Over **25** Years of Relationship

Red Hat + intel

Over **25** Years of Relationship

Fun fact:
Intel is #1
Linux Kernel
Corporate Contributor
since 2007[1]

Software Defined, Silicon Enhanced

"I believe a powerful, open ecosystem will always triumph!"

"Silicon without supported Software is a bug!"

Pat Gelsinger, Oct. 2021

Open Hybrid Infrastructure

STANDARDIZED   SUPPORTED   TESTED   SECURE   FLEXIBLE   INTEROPERABLE
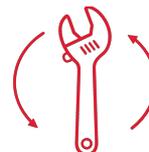
Edge to Cloud

IBM **Cloud**   Microsoft Azure   **amazon** webservices   Google Cloud   Hewlett Packard Enterprise   DELL   Lenovo   CISCO   SUPERMICRO

RUNS BEST ON

intel.

Red Hat | intel.

Intel InnovatiON Announcements

Deepening the Partnership on CentOS Stream

Gunnar Hellekson
Vice President and General Manager, Red Hat Enterprise Linux, Red Hat

▸ "Today, we're pleased to further strengthen our long collaboration with Intel by welcoming them to CentOS Stream, building on Intel's established contributions to the Fedora Project. We look forward to **Intel being a leading voice** in many aspects of the project and are eager to see their contributions to a number of CentOS Stream Special Interest Groups (SIGs)"

- **Instruction Set Architecture (ISA) SIG** - performance improvements and carbon footprint reduction.

- **Virtualization SIG** - virtualization security features, including confidential computing capabilities and Intel Trust Domain Extensions (Intel® TDX).

- **Hyperscale SIG** - support use cases of CentOS Stream deployments on large-scale infrastructures.

Benefits of the Collaboration

Embracing Intel's latest HW / SW Platform

▶ **Foundational Performance**

Collaboration continues
with ISA v3 for RHEL 10:

1. **Security**
2. **AI**
3. **Edge**

Benefits of the Collaboration

Embracing Intel's latest HW / SW Platform

▶ **Foundational Performance**

▶ **Encryption Performance**
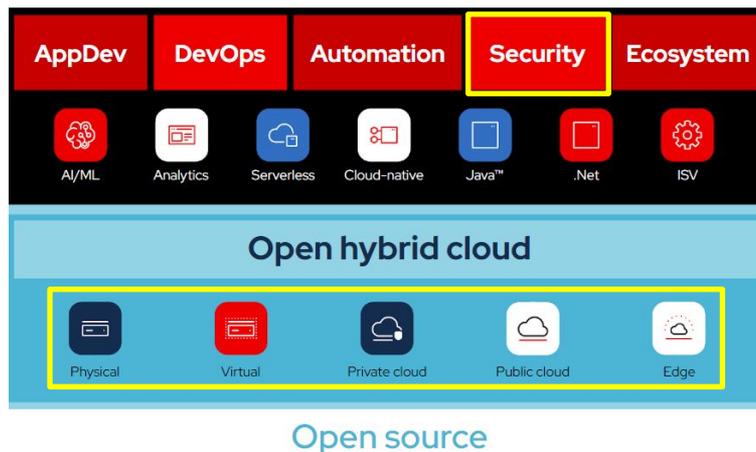
Data compression and crypto perf gains with offload to:

- **Intel® QuickAssist Technology**

Benefits of the Collaboration

Embracing Intel's latest HW / SW Platform

▶ **Foundational Performance**

▶ **Encryption Performance**

▶ **Security Performance**
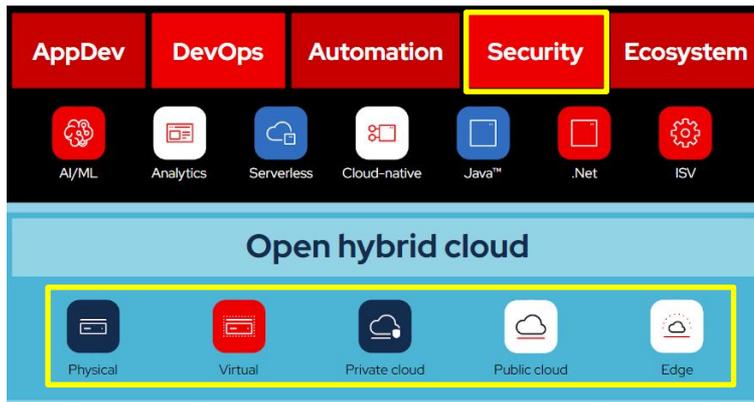
Trusted compute via:

SGX isolated app's
- HW enforced Secure Enclaves

TDX isolated VMs
- HW isolated Virtual Machines

Benefits of the Collaboration

Embracing Intel's latest HW / SW Platform

- ▶ **Foundational Performance**
- ▶ **Encryption Performance**
- ▶ **Security Performance**
- ▶ **AI/ML Performance**
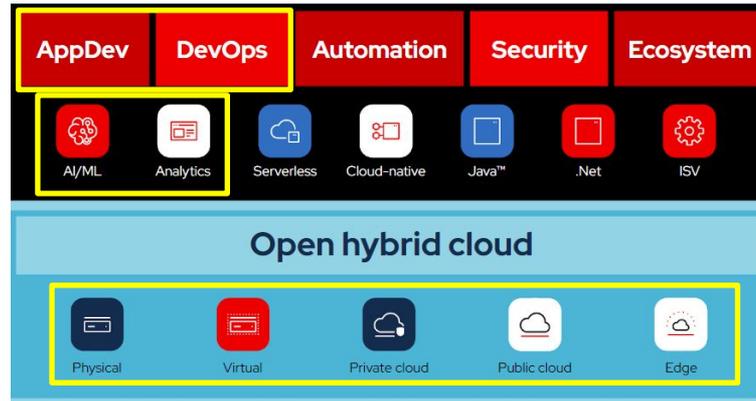
Training and Inference optimized deployment from
Datacentre to Edge with:

⊙penVIN⊙™

Benefits of the Collaboration

Embracing Intel's latest HW / SW Platform

- ▶ Foundational Performance
- ▶ Encryption Performance
- ▶ Security Performance
- ▶ AI/ML Performance
- ▶ **Compute Performance**
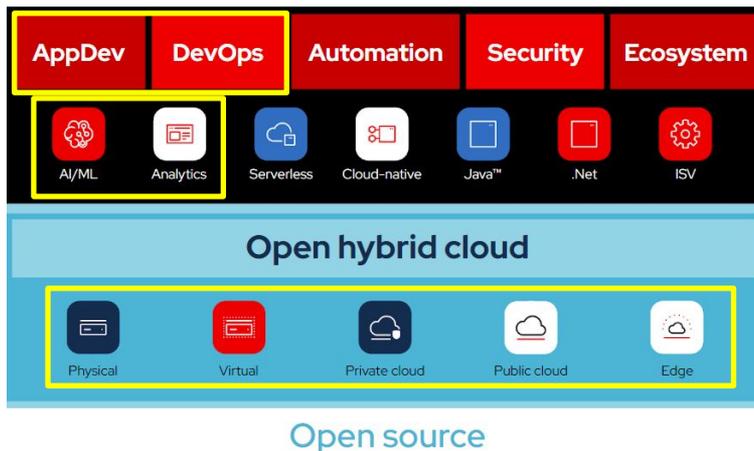
AI Accelerator support with :

Intel Developer Cloud

Benefits of the Collaboration

Embracing Intel's latest HW / SW Platform

- ▶ **Foundational Performance**
- ▶ **Encryption Performance**
- ▶ **Security Performance**
- ▶ **AI/ML Performance**
- ▶ **Compute Performance**
- ▶ **Edge Performance**
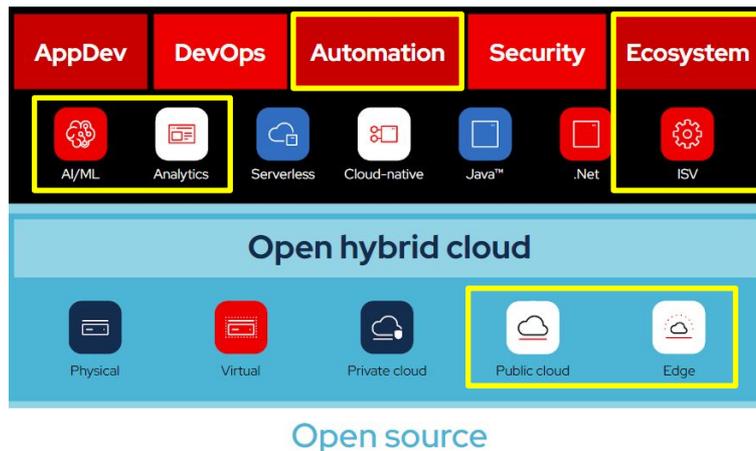
Open Source Industrial Automation for Manufacturing Shop Floor

Intel® Edge Controls for Industrial

Software Defined, Silicon Enhanced

▶ **Want to know More?**

▶ **Visit us at our booth**

Software Defined, Silicon Enhanced

▶ **Let's get started**

- Intel Ecosystem Developer Resources : Red Hat

- Intel and Red Hat developer program

- Intel Developer Zone

- Intel AI Developer zone

Benefits of the Collaboration

Embracing Intel's latest HW / SW Platform

▶ **Foundational Performance** – Collaboration continues with ISA v3 for RHEL 10

▶ **Encryption Performance** – QAT data compression acceleration and crypto performance gains

▶ **AI/ML Performance** – OpenVino embraced in Open Shift AI delivering training and inference from the datacenter to the edge

▶ **Compute Performance** – Intel integrated/discrete GPU and Gaudi AI Accelerator support in RHEL, OpenShift and Red Hat OpenShift AI

▶ **Security Performance** – Trusted compute delivered via TDX isolated VMs

Intel Edge Controls for Industrial

Usage driven, open and modular development framework

► A software reference platform running on

compatible hardware that integrates real-time
compute, standards-based connectivity, more
safety, virtualization, and IT-like management.

► It accelerates the transformation of Industrial

Control Systems to software defined solutions

► Integration in

Red Hat
Enterprise Linux

RED HAT
ANSIBLE

OPENSHIFT

► Real-time compute, more functional safety;

platform and infrastructure management

► Industrial connectivity, controls, workload

consolidation, and more security

► Increased availability, enhanced flexibility, and

reduced capex/opex

Red Hat | **intel.**

intel
advantage

Intel's Transformation Journey

From a CPU-centered company to a multi-architecture XPU company

Software $+$ Silicon & Platforms $+$ Packaging & Process

At-Scale Manufacturing

Red Hat | intel
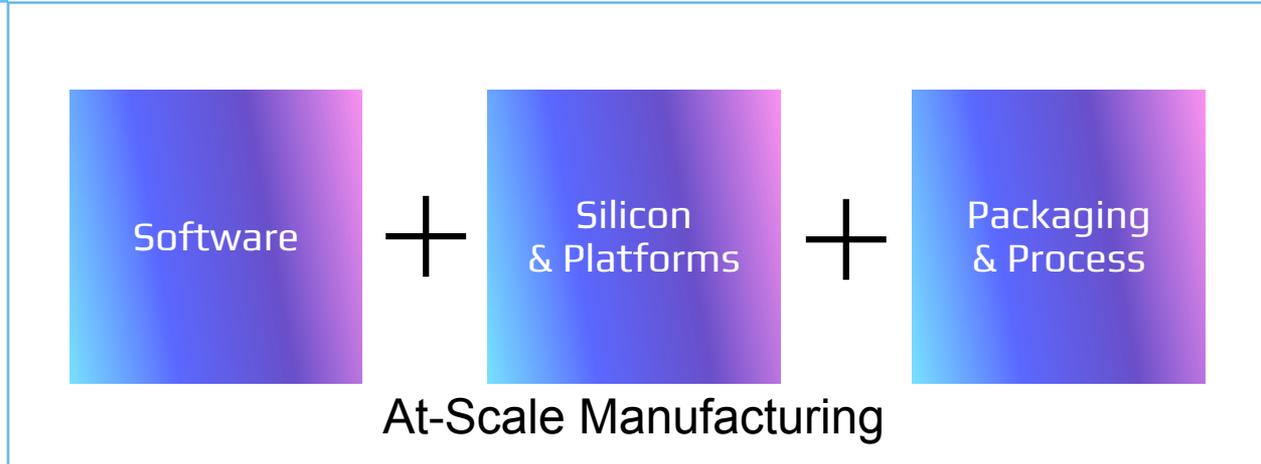
Delivering Leadership Manufacturing > IDM 2.0 Strategy

Product Leadership, Supply Resilience, Superior Cost

Internal Factory Network	External Foundries	Intel Foundry
Intel's global, internal factory network for at-scale manufacturing	Expanded use of third-party foundry capacity	Building a world-class foundry business, Intel Foundry Services
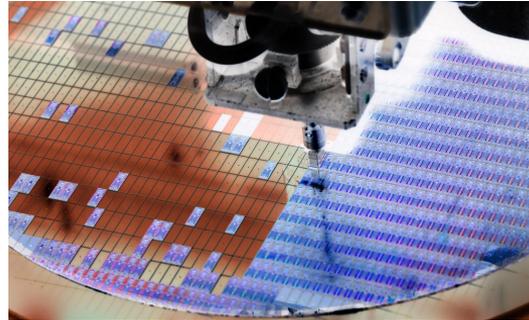
Intel's Geographically Divers Manufacturing Capacity

New Local Investments in Europe

Ireland	Israel	Germany	Poland
Intel 4	Intel 7		
$17B invest Fab 34	$10B invest Fab 38	Phase one > €30 billion	Up to $4.6 billion

Current

Future

* Select Products Shown. Based on internal estimates. Technology readiness timing does not necessarily indicate product production timing. Learn more at www.intel.com/PerformanceIndex.

Manufacturing Industry Transformation Drivers

Confidential Computing

Trusted Execution Environment

Encrypted Data In →

Unencrypted data

← Encrypted Results Out

Trusted, verified application software

Compromised Software

Cloud System Administrator
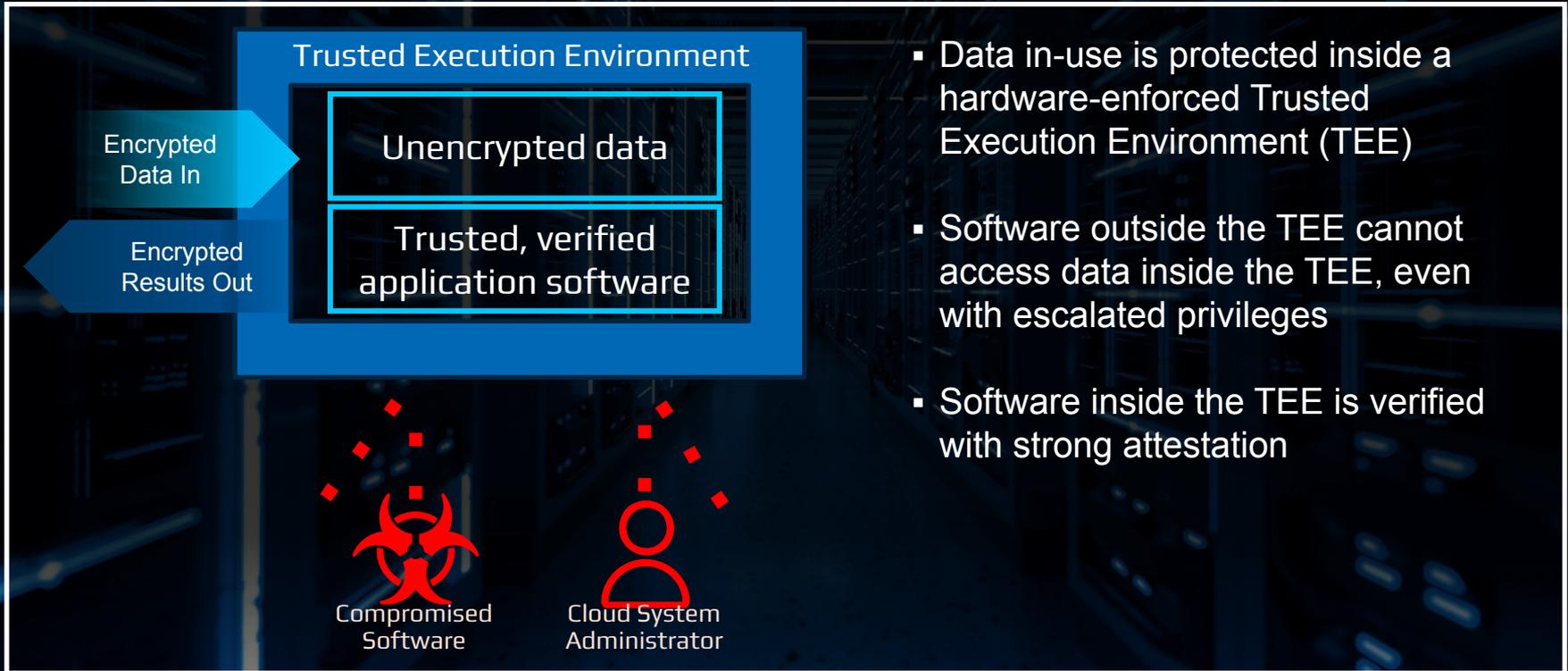
- Data in-use is protected inside a hardware-enforced Trusted Execution Environment (TEE)

- Software outside the TEE cannot access data inside the TEE, even with escalated privileges

- Software inside the TEE is verified with strong attestation

intel.

Innovation Announcements

- ► Gunnar announcement at Innovation:

- ► https://smbtech.au/features/red-hat-and-intel-roundtable-at-intel-developer-conference-2023/

- ► QAT Blog https://www.redhat.com/en/blog/accelerated-encryption-4th-gen-intelr-xeonr-scalable-processors

- ► Other Innovation related blogs:

- ► Intel, Red Hat, Guise AI, and OnLogic…Bringing Intelligence to the Edge

- ► Red Hat Collaborates with Intel to Deliver Open Source Industrial Automation to the Manufacturing Shop Floor

- ► It's arrived: Commoditization for industrial process control

- ► https://www.redhat.com/en/blog/welcoming-intel-centos-stream

- ► https://www.intel.com/content/www/us/en/newsroom/news/2023-intel-innovation-day-2-all-news.html#gs.5z4snz

- ►

Red Hat and Intel

An outstanding "better together" story

- Open hybrid & multicloud foundation
- Standard computing platforms for specific use cases
- Scale applications across any cloud
- One common architecture
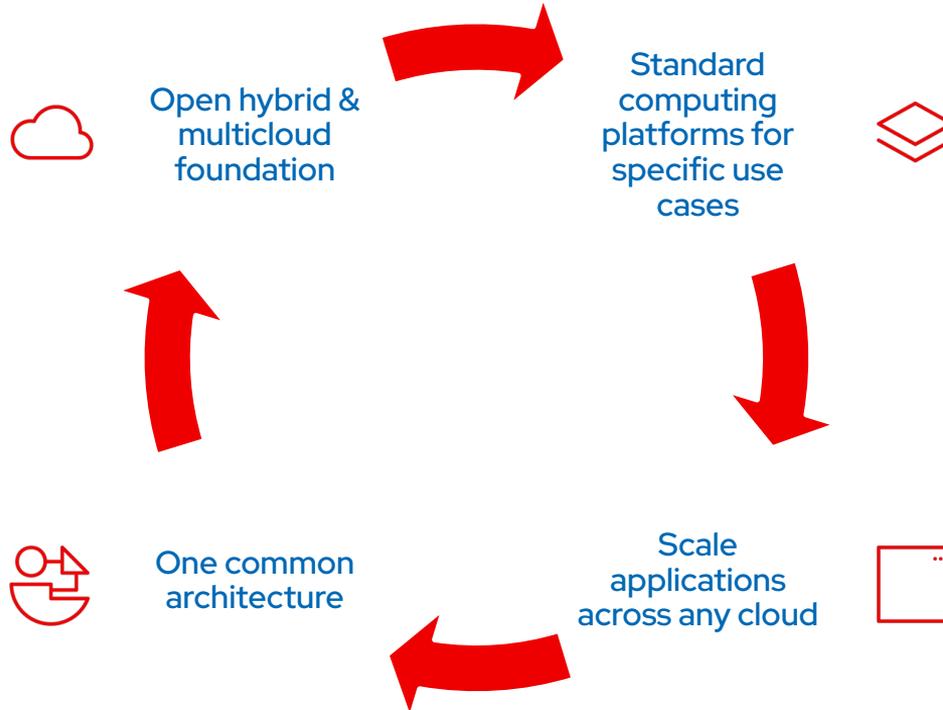
Platform simplification

A long-standing commitment to enterprise-ready, open source solutions

By combining Intel and Red Hat Enterprise Linux, businesses gain a robust, secure and high performing operating system (OS) to meet their business needs.

The compatibility, reliability, security features, and industry-standard nature of Intel processors make them an excellent choice for running Red Hat's enterprise-grade operating system in various IT environments.

For example, Intel's 4th Generation Xeon Scalable Processors provide significant performance gains for Red Hat Enterprise Linux by:

▶ Speeding up low-precision math and accelerating AI/ML.

▶ Coping and moving data faster.

▶ Accelerating compression, encryption, and decryption.

▶ Speeding up query processing performance and data queues.

Formation of the Unified Acceleration Foundation

An evolution of the oneAPI initiative

- ▸ The Linux Foundation announced the formation of the Unified Acceleration (UXL) Foundation

- ▸ Committed to delivering an open standard accelerator programming model that simplifies development of cross-platform applications

- ▸ An evolution of the oneAPI initiative, an open programming model that spans different architectures such as CPU, GPU, FPGA, and accelerators

- ▸ Participating organizations: Arm, Fujitsu, Google Cloud, Imagination Technologies, Intel, Qualcomm Technologies, Inc., Samsung

- ▸ To promote open-source collaboration and development of a cross architecture unified programming model