

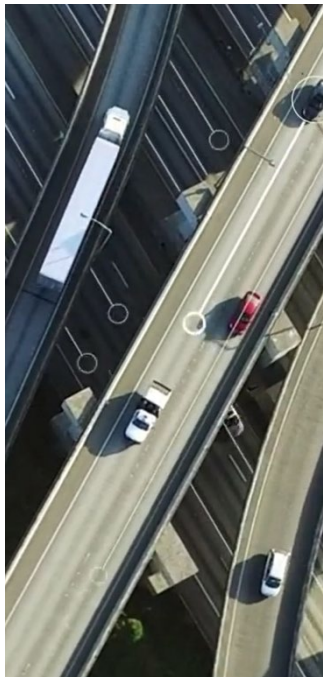
SOLUTION BRIEF

Intel® Vision Products
OpenVINO™ toolkit



Intel® Vision Products Optimize Deep Learning for Visual Surveillance

Intel's robust portfolio of vision products helps ISS (Intelligent Security Systems) deliver advanced visual deep learning neural networks



Organizations are demanding solutions that can effectively and accurately harness visual data

Advances in vision technology—such as enhanced detection accuracy and deep learning flexibility—are transforming the surveillance market. Across industries, **businesses and organizations are looking to harness these advances to help improve their security, safety, and operational effectiveness.**

However, **there are key performance requirements** that must be met before smart vision solutions can drive effective and accurate results for customers. To truly fulfill the promise of smart vision, solutions must:

- **Integrate with current and legacy systems** to serve as the foundation for business processes
- **Maintain high levels of accuracy and reliability** to unlock actionable data, meet standards of evidence, and comply with privacy requirements
- **Scale to capture and analyze vast amounts of visual data** across distributed environments such as campuses, roadways, and cities

Only Intel can deliver the most comprehensive array of intelligent vision capabilities to the wider market

The Intel® Vision Products portfolio is comprised of silicon, software tools, deep learning frameworks, and libraries that are uniquely positioned for the next generation of AI. Intel® Vision Products are helping put your data to work from the edge to the cloud, so you can act in real time, make decisions faster, and implement new operational strategies to drive immediate results.

At the hardware level, Intel boasts the most comprehensive selection of acceleration silicon in the industry. Intel® CPUs, CPUs with integrated graphics, and Intel® Vision Accelerator Design Products based on Intel® Movidius™ VPUs and Intel® FPGAs help deliver highly accurate vision analytics performance and compute efficiency.

Intel also offers an array of software tools, including the Intel® Distribution of Open Visual Inference and Neural Network Optimization (OpenVINO™) toolkit, for accelerating the development and integration of intelligent vision solutions and capabilities at scale. This end-to-end suite helps scale and integrate vision capabilities across your entire end-to-end infrastructure—whether for premises, campuses, or city-wide applications



"ISS' experience combined with [Intel® Distribution of] OpenVINO™ [toolkit] allows us to create solutions on the edge with lower power consumption and the ability to use existing infrastructure."

— Aluisio Figueiredo
CEO, ISS

The innovative technologies of ISS capture and convert visual data into actionable intelligence to protect people, infrastructure, commerce, and more.



ISS (Intelligent Security Systems) has 120,000+ deployments in 56 countries,⁴ delivering turnkey video management systems (VMS), video analytics (VA), and network video recorders (NVRs) that leverage advanced intelligent video capabilities.

ISS takes a smart and innovative approach to applying deep learning technologies, embedding purpose-built, task-specific, and edge-driven neural networks into their complete hardware-to-software solutions. Neural network-based algorithms allow ISS to bring current solutions to a new quality level and build new solutions with capabilities not reachable before—including key smart cities use cases such as license plate, cargo, and facial recognition, and more.

SecurOS* is ISS' wide-ranging suite of VMS offerings for on-premise and cloud-based video analytics. **SecurOS*** is designed to scale with customers as their deployments and surveillance needs grow, comprising a suite of offerings for multiple intelligent video applications. **SecurOS***-based systems easily integrate with most legacy digital security and surveillance systems, and ISS can provide local system integration and support to streamline the deployment process.



SecurOS* IoT vision solutions are built on high-powered, compatible, edge-based deep learning. To drive deep learning neural networks at the edge, SecurOS* solutions leverage efficient edge processing in a small form factor—and ISS neural networks can use dedicated hardware accelerators to make heavy deep learning workloads possible. On the software side, these neural networks run seamlessly from devices at the edge to servers in the cloud datacenter.



The Intel® Distribution of OpenVINO™ toolkit helped ISS offer optimized deep learning at the edge

The Intel® Distribution of OpenVINO™ toolkit optimized ISS' deep learning neural networks for Intel's suite of compact, low power, high performance CPUs and CPUs with integrated graphics. For high-powered, dedicated edge workloads, **Intel® Distribution of OpenVINO™ toolkit** will bring ISS' neural networks to its latest Intel® Vision Accelerator Design Products based on the Intel® FPGAs and Intel® Movidius™ VPUs.

Because the Intel® Distribution of OpenVINO™ toolkit drives a seamless experience across Intel-based hardware, deep learning data and workloads can easily move from cloud datacenter to edge devices and servers. In addition, the Intel® Distribution of OpenVINO™ toolkit supports the deep learning frameworks ISS uses for development, including Caffe™ and TensorFlow.™



Intel® Distribution of OpenVINO™ toolkit is the centerpiece of computer vision solutions

The Intel® Distribution of OpenVINO™ toolkit is a free, downloadable toolkit within the Intel® Vision Products portfolio that fast-tracks the development of high-performance computer vision and deep learning inference into vision applications. Intel® Distribution of OpenVINO™ toolkit is optimized for multiple Intel® Architectures including CPUs and CPUs with integrated graphics, along with the latest AI accelerators such as Intel® FPGAs and Intel® Movidius™ VPUs.

By leveraging the toolkit, users can accelerate computer vision performance, shorten vision solution development, and streamline deep learning inference and deployment.

The Intel® Distribution of OpenVINO™ toolkit is helping ISS deliver neural network-enabled surveillance products to support wide-ranging applications



Smart Cities / Safe Cities



Critical Infrastructure



Traffic & Transportation

SecurOS* Auto enables license plate recognition

Distinguish numbers and letters to accurately capture license plate information in all weather conditions across multiple lanes of traffic using a single-camera detection system. **SecurOS* Auto** leverages advanced deep learning, template-based algorithms and the Intel® Distribution of OpenVINO™ toolkit-based neural network *License Plate Capturer*, and supports license plate detection from more than 70 countries worldwide. With the flexibility of low and high-speed options (accurate capture up to 155 mph) and easy integration with third party systems, **SecurOS* Auto** can be deployed for parking management, traffic monitoring, law enforcement, and municipal services.

SecurOS* Crossroad detects traffic violations

Build on *Pedestrian Tracker* and **SecurOS* Auto** to provide real-time detection of complex traffic violations. **SecurOS* Crossroad** can monitor multiple vehicles and pedestrian behavior with just one camera to prevent dangerous exchanges and automatically report hazardous driving. Detectable violations include driving or turning on red stop lights, driving against traffic, illegally bypassing closed or closing railroad crossing gates, changing lanes, violating pedestrian right-of-way, driving in restricted lanes, and more.

SecurOS* Traffic Monitoring monitors traffic in real-time

Capture traffic statistical data for toll gates, tunnels, and bridges monitoring and control systems to third party ITS-systems. Through the specialized Intel® Distribution of OpenVINO™ toolkit-based neural networks—*Vehicle Tracker, Counter, and Classifier*. **SecurOS* Traffic Monitoring** offers flexible analytics tools, supporting both real-time and long-term/historical data-mining analysis.

SecurOS* Transit provides character recognition of train carriages, tankers, and platforms

Enable train car character number recognition and analytics through the Intel® Distribution of OpenVINO™ toolkit-based neural network *Railway Coupling Detector*—which separates train cars by their unique ID number. **SecurOS* Transit** is an effective tool for registering railway vehicles at key locations such as shunting yards, customs terminals, and railroad hubs, and can even control transportation units and monitor deliveries to industrial enterprises and warehouses.

Intel® Vision Products are enhancing the world's leading video solutions to enable higher accuracy and drive better business outcomes for customers.

Intel® Distribution of OpenVINO™ toolkit optimizes hardware to accelerate neural network-enabled products in the market, from existing CPUs and hardware to Intel's® latest AI accelerators and Intel® Vision Accelerator Design Products.



The visual surveillance market is growing rapidly...

\$48B

Visual surveillance market by 2020¹

70%

Cameras capture HD images at 2+ megapixels²

7X

Visual surveillance internet traffic growth 2016-2021³

Learn more

Discover how [Intel® Vision Products](#) can help your business unlock its data potential

Find out more about [Intel innovation for AI](#)

To learn about the Intel® Distribution of OpenVINO™ toolkit, visit:

- [Intel® Distribution of OpenVINO™ Toolkit Homepage](#) (an [open source](#) version is also available)
- [Intel® Distribution of OpenVINO™ Toolkit Customer Testimonials](#)

For more information on relevant ISS products, go to:

- [ISS SecurOS* Auto](#)
- [ISS SecurOS* Transit](#)
- [ISS SecurOS* Crossroad](#)



1. "[Global Video Surveillance Market to Hit \\$48 Billion by 2020](#)," GlobalSources.com, 2017
2. IHS Markit Report, October 2017
3. "[The Zettabyte Era: Trends and Analysis](#)," Cisco whitepaper updated June 2017
4. <http://isscctv.com/>

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