Rapiscan systems | AS&E

Part of the OSI Systems family of security companies

CARGO SCANNING & SOLUTIONS

MILITARY APPLICATIONS



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Rapiscan | AS&E is part of the OSI Systems family of security companies. We deliver products and services that help our customers find threats and contraband with ease and confidence, while maximizing operational efficiency.

Our range of high-to-low energy cargo and vehicle screening systems comes in a variety of configurations—mobile, portal, gantry, rail, trailer, air cargo, and handheld—and many leverage a combination of X-ray technologies to simultaneously provide multiple views of the scanned object for greater assistance with detection. Customers can further enhance inspection capabilities and operational efficiencies with our analyst assist tools and training programs.

Our data integration platform allows information to be collected and combined from multiple sources in the inspection operation in order to automate manual processes, control workflows, and deliver targeted, actionable intelligence. Our commitment to excellence in imaging performance, technology advancements, and uncompromising quality means our solutions consistently deliver best-in-class imaging, high reliability, and operator satisfaction.

Expertise



For the past 15 years, Rapiscan | AS&E has been providing cargo and vehicle inspection solutions to the United States military, as well as to NATO troops. From high-energy portal systems to low-energy mobile systems, Rapiscan | AS&E has deployed over 300 cargo and vehicle inspection systems in Iraq and Afghanistan and continues to deploy new equipment.

Rapiscan | AS&E also provides service to U.S. Department of Defense and NATO forces operating in Iraq and Afghanistan. We currently service 181 systems with 28 Field Service Engineers, 2 Field Service Managers, 1 Field Service Program Manager and 29 System Operators based in Iraq and Afghanistan, with parts depots located in both countries and other regional locations.

Technology:
Solutions to Meet Your Needs

Best-in-class images start with cutting-edge X-ray technology.

With more than 50 years of collective experience in X-ray imaging and a commitment to innovation, our advanced technology facilitates detection of a multitude of threats and contraband, ensuring our cargo screening systems meet the most demanding requirements of the U.S. military.

Transmission X-Ray Imaging

High-energy, dual-energy transmission technology penetrates dense cargo to generate colorized X-ray images that discriminate between organic and metallic materials

Z Backscatter X-Ray Imaging

Z Backscatter technology provides photo-like images that highlight organic threats and contraband, including explosives, currency, and drugs

Complementary Imaging

Complementary imaging uses both transmission and Z Backscatter technologies for improved manifest verification and threat detection

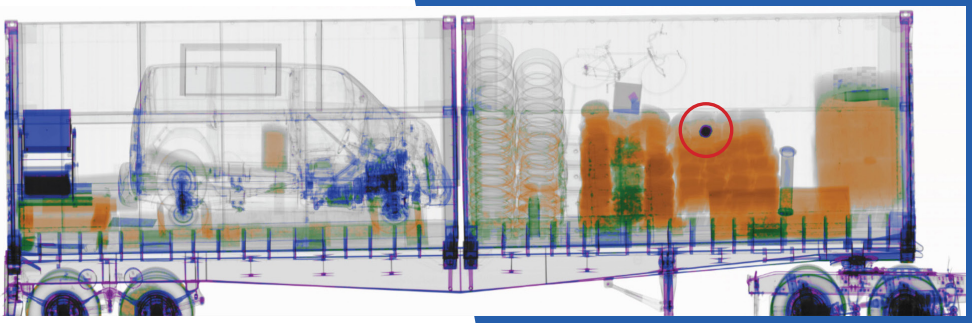
Technology:

Transmission X-Ray Imaging

Transmission X-ray (Tx) imaging was invented over 100 years ago by passing an X-ray beam through a target to a detector on the far side to generate an image, and today it remains the powerhouse of X-ray imaging technology for not only medical purposes, but security inspection missions also.

Today, large cargo and vehicle inspection systems have been developed to penetrate over 300 mm of steel and generate high-resolution X-ray images of trucks and containers filled with dense and cluttered cargo. In addition to generating an image with fine detail, Tx images can be colorized using dual-energy technology to help image analysts visually differentiate different types of material inside the cargo or vehicle—organics, metallics, and mixed materials. These characteristics make it an invaluable tool for detecting threats and contraband hidden within dense cargo containers and vehicles seeking access to military facilities.

The Transmission image penetrates the cargo container and shows the fine detail of the contents, while the material discrimination helps operators quickly identify the different types of material in the container.



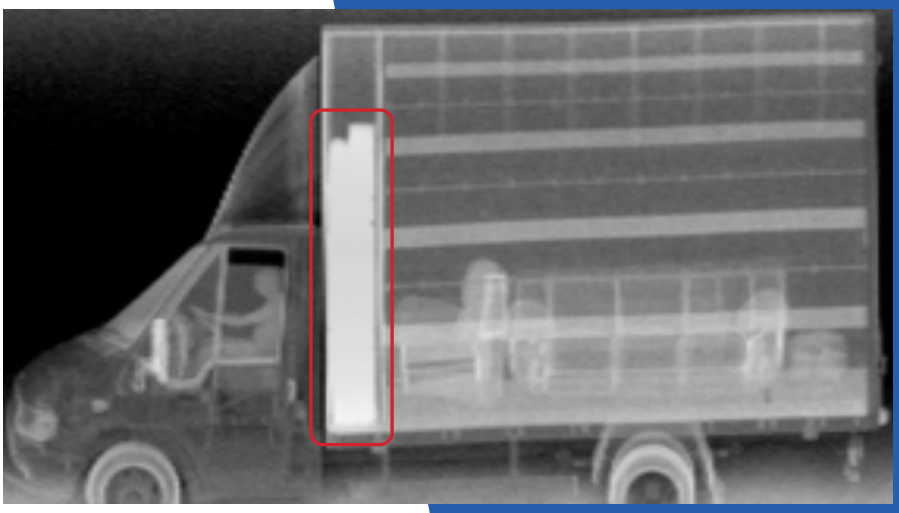
Technology:

Z Backscatter® X-Ray Imaging

Z Backscatter X-ray (Bx) imaging, our signature technology, captures the data from the X-rays that are scattered away from the object, back towards a near-sided detector (the effect is known as "Compton Scattering").

The Bx image is bright white where X-rays scatter the strongest, indicating the presence of organic matter. Bx images are more photo-like in nature than Tx images and this enhances the ability of image analysts to quickly understand and interpret images, and to more easily detect organic threats such as explosives.

The Z Backscatter image highlights the drugs that have been concealed behind a false wall in this delivery truck.



Technology:
Complementary Imaging

Non-intrusive, combinational inspection systems that employ both **Transmission and Z Backscatter technology** provide image analysts with the most comprehensive view of the vehicle or cargo under inspection. The Transmission images provide the deep cargo penetration and high-resolution detail while the Z Backscatter images highlight organic threats and contraband.

The Z Backscatter images present the shape/form of the cargo to help interpret the Transmission images. In addition, some system configurations allow for independent operation (in one modality or the other) as required. For example, if there isn't sufficient space to deploy the X-ray detector boom on the Eagle M60 ZBx, a Z Backscatter image can still be obtained with the boom stowed.

The Z Backscatter image (right) reveals a stowaway and the Transmission image (left) of the same vehicle reveals a hidden artillery shell.



War Zone Deployments

Rapiscan | AS&E Inspection Systems

COUNTRY	SYSTEM DEPLOYED	NO. OF SYSTEMS
Iraq	Eagle Mobile	51
	Eagle Portal	16
	ZBV	217
	Eagle Trailer	7
Afghanistan	Eagle Mobile	5
	Eagle Gantry	5
	ZBV	33
	Z Portal	6
	OmniView Gantry	1
	Eagle Trailer	3

Estimated systems deployed into Iraq and Afghanistan since 2003;
including planned future deployments for Eagle Trailers

PORTAL



CarView™

Vehicle Screening System



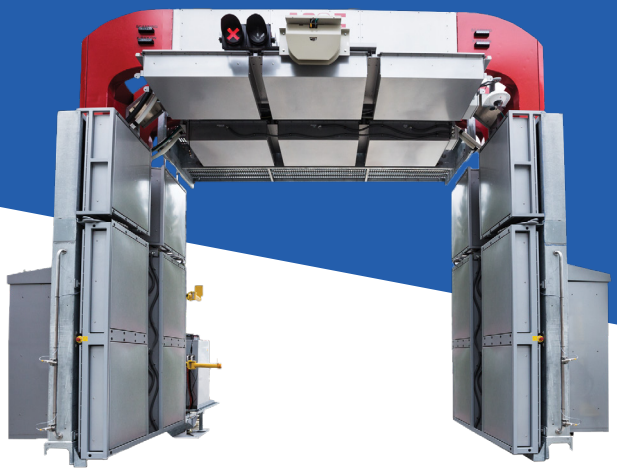
Multi-technology, top-view inspection for screening passenger vehicles for threats.

The CarView Portal helps operators detect threats and prevent them from entering military installations and secure facilities. The compact CarView system screens occupied cars and small trucks using innovative detector technology that simultaneously produces two views of the scanned vehicle: a high-quality, dual-energy transmission image and a photo-like Z Backscatter® image. Dual-energy transmission X-rays penetrate the vehicle and generate a colorized image that helps detect threats such as weapons and vehicle-borne improvised explosive devices (VBIEDs). Z Backscatter technology produces a photo-like image of the contents of a vehicle, highlighting organic materials such as stowaways, explosives, drugs, currency, and other contraband.

The compact CarView system fits into existing traffic lanes and standard tollbooth lanes, while its high scan speeds make it ideal for either primary or secondary inspection applications. As mission objectives change with an ever-evolving threat landscape, the portal can be easily relocated to meet new requirements.

Z Portal®

Multi-View Cargo and Vehicle X-Ray Screening System



For the detection of vehicle-borne improvised explosive devices and other threats concealed within vehicles and cargo.

Z Portal is a multi-view, multi-technology, drive-through screening system. Multiple views provide maximum screening capability and facilitate image interpretation. The Z Portal system provides high-quality, photo-like backscatter images that offer unsurpassed imaging of organic materials such as explosives.

The Z Portal system is a high-throughput screening gateway for scanning up to 250 trucks or 400 passenger vehicles per hour. Driven at speeds up to 20 km/hr, vehicles and their cargo are scanned for threats and illegal goods such as stowaways, explosives, drugs, and weapons. With its compact design and low radiation dose, the Z Portal system is ideal for high-traffic locations with space constraints and a high-throughput requirement. The Z Portal system is safe for drivers, operators, cargo, and the environment.

The Z Portal system employs Z Backscatter technology, which produces photo-like images of the contents of a container or vehicle, while highlighting organic materials, such as explosives, stowaways, drugs, and other contraband. In addition, the Z Portal system offers Forwardscatter® imaging, which creates two additional side-view images of scanned vehicles and cargo to display dense, metallic objects. The Z Portal system also offers an optional top-down transmission image for a sixth view of the scanned vehicles and cargo. The top-down image provides material discrimination and helps operators to locate weapons and other threats concealed in vehicles. Note: The Z Portal system is available in two configurations for deployment at military installations—one for large trucks, buses, and cargo vehicles and a smaller size for passenger vehicles.

Eagle® P60 ZBx

High-Energy, High-Throughput, Drive-Through X-Ray Inspection System



Advanced multi-technology, multi-view portal for the detection of threats in cargo and vehicles.

The Eagle P60 ZBx system is a multi-view, multi-technology, high-throughput, drive-through inspection system for scanning densely loaded vehicles entering U.S. military installations or other critical checkpoints. The Eagle P60 ZBx portal delivers a vital means of detecting threatening materials, weapons, explosives, and other contraband, purposely hidden to avoid detection, in very dense cargo containers, fuel carriers, and large vehicles. Using a high-energy X-ray source, the Eagle P60 ZBx provides high penetration into inspected objects—up to 330 mm of steel, and with a throughput of up to 100 trucks per hour.

The Eagle P60 ZBx system also utilizes Z Backscatter technology, empowering operators with multi-view capability for detecting organic threats and contraband within the cargo as well as in the cab of the truck.

By utilizing a 4-view imaging system that combines high penetration with the photo-like images provided by Z Backscatter technology, the detection of threats and contraband entering a U.S. military compound is greatly enhanced. For additional detection, the system can be easily integrated with radiation detection and container identification systems.

MOBILE



Eagle® M60 ZBx

Mobile Cargo and Vehicle Screening System



Advanced, multi-technology, mobile inspection system for the detection of threats in cargo and vehicles.

The Eagle M60 ZBx is an advanced mobile inspection system that combines high-energy transmission imaging with Z Backscatter® technology for comprehensive inspection of cargo and vehicles. The transmission image provides high penetration and resolution with material discrimination, while Z Backscatter technology provides photo-like images that highlight organic threats, such as explosives. The Eagle M60 ZBx is built on a Mercedes® truck platform that is easily driven over public roads and quickly deployed after arriving on site. The unit is fully self-contained with all of the equipment and features required to perform inspections at locations such as roadside checkpoints and military installations. It enables safe and efficient, non-intrusive inspection of a wide variety of vehicles ranging from truck-mounted cargo containers to passenger vehicles. The X-ray images are immediately displayed on a workstation monitor in the Eagle M60 ZBx onboard inspection office, which houses two onboard inspectors. The Eagle M60 ZBx is ideal for force protection missions and other high-threat checkpoints. The systems move easily from one site to another, giving officials the element of surprise.

The Eagle M60 ZBx is a highly versatile system that offers multiple operational modes including drive-by mode, portal mode with CabScan® technology, driverless operation, and Z Backscatter-only scan mode. In portal mode, the Eagle M60 ZBx is stationary while vehicles drive through the tunnel. CabScan technology allows the cab of vehicles driven through the tunnel to be scanned with a safe, low dose as threats can be hidden not only in cargo, but in the vehicle as well. In Z Backscatter-only mode, the boom is not deployed and only a Z Backscatter image is generated when the Eagle M60 ZBx drives past stationary vehicles or objects. This mode is useful for scanning in space-constrained locations where boom deployment is not practical.

ZBV® C-Class and R-Class

Mobile Cargo and Vehicle Screening System



Highly maneuverable and versatile system for detecting threats in cargo and vehicles.

Low-cost, easy to use, and highly versatile, the ZBV system is built into a standard delivery van and can screen vehicles, cargo containers, and other objects for threats and contraband simply by driving past them. The ZBV system's single-sided configuration and varied operating modes provide maximum maneuverability and flexibility for military applications, and it can be immediately deployed in response to security threats. With easy-to-interpret imaging for rapid analysis, the ZBV system enables high-throughput screening of vehicles and cargo. The system can be operated from within the vehicle or remotely from up to ½ kilometer away.

The ZBV system employs Z Backscatter® technology for photo-like imaging and the system is ideal for screening vehicles for explosives and stowaways. It can also be equipped with the Tx-View™ option, which provides a dual-energy transmission image for enhanced detection of metallic threats, including weapons. With the ZBV system in stationary scan mode, transmission detectors are positioned opposite the X-ray source in the van. The transmission image is displayed simultaneously with the Z Backscatter image, providing the operator with additional information about the contents of a scanned vehicle.

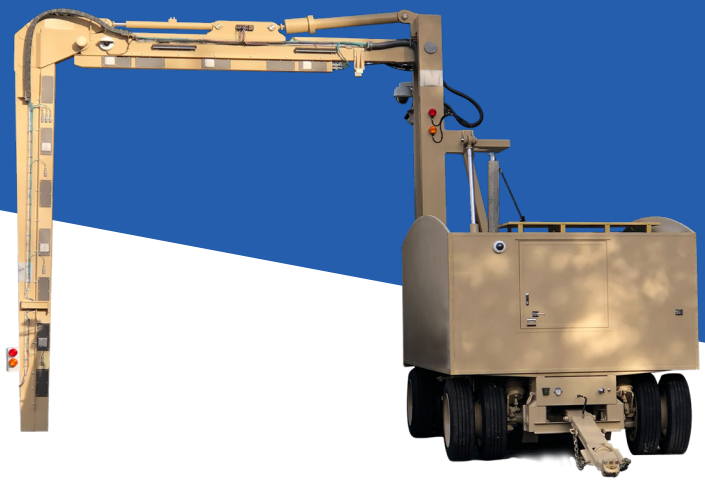
The ZBV is available in two configurations depending on deployment location. The ZBV R-Class is built on a Ford® F550 chassis and the ZBV C-Class is built on a Mercedes® Sprinter® cab chassis. The ZBV system is the most versatile mobile inspection system on the market. It is also the best-selling cargo and vehicle X-ray inspection in the world, with more than 900 ZBV systems deployed in over 70 countries.

TRAILER



Eagle® T25

Cargo and Vehicle Screening System



High-energy, trailer-mounted inspection system for the detection of vehicle-borne improvised explosive devices and other threats.

The Eagle T25 is a trailer-mounted, drive-through inspection system with material discrimination for efficient screening of cargo for threats and contraband. The fully self-contained unit can be easily towed and rapidly deployed. Force Protection officials can deploy the Eagle T25 for screening vehicles (cars and trucks), containers, and other cargo for terrorist threats and contraband.

The system operates in portal mode, where the Eagle T25 remains stationary while vehicles drive through the boom to be scanned. The system offers automatic cab exclusion or optional CabScan® mode to image the entire vehicle. Vehicles are scanned as they drive through the tunnel at 3–8 km/hr for a throughput of up to 60 trucks per hour.

The system is built on a commercially available, heavy-duty, solid-frame trailer chassis with 2 rear axles. For added personnel safety, the Eagle T25 can be operated from 100 meters away from the system with armored Ethernet cable or, optionally, up to 300 meters away using armored fiber optic cable.

The Eagle T25 was developed specifically for the U.S. Department of Defense.

Eagle® T60 ZBx

Cargo and Vehicle Screening System



Multi-technology, trailer-mounted inspection of cargo and vehicles for vehicle-borne improvised explosive devices and other threats.

The Eagle T60 ZBx is an advanced trailer-mounted inspection system that combines high-energy transmission imaging with Z Backscatter® technology for comprehensive inspection of cargo and vehicles. The transmission image provides high penetration and resolution with material discrimination, while Z Backscatter technology provides photo-like images that highlight organic threats and contraband such as explosives and drugs.

The trailer scans stationary cargo in autonomous drive-by mode, allowing operators to screen unoccupied vehicles for bumper-to-bumper inspection. In optional portal mode, the trailer scans vehicles driven through the X-ray tunnel, which can be used either with automatic cab exclusion or with CabScan® mode to image the entire vehicle. The Eagle T60 ZBx also operates in Z Backscatter-only mode in order to generate Z Backscatter images without the need to deploy the boom. The on-board inspection office can house up to four inspectors to facilitate high-throughput operation.

The Eagle T60 ZBx is built on a commercially available, heavy-duty, solid-frame trailer chassis with 2 rear axles and a standard fifth wheel for rapid and safe connection to standard tractor units capable of towing a load of at least 25 metric tons.

HANDHELD



MINI Z®

Handheld Imaging System



On-the-go inspection of suspicious objects in constrained or hard-to-reach areas.

The MINI Z handheld Z Backscatter® screening system is a lightweight, ergonomic imaging system that provides fast, portable, real-time detection of hidden organic threats and contraband such as plastic guns, ceramic knives, and explosives. With its small form factor and single-sided imaging, the MINI Z system can scan a wide variety of targets, such as car doors and fenders; tires; furniture; packages; and the interiors of boats, vehicles, and aircraft. The MINI Z system is inherently low dose and features reliable and redundant safety subsystems.

The scanner unit interfaces with a dedicated tablet PC via Wi-Fi or direct Ethernet tether. The system operator controls the scanning function using a simple, intuitive graphical user interface (GUI) on the tablet. The MINI Z system scans objects at an optimal speed of 6 in/sec and can be operated immediately with no set up required—making it ideal for rapid, "on the go" inspections of suspicious objects in tight confines and hard-to-reach areas.

The Enhanced Detection Panel option provides the user with the ability to perform transmission imaging with the MINI Z system to detect metallic threats such and guns and knives. The operator connects the panel to the MINI Z system with the included cable, selects transmission imaging from the GUI, places the panel behind the object being scanned, and performs a typical MINI Z scan. The transmission image is displayed simultaneously with the Z Backscatter image on the tablet.

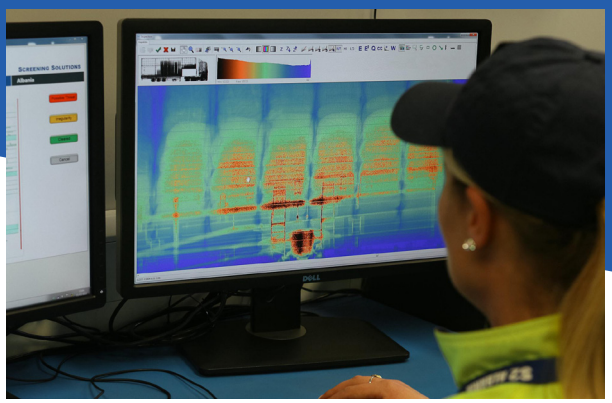
COMMAND & CONTROL



CERTSCAN®

CertScan®

Command & Control Center



Integrated inspection and intelligence for improvements in operational efficiency and security.

CertScan transforms data into intelligence by collecting and integrating your logistics and screening information into a user-friendly common operating platform for true command and control (C2) of your security operations, increasing efficiencies and inspection capabilities.

The CertScan integration platform combines data from multiple sources in your inspection operation and supports application-specific business rules to automate manual processes and control workflows, allowing you to manage increasing traffic and gain more actionable intelligence from your data.

Within CertScan, processes can be managed on the fly using the agile decision flow system, so you can make decisions as information becomes available to adapt concept of operations (CONOPS) in dynamic and kinetic environments. CertScan automatically manages system tasks through the workflow function and presents the right intelligence to the right people to make targeted decisions, freeing up personnel to focus their attention on assigned roles.

CertScan allows you to share results and build your intelligence network, reporting system health, user stats, and decisions. Training tools are also available, ensuring your personnel and resources are up to date with critical skills.

TRAINING



Training Programs

Enhanced Security and Efficiency



For real-world training using the same methods, processes, and tools from successful operations.

Our S2 University Training programs ensure your personnel are motivated and prepared for the inspection challenges they face in their respective roles. S2 University image analysis training is designed to provide a training experience that is as close to real-world operations as possible.

Accordingly, students are trained using X-ray images from live inspection operations that have not been modified and represent actual streams of commerce.

The training program uses the same Common Viewer that is installed on S2 Global's CertScan® integration platform and encompasses the image enhancement tools used for live operations. The Common Viewer is largely icon driven and does not require familiarity with the graphical user interface (GUI) of a specific manufacturer for effective use.

We develop solutions tailored to the specific needs of each customer—including language, location, or inspection requirement to ensure your staff is trained in the most convenient manner.

S2 University consists of the following components:

- **Pre-Screening**—The X-Ray Pre-Screening Test is an S2 University innovation that assesses visual acuity and analytical aptitudes before operations begin, including color recognition, spatial recognition, pattern recognition, memory recall, threat detection, and more.
- **Initial Training**—Students gain an understanding of the trends and concerns that impact security inspection processes and learn how to (a) effectively and efficiently conduct image analysis, (b) identify a range of potential threats and items of interest, and (c) use advanced inspection analysis software. A variety of learning activities drive the acquisition of skills and knowledge, including instructor-led classroom sessions, individual e-learning courses, and facilitated group discussions.
- **On the Job Training (OJT)**—Upon completion of classroom training, students perform image analysis in an operational environment using the CertScan Common Viewer, applying their newly acquired skills while being observed by an S2 University trainer. Any deficiencies are noted and reflected in Remedial Training for the student.
- **Recurring Training**—To ensure that students remain proficient in the skill sets acquired during initial and OJT training, we recommend recurring training as "refreshers" on a customer-determined schedule. Recurring training also allows image analysts to stay current on the latest types of concealment techniques and threats.
- **S2 University Learning Management System (LMS)**—A proprietary, cloud-based, enterprise-ready software application for customer use to develop e-learning programs; deliver training; and track, report, and manage all aspects of their training ecosystem. LMS applications are commonly used by government agencies, businesses, and educational institutions to optimize learning environments and introduce efficiencies.

ISO 9001:2015 Certified

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