Solution Brief

Industrial IoT
Intel® OpenVINO™ Toolkit for AI
Intel® Edge Insights for Industrial

Portwell, Inc. and Intel Enable Access Control and Physical Identity Management

Intel® IoT technologies and Portwell industrial hardware systems provide a unique solution for worker safety in sensitive environments.

"Machine vision applications for safety are rapidly growing in use for manufacturers to automate video monitoring to reduce costs and improve their results. Intel's technologies combined with our expert consultation and industrial PCs make for a powerful worker safety solution for industrial customers."

— Timothy Chang
Sales Director
Portwell Inc.

Leveraging AI and Machine Vision for More Worker Safety and Compliance

In a world still dealing with the impact of an unprecedented pandemic, combined with an increasing amount of industrial automation, the "new normal" has generated significant demand for applications capable of helping to ensure worker safety. These applications include physical identification and compliance for sensitive environments like cleanrooms used in silicon production, monitoring of industrial settings with heavy machinery in use, keeping track of security zones with restricted personnel access, and more.

Enforcing compliance with policies for the appropriate use of personal protective equipment (PPE) and limiting personnel to the locations for which they are equipped results in reduced work-related accidents, thus helping to improve employee safety while also supporting steady productivity. These practices also help enable organizations to avoid expensive and reputation-damaging citations from government agencies monitoring industrial environments. Worker safety is not to be taken lightly, as safety concerns have become an issue of widespread concern around the world. In the US alone, more than 5,300 people died in work-related accidents in 2019. On average, accidents happen more than 100 times a week or about 15 times per day. Among the citations given by Occupational Safety and Health Administration (OSHA) in the same year, eye and face protection and respiratory protection were both among the top 10.[1]

Most organizations recognize that enforcement of these policies is necessary and have invested significant resources to help reduce risk and maintaining compliance. Many are turning to AI-powered machine vision-based applications to support compliance and help maintain enforcement using a centralized architecture. By doing so, these organizations have successfully automated their systems via a combination of smart cameras, sophisticated machine vision applications, and industrial computing solutions that do not require human resources to help ensure compliance. These systems are better equipped than humans to complete tasks of this kind. For example, smart monitoring solutions help ensure employees are wearing the appropriate PPE when required, help ensure the right people are allowed in the correct zones, and enable real-time implementation of corporate policy where it is needed.

Authors

Rhino Fang
Technical Account Manager
Intel Corporation

Reggie Castillo
Senior Product Line Manager
Intel Corporation

Timothy Chang
Sales Director
Portwell Inc.

Portwell and Intel Partner to Deliver Worker Safety and Security with Machine Vision

When combined with Intel's industrial technologies, Portwell Inc.'s industrial computing solutions provide an excellent solution for smart monitoring solutions. This solution, known as the Industrial Edge Vision Orchestrator, relies extensively on Portwell's computing solutions. In particular, Portwell's WEBS series of edge industrial systems and LEAD series of panel PCs offer its industrial customers significant flexibility for processing the images, video, and time-series data common to AI and machine vision applications.

Portwell WEBS series supports multiple Intel® CPU platforms, from those based on Intel® Core™ i3 processors to platforms based on Intel® Xeon® processors, which provide significant computing power for demanding industrial applications and compute applications like AI. The LEAD series offers customers incredible flexibility, as they can employ this series simply as a monitor, as a Portwell Networking Display (PND) for basic computing power, or even as a Panel PC for Intel® Pentium® N4200 series and more. Those customers adopting WEBS solutions and LEAD solutions as an integrated system now have a single solution for their industrial applications.

Portwell's Industrial Edge Vision Orchestrator leverages Intel's portfolio of industrial IoT technologies, including the Intel® OpenVINO™ toolkit for AI, computer vision, and Intel® Edge Insights for Industrial (EII) software. EII is a collection of field-proven modular software applications that enable companies to more securely ingest, analyze, and store video and time-series data. EII is based on an open and flexible microservices-based architecture optimized for Intel-based hardware and silicon solutions. This optimization, in turn, makes EII ideal for Portwell's computing systems, which use Intel silicon technologies to provide superior performance.

Portwell also integrates Intel® Iris® Xe MAX graphics solutions, which offer outstanding performance from both the CPU and GPU. Intel®'s Deep Link technology matches the right workload with the right compute solution—enabling discrete graphics for creation. At the same time, 11th Gen Intel Core processors power great productivity with 20 percent more CPU performance than systems with third-party graphics solutions.[2] Intel Deep Link technology enables faster, richer AI capabilities for less waiting and more creating, with 7x better AI performance than other discrete graphics.[3] Plus, quad encode engines deliver class-leading streaming and sharing, with over 75 percent faster encode.[4]

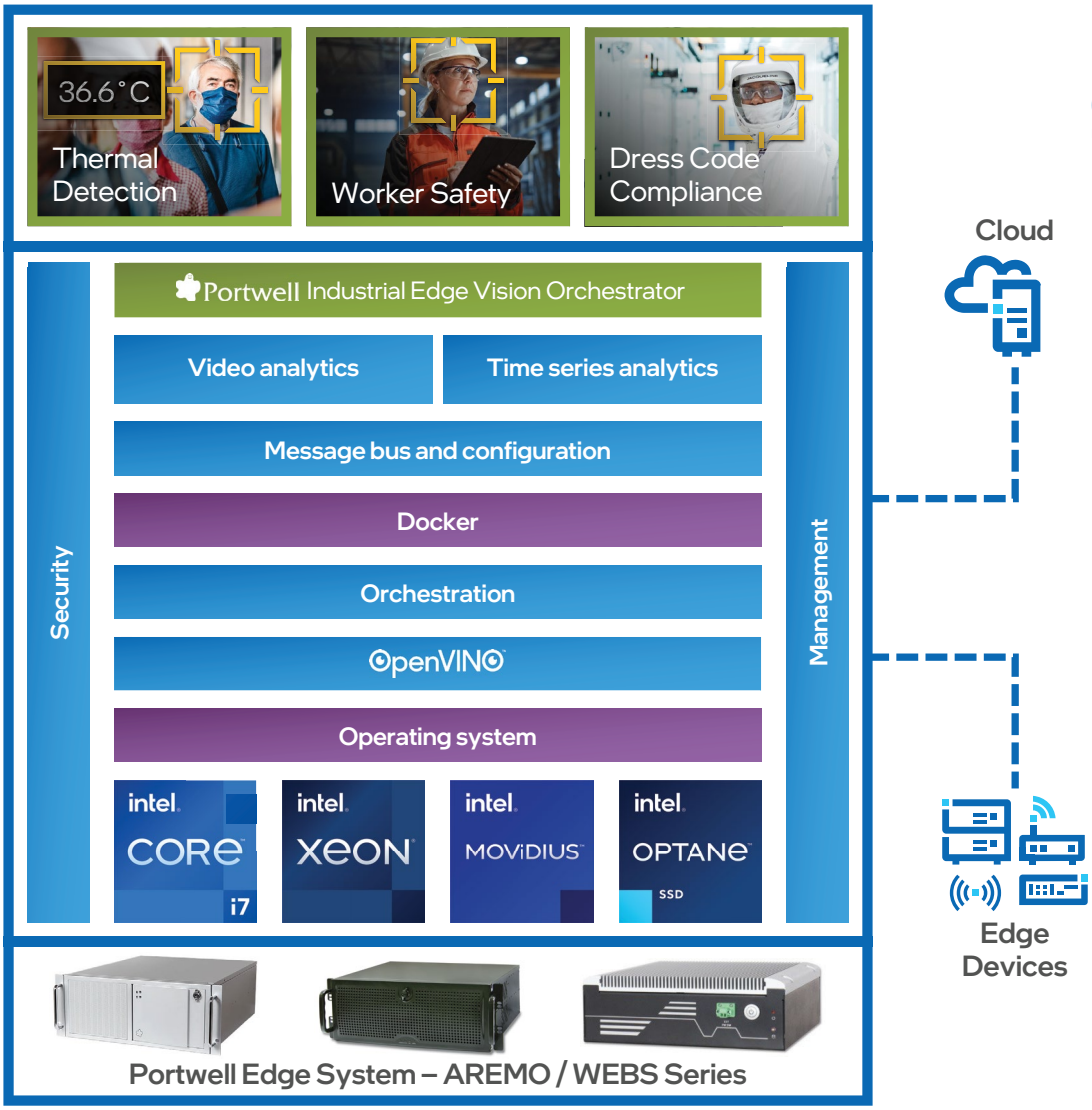

Figure 1. The Portwell Edge Solution with Intel® Edge Insights for Industrial (EII) supports multiple use cases.

See backup for workloads and configurations. Results may vary.

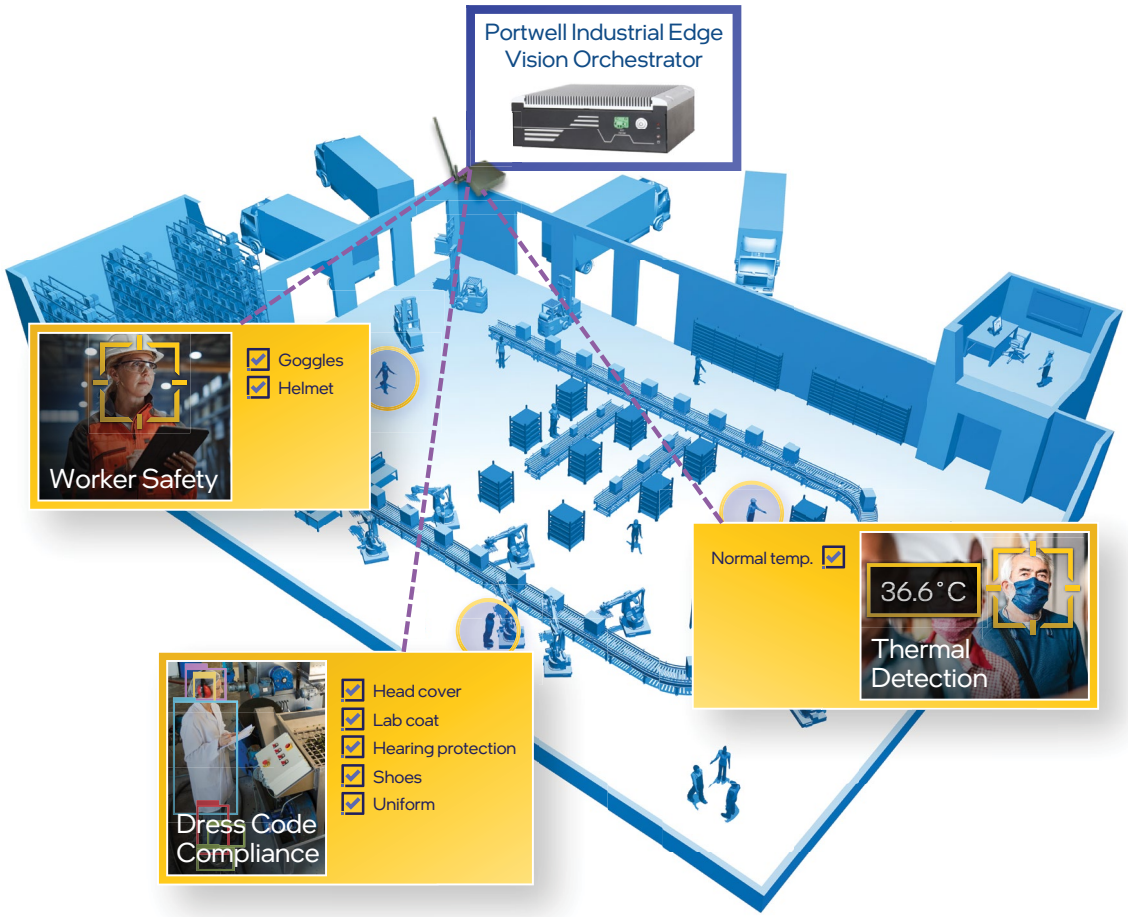

Figure 2. Portwell's Industrial Edge Vision Orchestrator with Intel EII provides a robust solution that can facilitate multiple worker safety and other use cases across the factory.

Portwell combines these technologies from Intel and its own industrial solutions to deliver AI-enabled access control and monitoring solutions. This machine vision-based system relies on AI to quickly and easily determine if employees are wearing appropriate PPE, clean suits, or other required equipment in the proper areas. Machine vision systems can quickly and easily identify measurements (height, width, length), color, temperature, and the number of elements an employee may be wearing.

An excellent example of Portwell's AI-based monitoring solution in action is in the company's very own printed circuit board (PCB) production facility. Portwell leveraged Intel's EII to provide an advanced, high availability, and convenient system to help monitor employees' policy compliance. This includes the required dress code, safety regulation compliance, and thermal detection for pandemic management throughout multiple areas, including the factory floor front entrance and other restricted areas.

How Intel and Portwell Partner

Intel and Portwell have a successful track record of working together for decades. From single-board computers to today's IoT and Automation solutions, the company's portfolio of solutions has made Portwell a major worldwide supplier of specialty computing application platforms. In addition, Portwell is an Intel Titanium partner, the highest level of partner possible, which gives Portwell access to critical benefits such as access to Intel® Partner University, access to pre-launch and face-to-face training, and lead routing and lead sharing activities.

About Portwell, Inc.

Portwell was founded in Taiwan in 1993 and has a long history of providing computing solutions for industrial applications. Today, as an industrial embedded systems manufacturer and solutions provider, the company's continued development of leading-edge products has resulted in strong growth in market share for industrial compliance and monitoring solutions.

Learn More:

- **Intel® Distribution of OpenVINO™ toolkit**
- **Intel® Edge Insights for Industrial**
- **Intel® Iris® Xᵉ Graphics**
- **AI Solution | Portwell**

Contact Portwell, Inc.:

Taiwan
Email: **info@portwell.com.tw**
Tel: +886-2-7731-8888

USA
Email: **info@portwell.com**
Tel: +1-510-403-3399

Europe
Email: **info@portwell.eu**
Tel: +31-252-620790

Japan
Email: **info@portwell.co.jp**
Tel: +81-3-6902-9225

Korea
Email: **info@portwell.co.kr**
Tel: +82-31-450-3043

[1] 2019 U.S. Bureau of Labor Statistics. https://www.bls.gov/news.release/cfoi.nr0.htm

[2] Transcode video at 1.2x performance on 11th Gen Intel® Core™ i7-1165G7 with Intel® Iris® Xe MAX vs. simulated 11th Gen Intel Core i7-1185G7 with Nvidia Geforce MX350. As measured by FPS in Handbrake (Version 1.3.3) using CPU transcode.

[3] Upscale photos at 7.34x performance on 11th Gen Intel® Core™ i7-1165G7 with Intel® Iris® Xe MAX vs. 10th Gen Intel® Core™ i7-1065G7 with Nvidia Geforce MX350. As measured by time in seconds in Topaz Labs Gigapixel AI (Version 5.2.1) photo upscale workload.

[4] Transcode multi-stream videos at 1.78x performance on 11th Gen Intel® Core™ i7-1165G7 with Intel® Iris Xe MAX vs. 10th Gen Intel® Core™ i9-10980HK with Nvidia Geforce RTX 2080 Super MaxQ. As measured by time in seconds in Handbrake Nightly (Version 20201020-96317ec50) using GPU batch transcode.

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