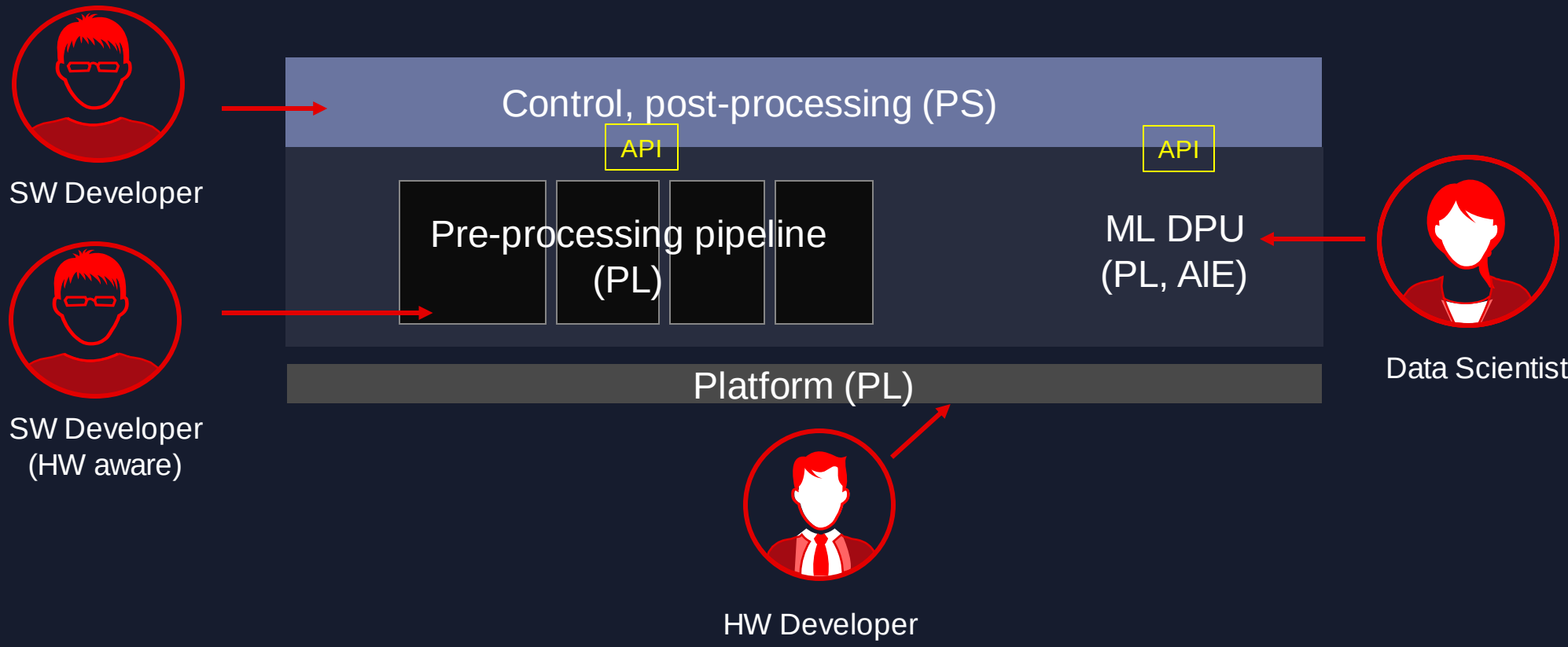
SW Developer (HW aware)

Iterations: O(hour)
- C++ programming
- Memory hierarchy abstraction
- Pre-compiled libraries

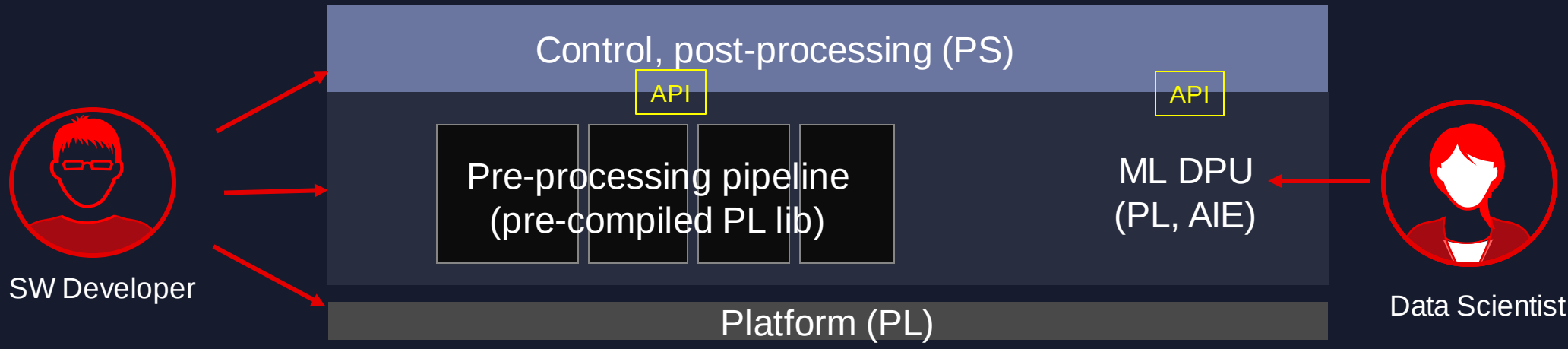
Data Scientist

Iterations: O(minute)
- SW Frameworks integration

Software Programmability – Today



Software Programmability – End Goal



Vitis One Year After Launch

Downloads

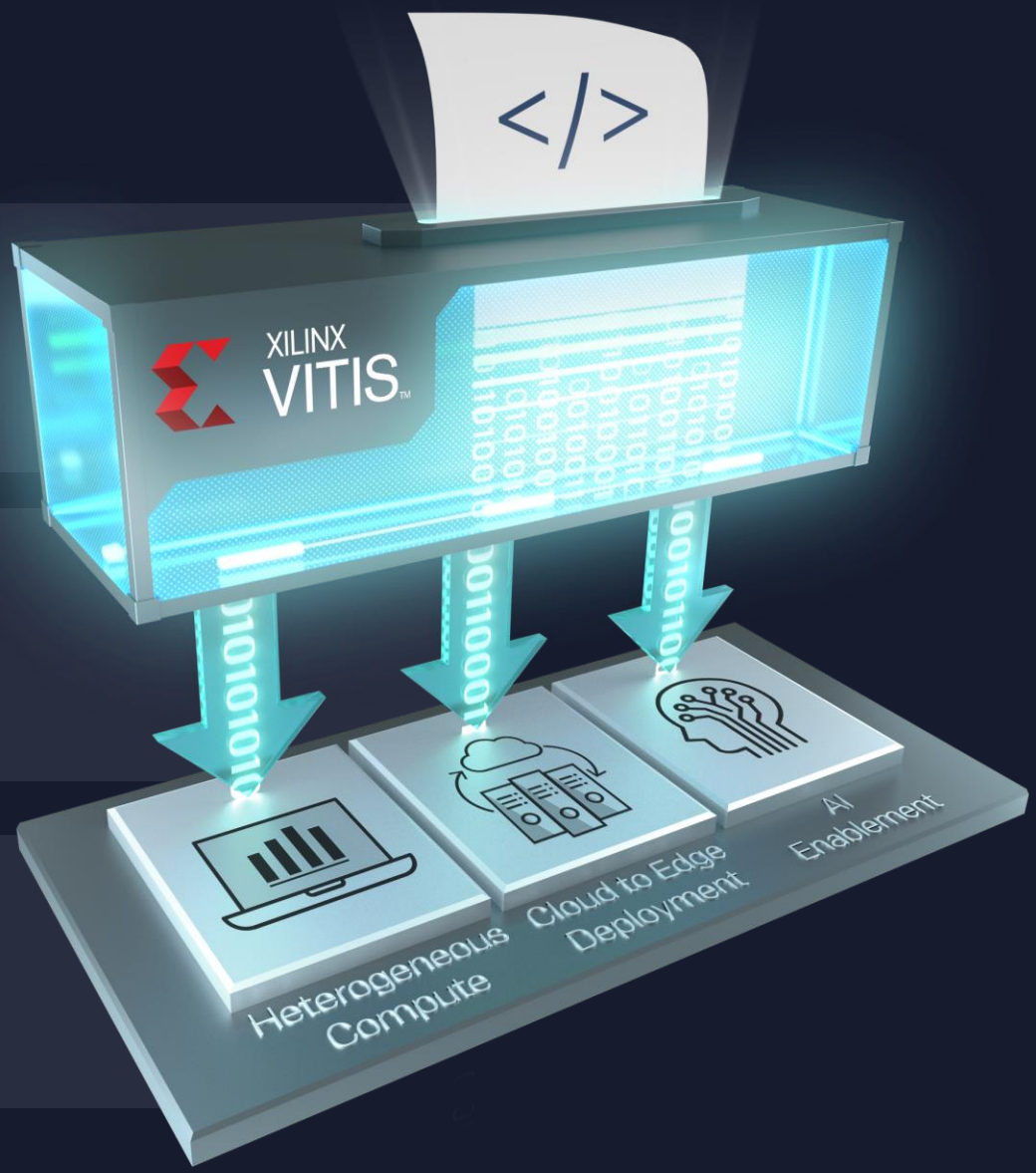
- 47k Vitis
- 40k Vitis AI
- 50% new users

Training

- Trained >15k developers
- 1k ISV

Tutorials

In-depth tutorial for
Vitis & Vitis AI
on GitHub



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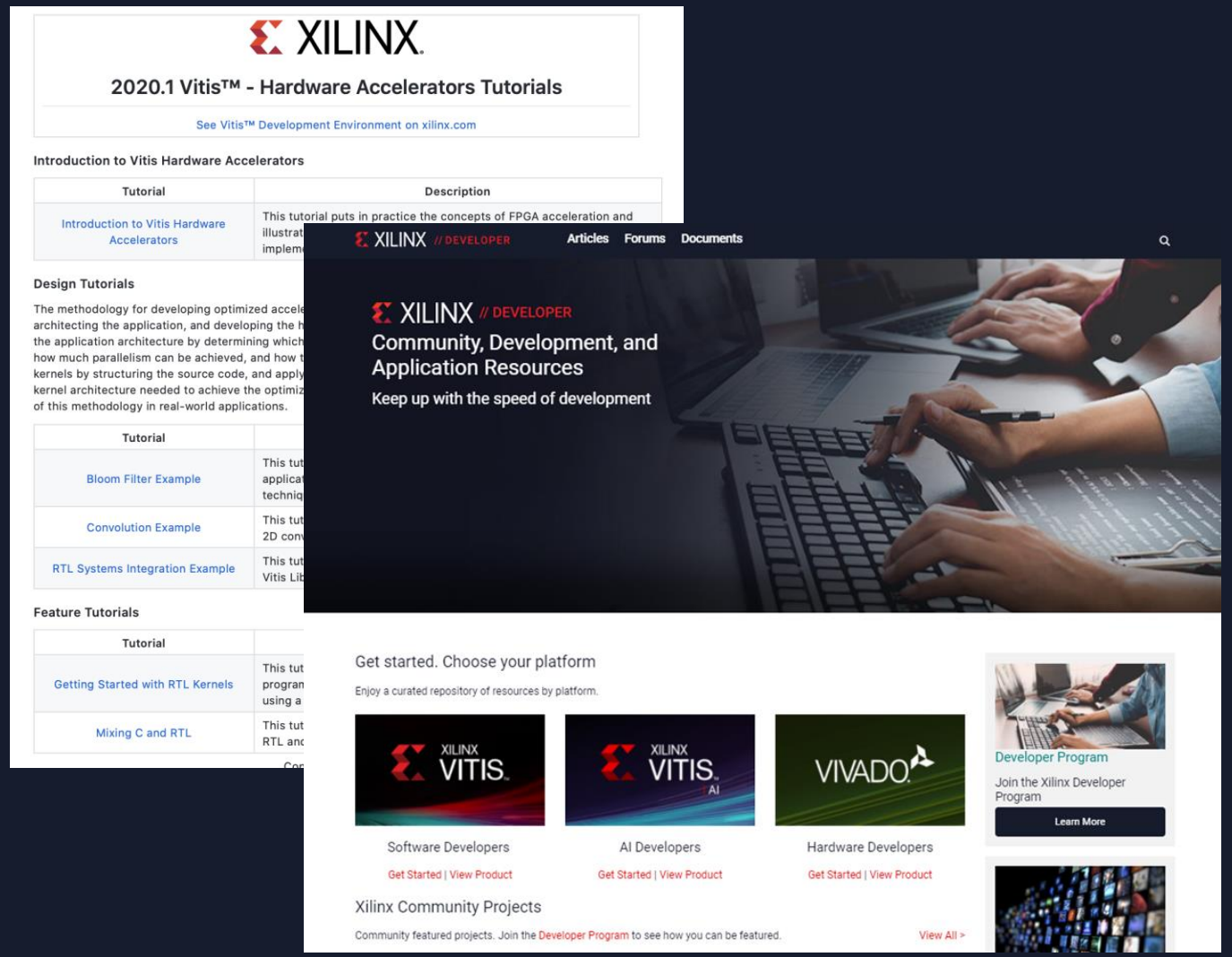
Developer Site – developer.xilinx.com

- The one-stop shop portal for all Xilinx developers
- in-Depth Tutorials
- Articles, Projects, Videos
- Connect developers together



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Adaptive Computing Challenges – $250k in Prizes

- **Developer Contest**
  1,070 participants registered on hackster.io
- **70** countries

- **Startup Contest**
  60 Startups registered on xilinx.com

2020 Contest is now closed, watch for the 2021 contest!

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Contest Examples

Board	Project
Ultra96-V2	Farmer Assistant Robot
Ultra96-V2	Precision Agriculture System for Small Farmers
Ultra96-V2	Social distancing monitor
Ultra96-V2	Neural Network training on the edge
Ultra96-V2	Object detection for collision avoidance systems in urban env.
Ultra96-V2	Video manipulation on Notebooks
Ultra96-V2	AI Training
Ultra96-V2	Automated Robotic Surveillance & disinfection of contaminated area
Ultra96-V2	CNN based fall detection for elderly homes
Ultra96-V2	Real Time Detection of Suspicious Behavior in Public Spaces
Ultra96-V2	Smart Assistant for patients suffering from Alzheimer's
ZCU104	GLN-based lossless medical image compression/decompression
ZCU104	Adaptive Sensor Fusion for Autonomous Mobile Robots
ZCU104	Smart Traffic Light with Traffic Analytic
ZCU104	Smart Wildlife Observatory, on a Mast
ZCU104	Smarter Fruit Grading with Optical Sensing and BNN
ZCU104	Acceleration of Binary Neural Networks (BNN) using Xilinx FPGAs
ZCU104	Smart Retail
ZCU104	Senior Citizen Monitoring and Alert
Alveo U50	Accelerated LSTM inference for High Frequency Trading (HFT)
...	

Multi-sensor AD stack (for a Maserati)

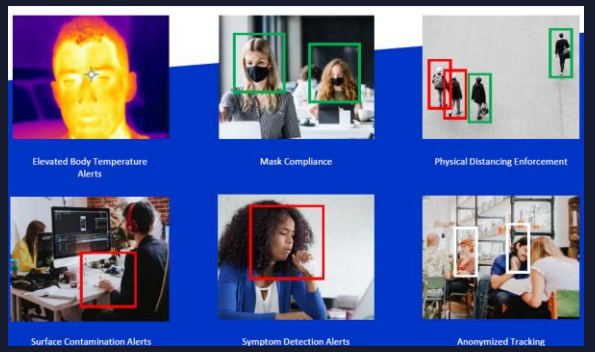
MOFFETT AI

Visual search (face ID)

intigia.

AI based Predictive Maintenance

datavia | VERATHENA



Advanced Special Intelligence

清帆科技

EduBrain

AI based Smart Classroom

ThunderGP

Fast Graph Processing for HLS-based FPGAs

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Vitis Successes

Tattile
Custom Vision Solutions

Smart camera: Toll & traffic monitoring, Automatic Number Plate Recognition

- Realtime AI + video compression
- Scalable & high TCO

Tencent Cloud X Aupera ISV

Edge box: Smart building / city Tencent IoT

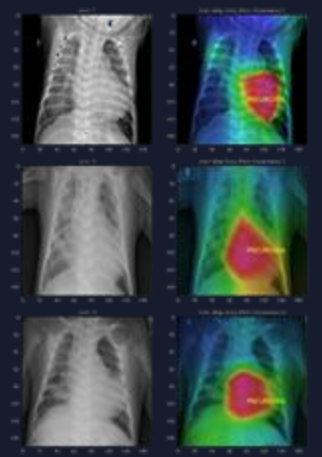
- Realtime video analytics
- Low-latency transcoding + AI analytics

Amazon SageMaker X $pline.ai ISV
aws

Edge & Cloud: Pneumonia & covid-19 detection AWS Cloud IoT

python™

AWS Greengrass Compatible



- High accuracy, low latency
- Edge to Cloud deployment / Python

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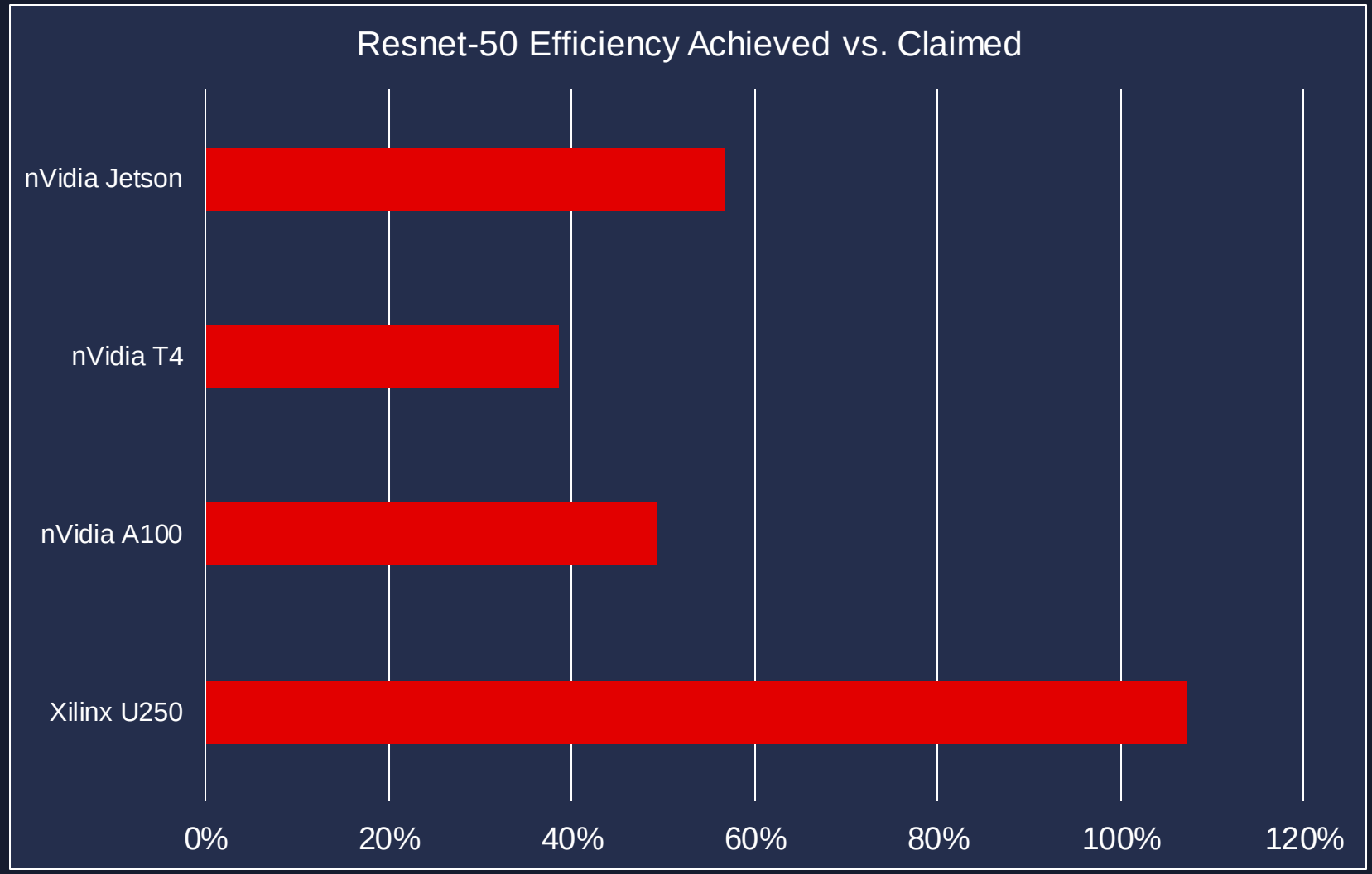
Xilinx Achieves Highest AI Inference Efficiency

MLPerf

Based on MLPerf benchmarks



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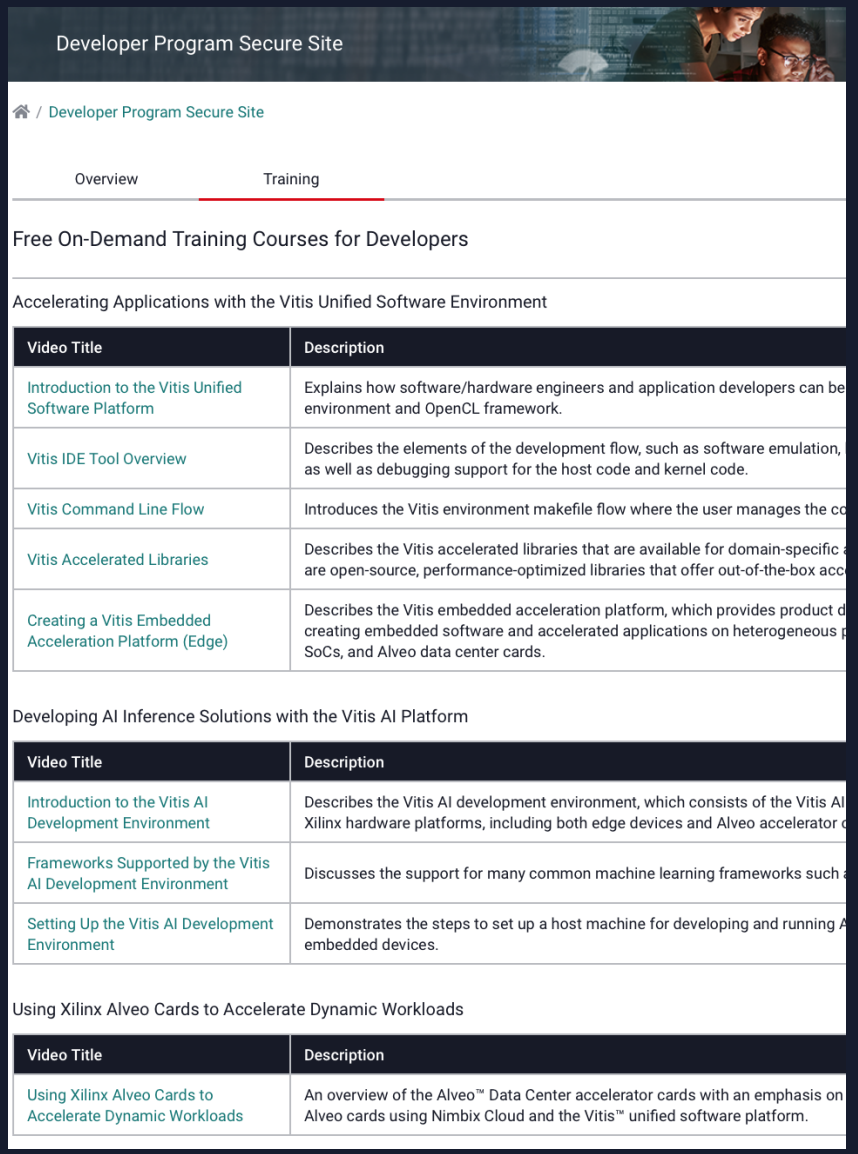
Announcing the Xilinx Software Developer Program

Why Join?

1	2	3	4
Access to free training courses & certification	Showcase your work on the Xilinx Developer site	Invitations for developer-only events & activities	Early access programs & release notifications

Free for all developers



Announcing…

Xilinx App Store

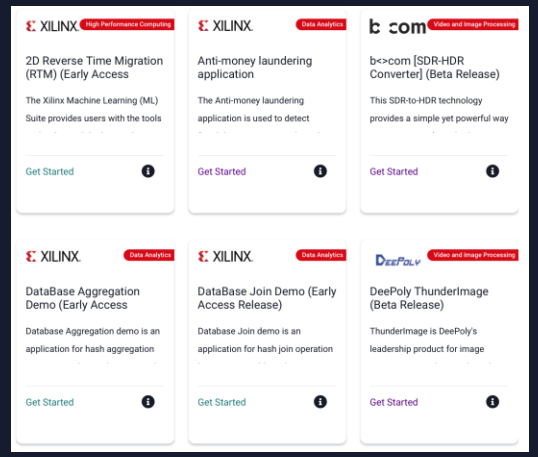
Application for Diversified Markets

See all Apps

Three-Step, Ten-mins to Evaluation on Alveo or Cloud

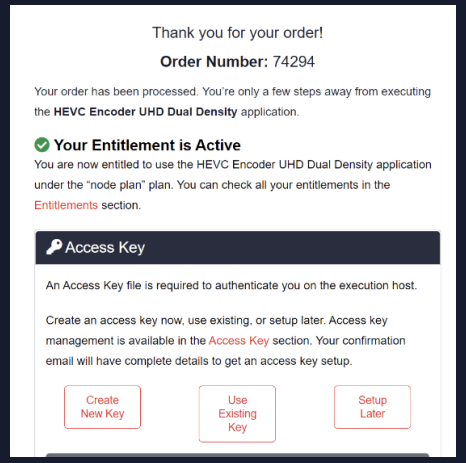
Step 1:

Select an app



Step 2:

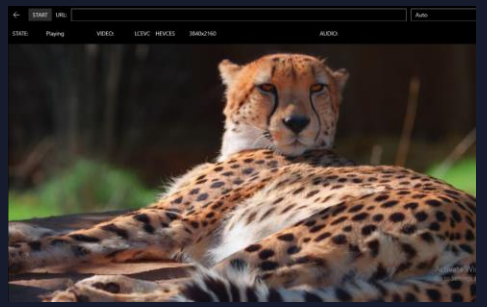
Entitlement

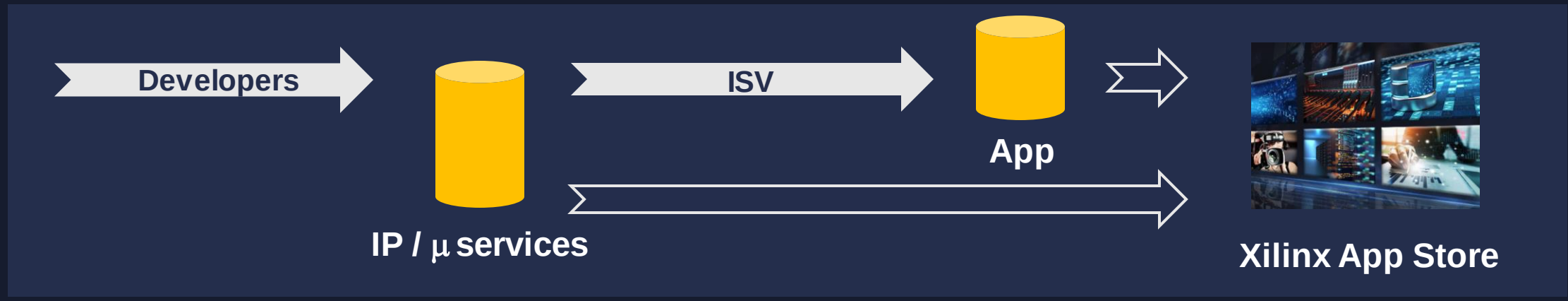


Step 3:

Download & Run

```
docker pull hubxilinx/vnova_pplus_alveo_u200:ppxde-demo
docker run -v /tmp/cred.json:/vnova_pplus/cred.json:Z
```





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XILINX APP

ISV APP

XILINX APP STORE

DELIVERY & DEPLOYMENT

XILINX CONTAINER REGISTRY

docker hub

Transcoding	IVA	Life Science	Fintech	Database	Storage	Networking	Telco
APP	APP	APP	APP	APP	APP	APP	APP
APP	APP	APP	APP	APP	APP	APP	APP
APP	APP	APP	APP	APP	APP	APP	APP
APP	APP	APP	APP	APP	APP	APP	APP

STOREFRONT

CHECKOUT - PAYMENT - BILLING - INVOICING

ENTITLEMENTS

DRM - LICENSING - METERING

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Making Adaptive Computing Mainstream

- Visit developer site (developer.xilinx.com)
- Apply to the Developer program
- Participate to Adaptive Computing challenges
- Extensive, in-depth tutorials on GitHub
- Leverage new Xilinx App Store

Become an Adaptive Computing Champion Today!

Thank You