

Intel® Network Builders Insights Series

Reference Implementations (RIs) - Free, Customer-Deployable Apps for Customer Use Cases

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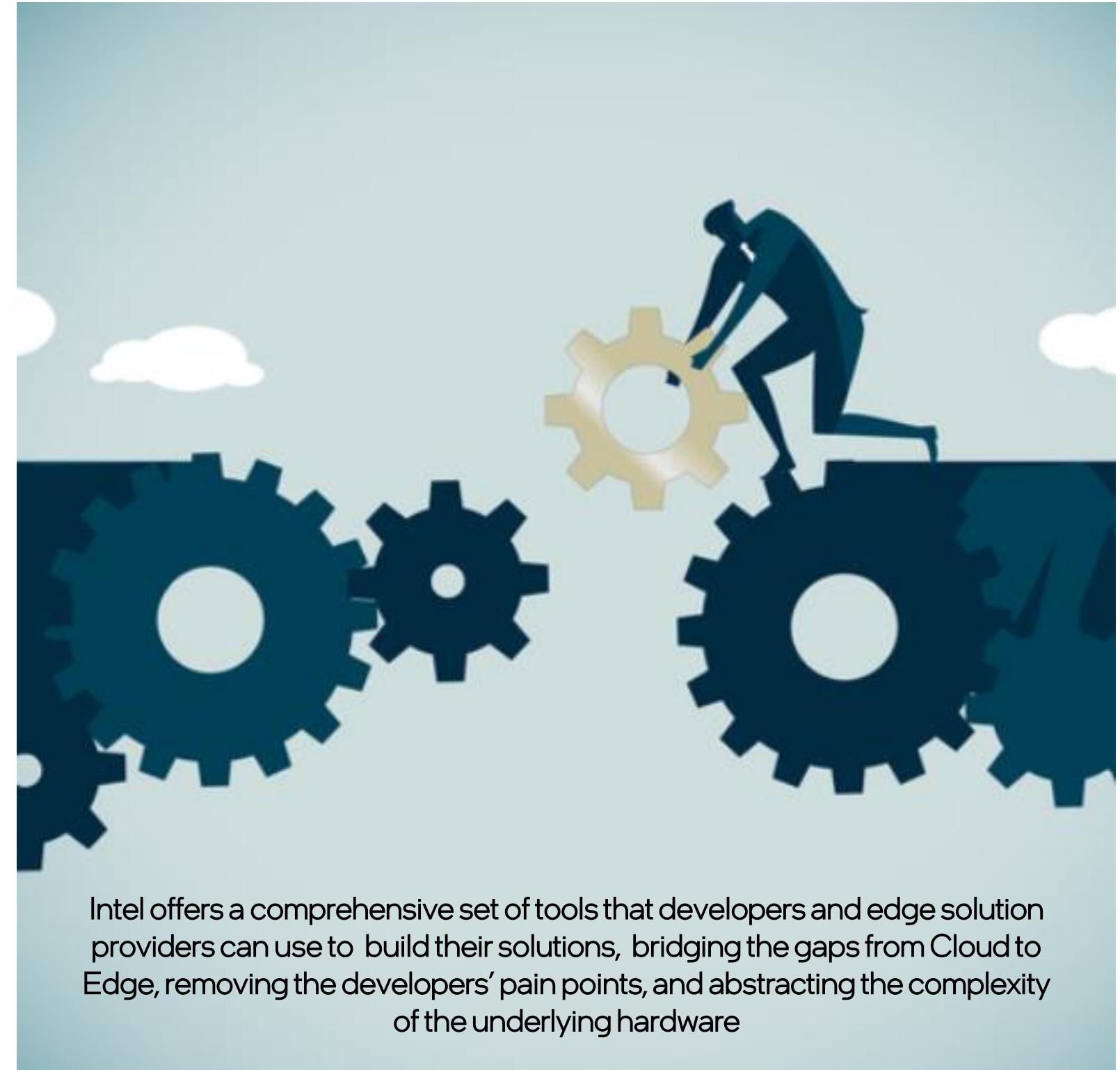
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Edge Software Solutions Opportunity and Challenge

Edge software solutions benefit from the existing cloud-native frameworks, open opportunities for new services, and allow meeting ultra real-time needs

BUT No One Solution Can Fit All

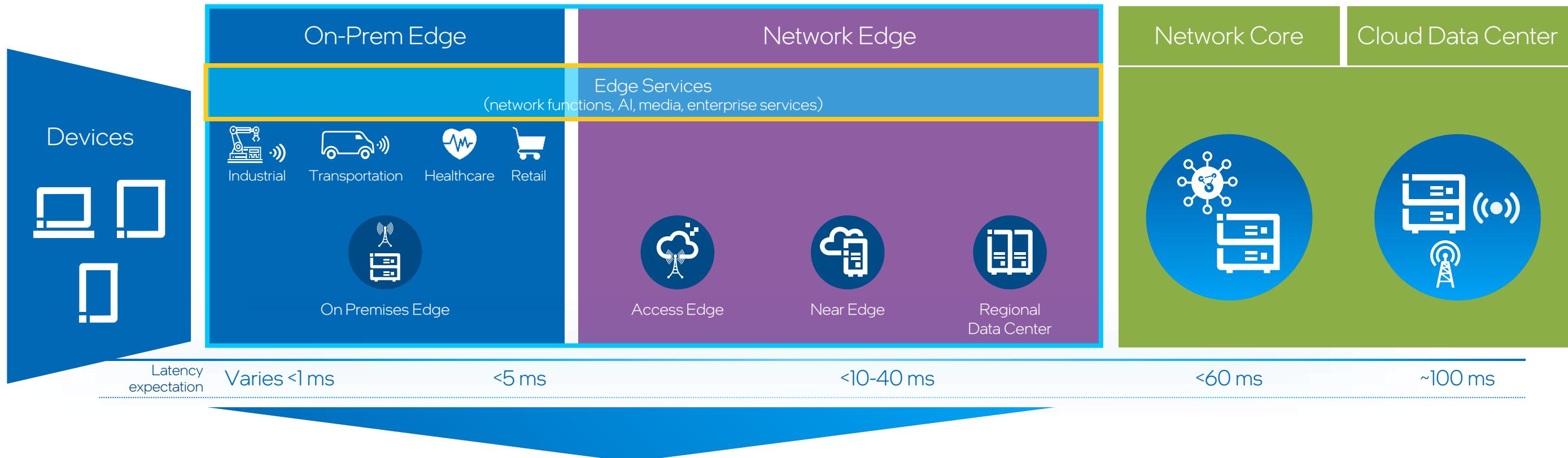
Challenges emerge due to the diverse capabilities of the edge platforms, seamless data ingestion at the edge, real-time communication from/between edge platforms, and AI workload optimization at the edge



Intel offers a comprehensive set of tools that developers and edge solution providers can use to build their solutions, bridging the gaps from Cloud to Edge, removing the developers' pain points, and abstracting the complexity of the underlying hardware

Cloud Native Edge with 5G

Delivering Cloud Native Services for the Edge



Key challenges to overcome

Edge SW solutions consistent and scalable across diverse edge platforms and location requirements

Optimize cloud native frameworks to meet stringent edge KPIs and network complexity

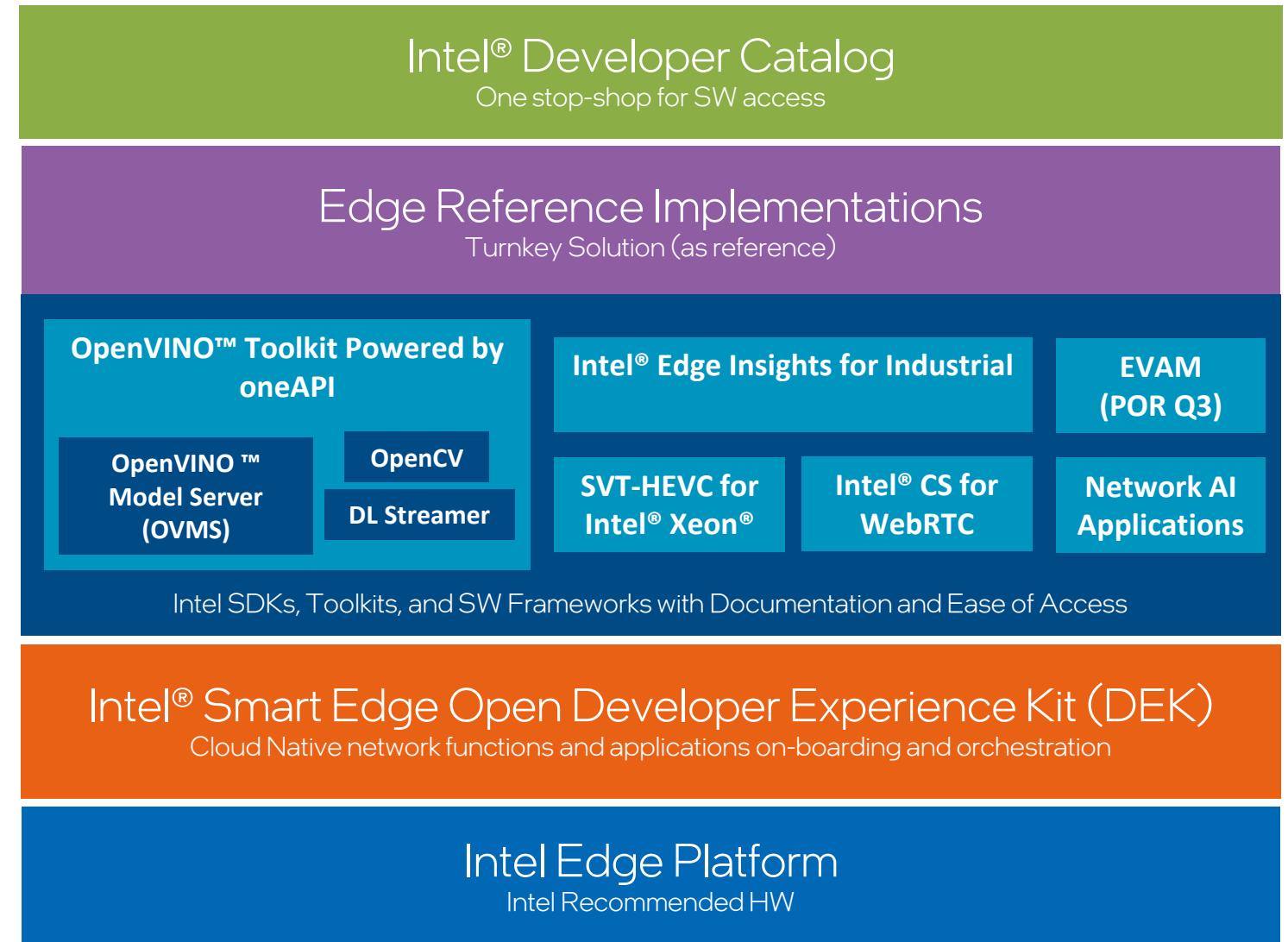
Leverage a broad SW building blocks from Intel, optimized for IA, to build edge services for diverse edge deployment

Cloud-Native Microservices

Modular Approach to Build One Edge Reference Implementations

Modularity
Horizontal building blocks
(Intel SDKs and SW toolkits)

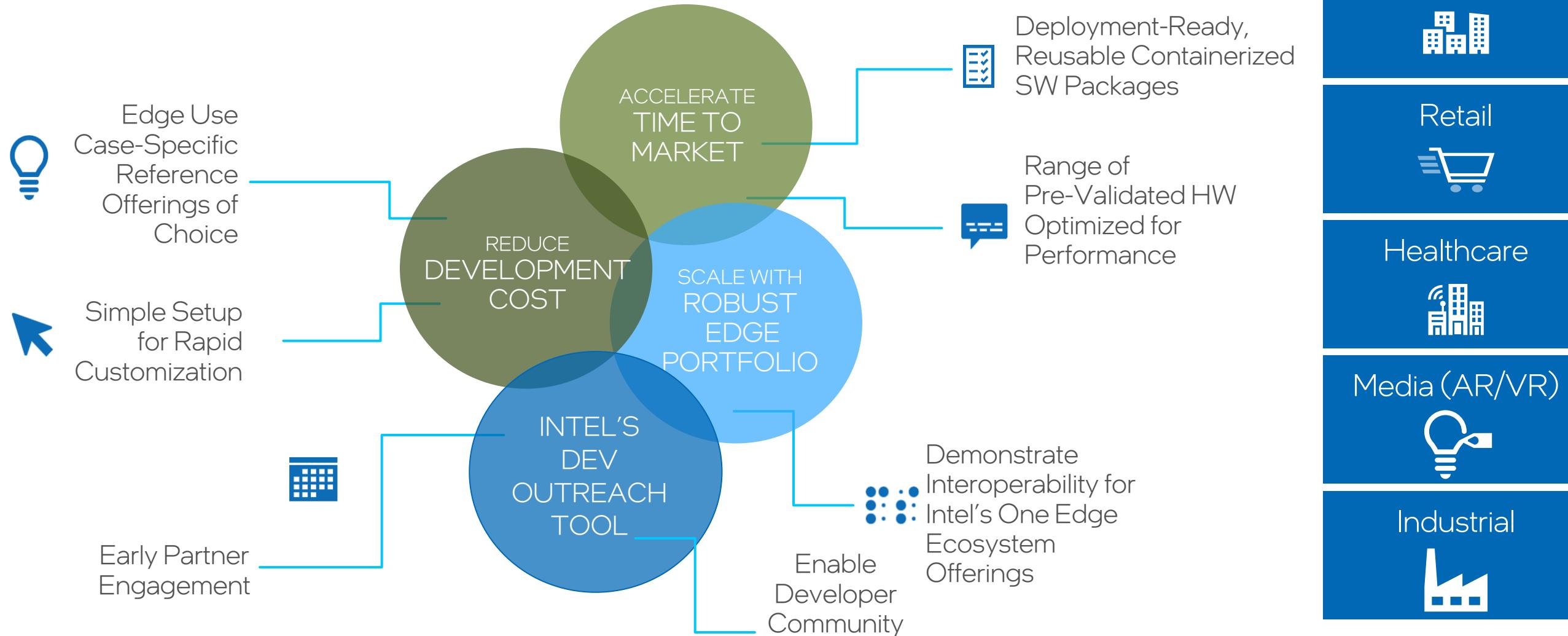
Micro-Services-Based
AI-Inference-aaS
Real-time-communication (RTC)-aaS
Data-Ingestion-aaS
Data-Insights-aaS
RAN Intelligent Controller (RIC)-aaS
....more to come...



Delivering a comprehensive portfolio of vertical segment specific use cases as well as horizontal capabilities that can be leveraged by ISVs, ODMs, SIs, CoSP.... to accelerate exploration and development

Reduce the Development Complexity for Edge SW Solutions

Edge Reference Implementations



Reference Implementations (RIs) are a set of Intel developed, free, customer deployable apps that demonstrate a solution for a customer use case

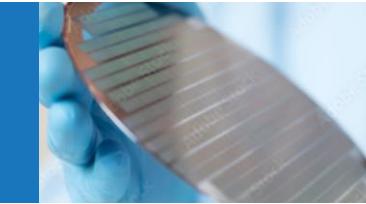
Edge Reference Implementations Available for Download & Consumption



Reference Implementations
Only Available in the
Intel Developer Catalog

PCB Defect Detection

Optimized video streams ingestion, edge AI inference, optimized apps on-boarding



Telepathology

AI inference, Inference scaling, reduce large storage needs for medical images, optimized apps on-boarding



Telehealth

Real-time communication, Video decode/encode SW acceleration, AI inference, optimized apps on-boarding



Immersive Media

Real-time communication, 360 video decode/encode SW acceleration, 360 frames AI inference, optimized apps on-boarding



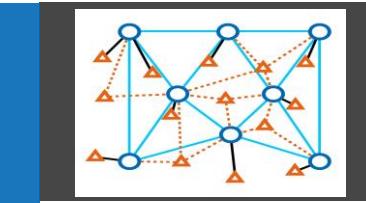
Wireless-Ready Smart Intersection

Reduced TCO, Edge AI Inference, AI models Optimization, optimized apps on-boarding



Intelligent Connection Management

Deep reinforcement learning (DRL) algorithm, graph neural network (GNN) model to implement networks



AI and Analytics Tools Applied In Reference Implementations - Big Picture

Intel oneAPI Software Tools for AI and Analytics

Intel® oneAPI Toolkits



Intel® oneAPI AI Analytics Toolkit

Accelerate machine learning and data science pipelines with optimized deep learning frameworks and high-performing Python libraries

Data Scientists, AI Researchers, DL/ML Developers



Intel® oneAPI Base Toolkit

Incl. Intel® oneAPI Deep Neural Network Library (oneDNN), Intel® oneAPI Collective Communications Library (oneCCL), and Intel® oneAPI Data Analytics Library (oneDAL)

Optimize primitives for algorithms and framework development

DL Framework Developers - Optimize algorithms for Machine Learning and Analytics

Toolkit Powered by oneAPI

Intel® Distribution of OpenVINO™ Toolkit

Deploy high performance inference and applications from edge to cloud

AI Application, Media, and Vision Developers



Intel® Developer Catalog



Vision



Retail



Industrial



Cities



Healthcare



Deep Learning Acceleration



5G Network Transformation



Media Experience Evolution

....and more



Edge and Cloud Orchestration



Multi-Cloud Capability



Open-Source Collaboration

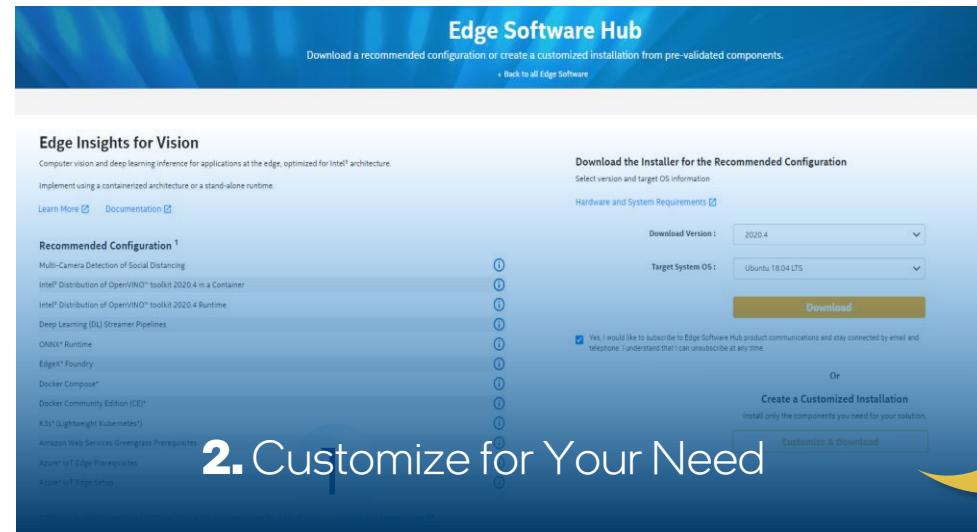


Hardware Scalability and Developer Kits of Choice

A Look Inside: Intel® Developer Catalog

Download prevalidated software to learn, develop, and test your solutions for the edge.			
Use Cases	Software Packages	Hardware	
Use Cases and Reference Implementations			
Download a reference implementation that includes preconfigured software necessary to build a complete sample application. Select use cases to see real-world applications for the edge.			
			
Reference Implementation	Reference Implementation	Reference Implementation	Reference Implementation
Wireless Network-Ready Intelligent Traffic Management	Intelligent Traffic Management	Fleet Driver Assistance	Automated Checkout
Combine data from sensors and wireless workloads at traffic intersections. This container is hosted in an OpenNexus Edge Services Software (OpenNESS) edge node, which contains the necessary software blocks to host a 4G RAN.	Monitor traffic intersections via IP cameras to optimize traffic flow. Detect vehicles and pedestrians, record vehicle types and counts, calculate velocity and acceleration, and more.	Use computer vision to monitor driver behavior and alertness. Provide real-time alerts to the driver and fleet manager; plus long-term analytics across drivers, vehicles, and routes.	Use computer vision to detect products that are removed from a cooler or cabinet without the mechanics of a pusher or robotic arms.
Documentation	Documentation	Documentation	Documentation
Configure & Download	Configure & Download	Configure & Download	Configure & Download
			
Reference Implementation	Reference Implementation	Use Case	Use Case
Real-Time Sensor Fusion for Loss Prevention	Rotor Bearing Defect Detector	Asset Monitoring and Control	Compressor Leak and Surge Detection
Combine data from point-of-sale systems, scales, cameras, and RFID readers to prevent loss at checkout.	Predict performance issues with manufacturing equipment. Perform total or cloud analytics on any assets found and predict when failures might arise.	Apply AI process automation for better asset monitoring and control. Control processes with real-time capabilities and optimize process efficiency.	Detect a compressor leak or surge by applying AI to time-series data; identify surges that are against the direction of flow or an oscillating flow in both directions.
Documentation	Documentation	Documentation	Documentation
Configure & Download	Configure & Download	Configure & Download	Configure & Download
			
Use Case	Use Case	Use Case	Use Case
Electrical Fault Detection	Equipment Failure Detection	Human Wellness Monitoring	Intelligent Transportation Systems
Detect a fault or fault current in an electric power system.	Apply machine learning to time-series data to predict equipment failure.	Apply deep learning models to medical imaging data to detect anomalies.	Apply AI to traffic data to detect anomalies and predict traffic flow.

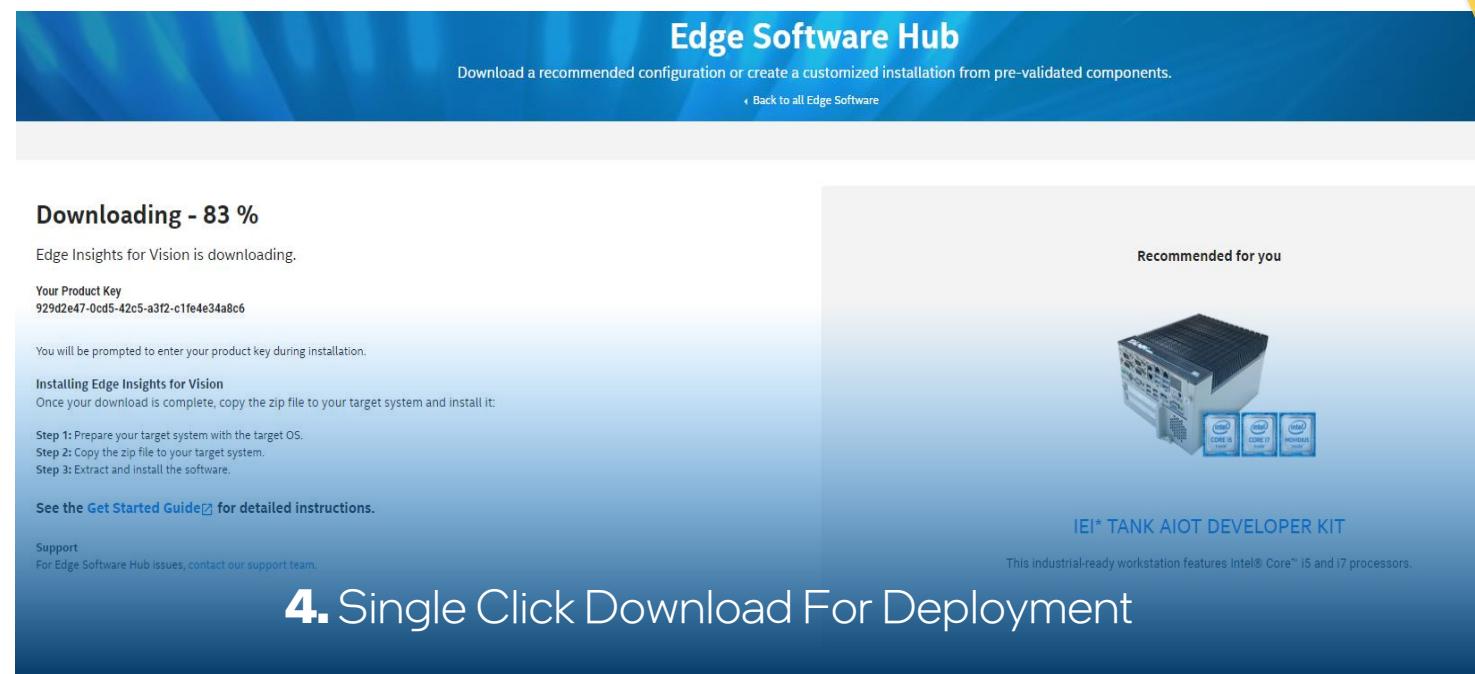
1. Select Use Cases or Packages



2. Customize for Your Need



3. Accept Evaluation License



4. Single Click Download For Deployment

Notices and Disclaimers

Performance varies by use, configuration and other factors. Learn more at www.intel.com/PerformanceIndex.

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure.

Your costs and results may vary.

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Product plans, dates, and specifications are preliminary and subject to change without notice

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GET STARTED TODAY WITH
EDGE AND 5G SOFTWARE
AND TOOLS

INTEL® DEVELOPER
CATALOG

[DEVELOPER.INTEL.COM/DEVCATALOG](https://developer.intel.com/devcatalog)

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Join Us Next Time
August 3rd @ 8am PDT

Intel® Network Builders Insights Series
Intel® Ethernet 800 Series: Delivering High
Timing Accuracy for 5G vRAN

- Sean Lion, Product Marketing Engineer
- Shachi Paithankar, Product Marketing Engineer Manager



The Intel logo is displayed in white on a solid blue background. The word "intel" is written in a lowercase, sans-serif font. The letter "i" has a small blue square to its upper left. The letter "t" has a small blue square to its upper left. The letter "e" has a small blue square to its upper left. The letter "l" has a small blue square to its upper left. The letter "l" also features a registered trademark symbol (®) at its bottom right corner.