INTEL IOT DEVELOPER PRODUCTS AND PROGRAM

ACCELERATING IOT SOLUTION DESIGN AND DEPLOYMENT

Developer Relations Division, Intel®

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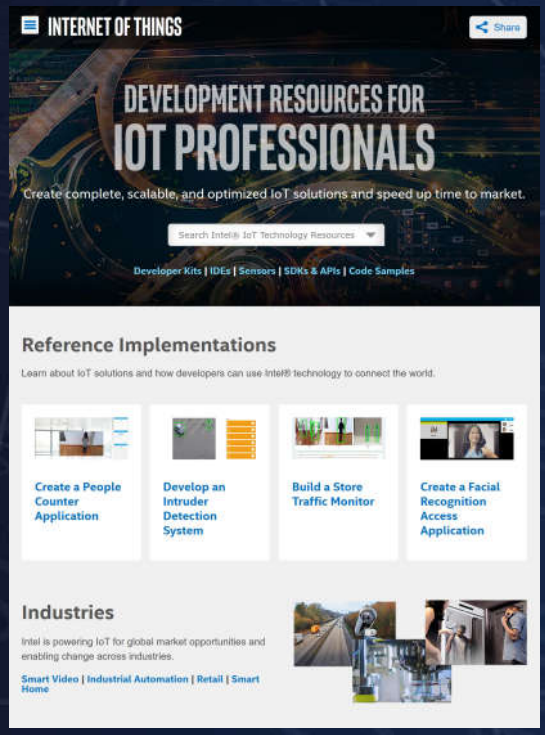
INTEL DEVELOPER ZONE FOR IOT:

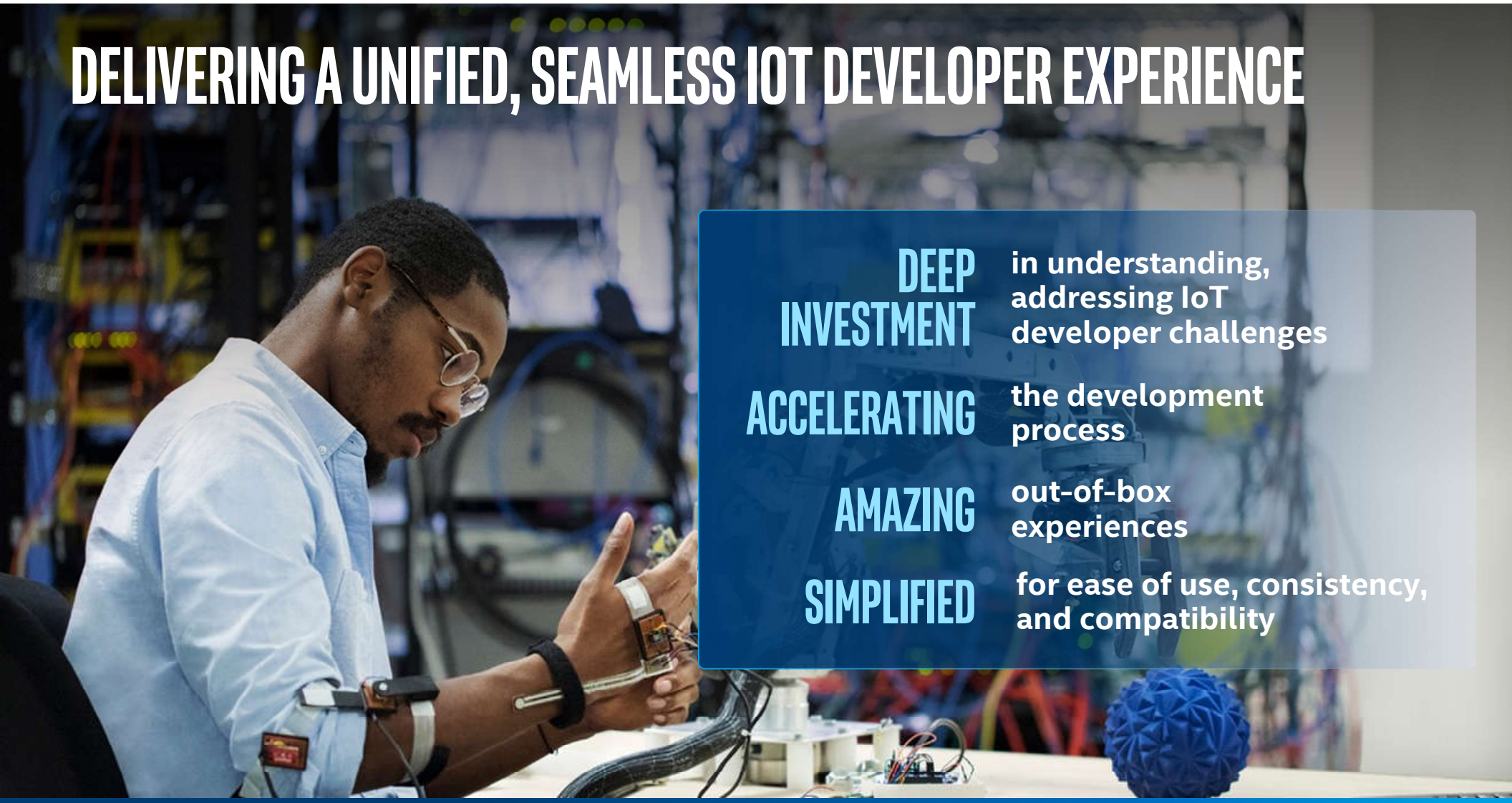
CENTRAL RESOURCE FOR E2E SOLUTION SUPPORT

- Training, How-Tos, Documentation, Forums, Support
- Development Kits, SDKs, Libraries, Sensor Drivers, APIs, Tools
- Code Samples and Tutorials, End-to-End Reference Implementations
- Guides for Productization and Commercialization



software.intel.com/iot

DELIVERING A UNIFIED, SEAMLESS IOT DEVELOPER EXPERIENCE



DEEP INVESTMENT in understanding, addressing IoT developer challenges

ACCELERATING the development process

AMAZING out-of-box experiences

SIMPLIFIED for ease of use, consistency, and compatibility

DEVELOPER KITS ACCELERATE DESIGN OF INNOVATIVE SOLUTIONS

UP2 GROVE IOT DEVELOPMENT KIT

- Versatile, broad prototype application
- Traditional computer vision – Non-inference based training/learning
- Basic essential components

UP2 AI VISION DEVELOPMENT KIT

- Light computer vision/deep learning applications (1-2 cameras)
- Conceptualization and early CV prototype development
- Optional accelerator options

iEi TANK AIOT DEVELOPMENT KIT

- Demanding computer vision/deep learning applications (multi-camera environments)
- Commercial production ready development
- Built-in scaled support for complex/parallel video streams

Reduced time to prototype, expedite path to productization, and designed for scalability and extensibility

All kits include the start-up essentials for a bootable development environment

COMPREHENSIVE PORTFOLIO OF DEVELOPER RESOURCES

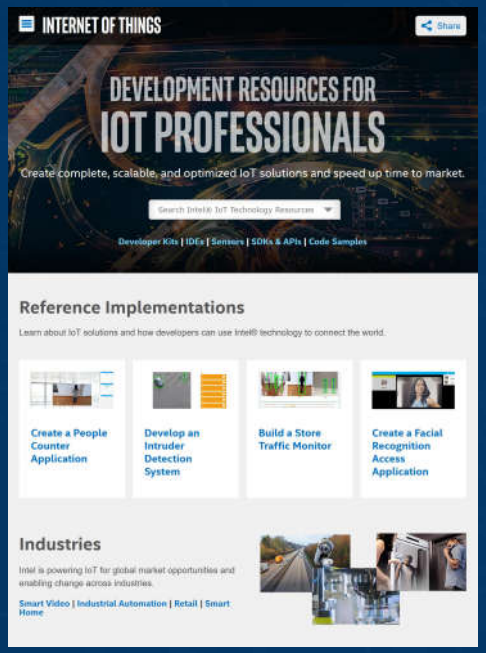
TOOLS

KITS

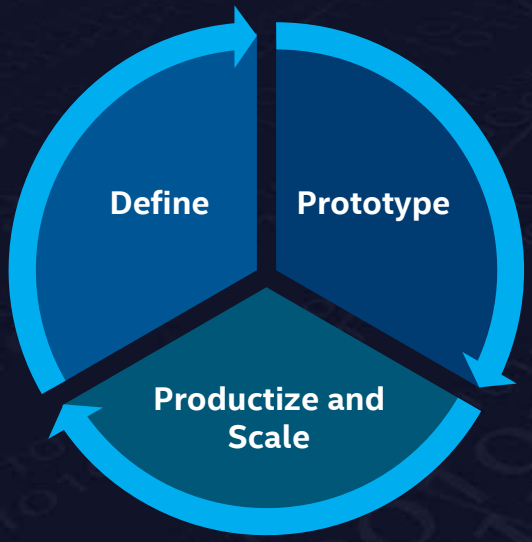
SDKS

- OpenVINO™ Toolkit
- Intel® Media SDK and Intel® Media Server Studio
- Intel® SDK for OpenCL™ Applications
- Intel® Active Management Technology (AMT)
- mRAA/UPM

INTEL DEVELOPER ZONE



ENGAGING THROUGH ALL PHASES OF DEVELOPMENT



EVENTS

Virtual/Tradeshows
(Global IoT DevFest)

WORKSHOPS

Hands-On Training

PROMOTION

Showcase Reference Implementations
IoT Innovators sharing Expertise

ENGAGEMENTS

ISV Engagement
App Enablement
Architecture Conversion

INDUSTRIAL WORKSHOP OVERVIEW

Control Stack
Day 1

- Introduction and Intel Developer Program
- Case Studies for Industry 4.0
- Virtualization of Workloads Intel Technology for Hypervisors & Containers
- Real-Time and Deterministic Computer Systems
- Real-Time and Deterministic Networks
- Industrial Networking Protocols OPC-UA TSN

Insights Stack
Day 2

- OpenVINO™
- IoT DevCloud
- Presentation from Aaeon
- Computer Vision Deep Learning
- Computer Vision Labs With OpenVINO
- Hardware Heterogeneity in Computer Vision Applications

IOT CLIENT (CORE) FOUNDATION DEV KIT

The IOT Client Foundational Kit will provide **manageability**, **performance**, and a **scalable rapid path to market** solution that will support advanced **computer vision** and **deep learning** usages.

IEI Tank-870-Q170 (2-slot)
PCIe slots that will support HDDL-F (FPGA) and HDDL-RC (Myriad X)
http://eshop.usa.ieiworld.com/usa/items.php?CA=2&sub_CA=24
Specs:

- Dimensions: 5” (121.5mm) x 10” (255.2mm) x 8” (205mm)
- Weight: 13.9lbs (6.3kg)
- Core i5 (Sky Lake at launch then convert to Coffee Lake Q4’18)
  - Kaby Lake Gen Gfx driver incompatible with CV SDK
- Fanless
- 8GB of RAM
- 1TB HDD
- 2x PCIe x8
- LAN1: Intel® I219LM PCIe controller
- LAN2 (iRIS): Intel® I210 PCIe controller
- WIFI/BT : Realtek RTL8821AE : 1T1R wifi module kit for embedded system, IEEE802.11a/b/g/n/ac WiFi with Bluetooth 4.0/3.0+HS, 1 x wifi module, 2 x 400mm RF cable, 2 x Antenna, RoHS
- I/O Ports: 4x USB 3.0, 4 x USB 2.0, 4x RS-232, 2x RS-232/485, 8-bit DIO, 1x Line-out, 1x Mic-in
- Operating Temp: -20°C~60°C

https://software.intel.com/en-us/blogs/2018/06/13/introducing-the-tank-aiot-developer-kit

INTRODUCING THE UP2 GROVE IOT DEVELOPMENT KIT

High-Performance Features

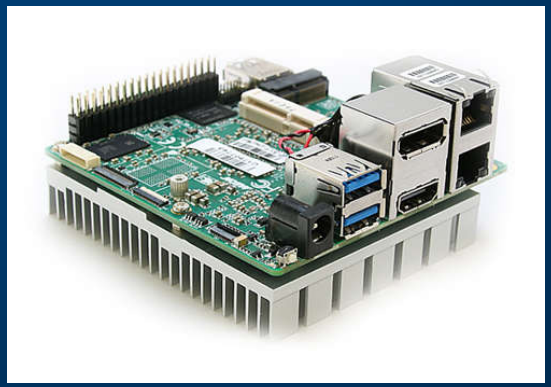
- Fast CPU and graphics capabilities
- Multiple displays, Dual network ports
- Many I/O expansion options

Integrated Software

- Preinstalled Ubuntu* 16.04
- Over 400 sensor libraries
- Integration for major third-party cloud providers

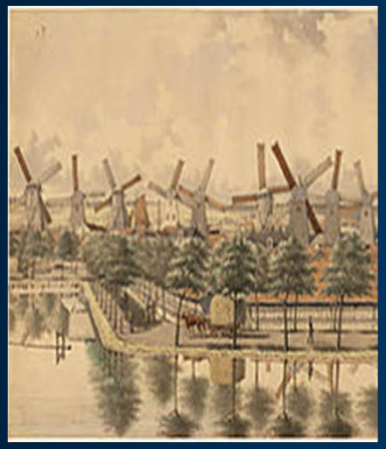
Development

- Develop simply with Arduino Create*
- Optimize code with Intel® System Studio



INDUSTRIAL REVOLUTION 4.0

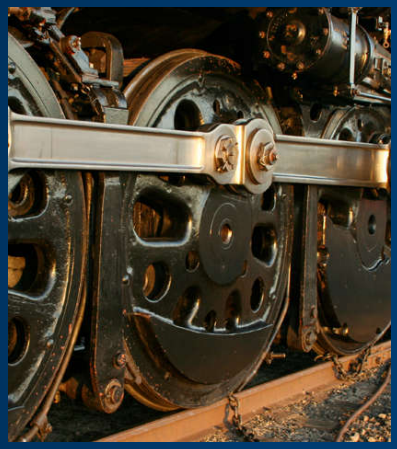
1ST



1760'S

Steam, Water Mechanized Production

2ND



1860'S

Electrification, Oil, Mass Production

3RD

LATE 1900'S

Invention of the Microchip

4TH

NOW

Invention of the computerized network

INDUSTRIAL CUSTOMERS ARE ASKING ...

How can I **capture knowledge** for my transitioning workforce?

How Can I Better **Innovate**?

How Do I Improve **workforce productivity**?

I need to achieve **Real Time Visibility**

How Can I Introduce new IOT **solutions faster**?

How can I **Reduce Downtime?**

How can I have better visibility to manage my

Global Supply Chain?

I need to improve

Product Quality.

VISIBILITY LEVERAGED FOR DECISION MAKING

"While manufacturers have long had access to data collected on the plant. floor, it's typically been locked away in proprietary manufacturing software silos... That changes with IoT, which makes it far easier to collect and manage large amounts of manufacturing data not just in a single factory, but across multiple production sites through the cloud. When paired with analytics, companies will gain better insights, allowing them to optimize plant operations, reduce quality defects and perform preventative maintenance"

-Matt Wells, GE Digital

Matt Wells, product general manager for automation software at GE Digital, based in San Ramon, Calif.

INDUSTRIAL IOT

Industrial processes are taking on a dual nature, one physical and the other digital. Together Industry 4.0 runs on Cyber-Physical machines.

WHAT?

Sensors are connecting our tools to their physical environment. The Internet of Things is connecting our tools to each other, and large scale computing is connecting our tools to us through optimization of process and analytics.

WHY?

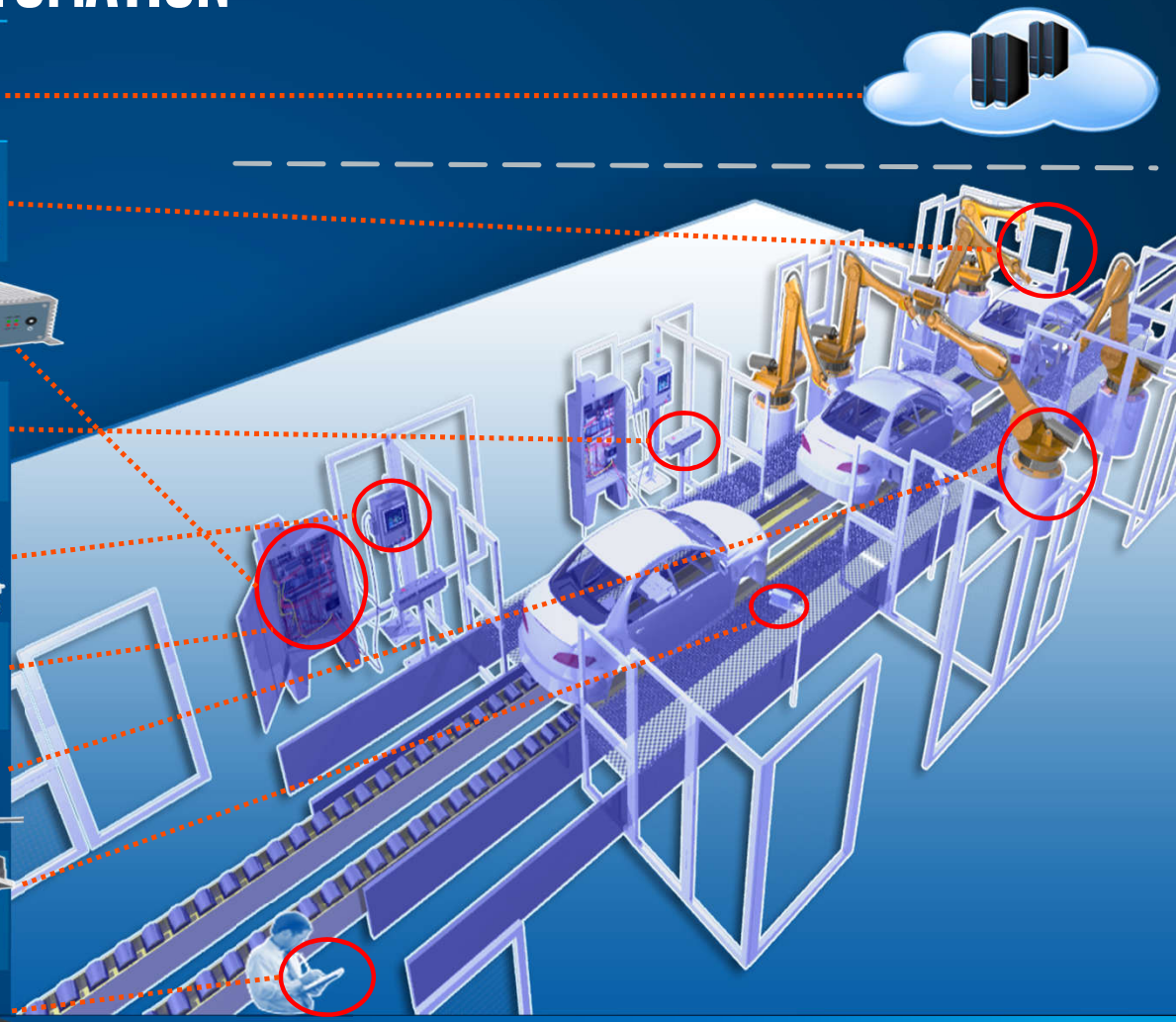
IIoT is about decoupling devices from applications and gaining visibility into business processes. When each manufacturing device can provide data about it's use and status then manufacturing processes can be dynamically configured and reconfigured by a data-driven, software processes. Manufacturing will be able to move faster, be more flexible, meet higher work safety standards and fulfill higher quality standards.

HOW?

Working through Industrial Consortiums and Open Industrial Standards to connect current industrial processes to physical sensors, secure protocols, new safety standards, virtualization, real-time automation and machine learning will able visibility and optimization of current business processes.

INTEL INGREDIENTS IN INDUSTRIAL AUTOMATION

Data Center	**Compute Performance** **I/O intensive**
Factory server	Compute Performance I/O intensive
Industrial PC	Compute Performance Visualization/ UX RT Perf
PLC/PAC	I/O intensive Form Factor Sensitive RT Perf
HMI	Compute Performance Visualization/ UX Form Factor Sensitive
Remote IO	I/O intensive RT Perf
Robots	Compute Performance I/O intensive RT Perf
Machine visions	Compute Performance Form Factor Sensitive
Mobile workforce	Visualization/ UX Form Factor Sensitive



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INDUSTRIAL EDGE COMPUTE IS TRANSFORMING

FROM THIS...

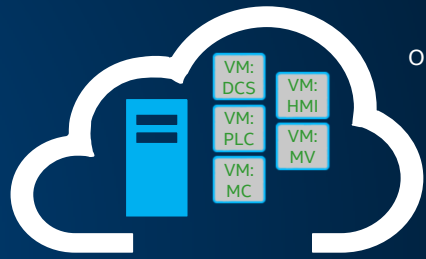
PROPRIETARY, SPECIALIZED, MONOLITHIC

TO THIS...

VIRTUALIZED, OPEN, INTEROPERABLE

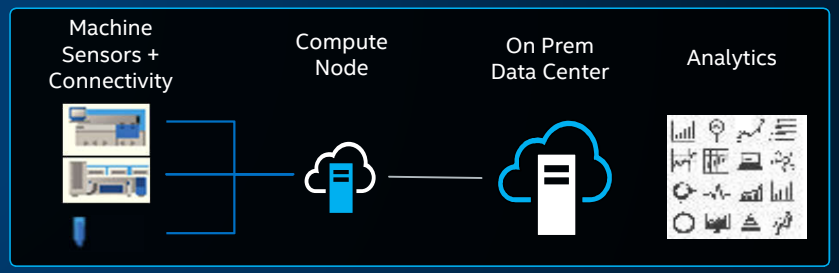
Control

DCS | PLC | HMI | Robotics | MV



On Prem Compute (Edge to Fog)

Analytics



ENABLED BY TECHNICAL PILLARS OF TRANSFORMATION

VIRTUALIZATION | SECURITY | SAFETY | ANALYTICS (AI) | MACHINE VISION | REAL TIME

VISION FOR INDUSTRIAL IOT

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INTEL TECHNOLOGY FOR INDUSTRIAL IOT/INDUSTRY 4.0

Open Platform

built with interfaces and APIs that enable integration with legacy systems and devices and with platforms from multiple vendors.

Interoperability

is designed into IA CPUs to offer backward compatibility to help SW and application reuse thus reducing development time and resources.

Performance at the Edge

that enables near-real-time analytics, local decision making, and tighter process controls.

Advanced Security

for trusted data from edge to cloud and protection from costly attacks.

Scalability

for varying levels of gateway performance, with a broad range of support from Intel® Quark™, Intel® Atom™, Intel® Core™ and Intel® Xeon® processor D and E families.

Manageability

for secure remote upgrades and services.

Faster, More Flexible Deployment

with a platform that supports your choice of operating systems and ecosystem applications.

INTEL IS PARTNERING WITH THE ECOSYSTEM

* Other names and brands may be claimed as the property of others.

HONEYWELL CONNECTED FREIGHT

ASSET MANAGEMENT SOLUTION

Intel and Honeywell collaborate to develop 1st instantiation of Intel connected logistic platform through close partnership with key 3PL companies. The platform will deliver a cost effective and connected asset management solution.

Solution

- Smart sensor tags with proprietary wireless sensor network
- Intel based gateway with cellular and Wi-Fi connectivity
- Analytics capability
- End to end HW enabled security

Use Cases

- Asset location tracking
- Condition monitoring: Humidity, shock, tilt, fall, …
- Logistic routing optimization
- Speedier customs clearances
- Customer satisfaction
- Better forecasting

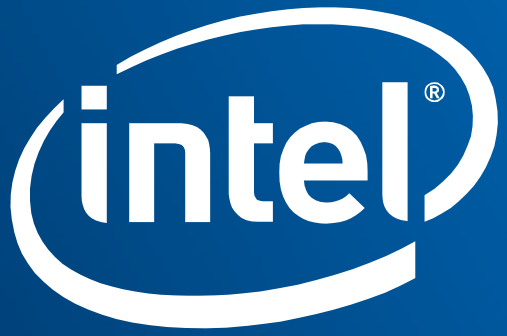
*Other names and brands may be claimed as the property of othe
https://www.honeywellaidc.com/solutions/workflow/connected-

https://www.youtube.com/watch?list=PL6g2Y3N0CFAZUID8MIb48a33Lz3Hq0Y_8&v=zeRLY9ZanXA

CASE STUDY HEADLINES

- Fast Track IoT Smart Building, Industrial and City Solutions with Altiux and Intel
- Altiux Helps Integrated Steel Plant Reduce ACC Energy Consumption by 18%
- Altiux Helps Intelligent Glass Manufacturer Reduce On-site Maintenance Calls
- Alleantia - Achieving the Power of Industry 4.0 with Plug-and-Play Simplicity
- Intel Partner Simularity Delivers AI Software for Asset Monitoring
- Cut Energy Costs with a Smart Real-Time Occupancy Solution from Feedback Solutions and Intel
- The Infiswift IoT platform based on high-performance Intel® architecture enables more efficient agricultural operations.
- Enabling data-driven insight and holistic visibility for Telco, service providers, and the enterprise

http://www.altiux.com/solution-brief-altiux-iot-and-intel.html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