

PinPoint™

Threat Identification and Alert System



“Detecting explosive materials and IEDs at the checkpoint is TSA’s top priority.”
(2006 GAO Report)



Commercial aviation has for many years been a primary target for terrorist activities. Global terrorism seeks out ways to kill citizens, destroy property and infrastructure, disrupt global economies, and demoralize entire nations. These enemies are opportunistic, and will remain fixated on identifying and exploiting our vulnerabilities.

PinPoint™ addresses TSA’s and the world’s top aviation security priority by providing automated detection of threats for passengers where they are the most vulnerable – checkpoint. PinPoint’s first-to-market, proprietary, state-of-the-art image analysis technology is based on an iterative transformational divergence process that identifies the “*unique signatures*” of image objects not able to be discriminated and identified by the human eye, and even more importantly, to existing image analysis technologies. To locate and identify a threat’s presence in an image PinPoint requires no *a priori* knowledge of the object’s shape, volume, texture or specific density.

CHECKPOINT CHALLENGES

Governments around the world conduct covert operations to assess the operational effectiveness of their screeners and their security protocols. Well publicized news reports have revealed the results of these covert operations. Considerable gaps continue to exist in security at checkpoints, in spite of major investment in advanced hardware technologies.

Current checkpoint security remains challenged by the following obstacles:

- Screener training cannot compensate for the limitations of human vision;
- Image analysis is a subjective, capricious interpretation that relies almost entirely on human intervention;
- Metal detection, specifically guns, is limited to those detectable by pattern recognition;
- Automatic explosive detection capabilities are minimal to none;
- Organics, such as food items and toiletries, appear identical to explosives;
- Cluttered baggage renders detection of any individual item difficult, if not impossible; and,
- Explosives have no defined shape.

Image Without PinPoint



PinPoint Processed Image



THREAT - OPEN BAG

ABOUT GUARDIAN

Guardian Technologies International, a wholly owned subsidiary of [Applied Visual Sciences, Inc.](#) (OTCBB: APVS), produces automated target recognition algorithmic software using proprietary advanced imaging analytics and technologies for airport screening and other security applications. Guardian’s PinPoint™ solution automatically and accurately recognizes specified targets such as explosives, weapons and contraband items, to improve throughput and enable more efficient and appropriate responses.

The impact of Guardian’s industry-first computer-aided-detection technologies is immediate and profound for helping to eliminate human error in the decision-making process. Our software solutions can be seamlessly installed to compliment existing imaging devices, such as baggage scanners to scan the contents of any image and immediately identify items of interest not easily discernable by the human eye.

In a world of expanding dependence on imagery, increasing investment in the production of more and higher quality images, the human factor remains the consistent and limiting factor in image analysis. Guardian provides the automated analysis and detection technology to significantly reduce ‘false positives’ and improve detection to levels not previously thought possible.

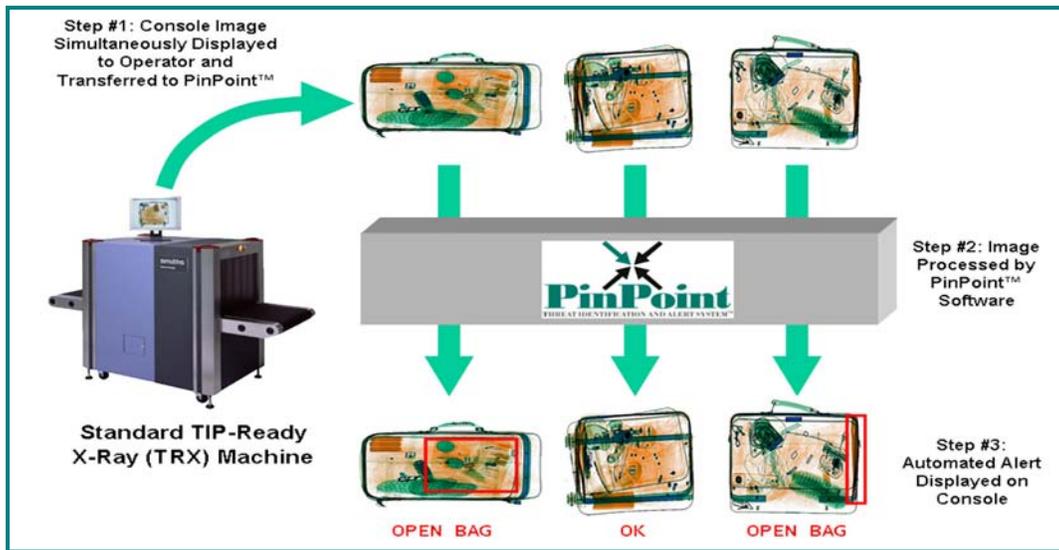


PinPoint™ is a post-image acquisition analysis solution designed to operate with commercial-off-the-shelf (COTS) radiographic scanners. PinPoint™ incorporates two Guardian-developed underlying core technologies: *Intelligent Imaging Informatics™ (3i™)* and *Signature Mapping™*.

Intelligent Imaging Informatics fuses three image processing and analysis paradigms: advanced image processing (Signature Mapping), contextual imagery analysis, and supervised machine learning.

In the domain of image processing, the power of Signature Mapping's algorithms to segment and differentiate very similar materials makes the other two domains far more useful and powerful in distinguishing threat materials from non-threats.

Signature Mapping applies a dynamic and interactive process to the x-ray image that causes groups of pixels related to one another, through their association as part of the representation of a particular group (e.g. – an explosive), to react or respond collectively. Ultimately, such distinctions emerge as the *unique signature or fingerprint* for that material.



PINPOINT PERFORMANCE BENEFITS

- Provides automated explosives detection capability for existing x-ray scanners
- Improved explosive detection rates
- Low 'false positive' rate
- Reduces security overhead, manpower costs
- Improved screener performance, automatic screener alerts
- Compatible with existing in place scanner equipment through API
- Incremental investment for "next generation" solution
- Improved passenger throughput
- Enhanced air travel safety

MINIMUM COMPUTER REQUIREMENTS

- Intel Pentium 4 Chipset (newer than 845)
- Pentium 4 CPU – clock speed of 3.0 GHz or higher
- 100GB, 8MB Cache Hard Drive or higher
- ATAPI/IDE CD-ROM Drive
- 1GB DDR400 RAM or higher
- 10/100 Ethernet Network Interface Card
- 16MB Video Card or higher
- USB port(s)

ADDITIONAL PINPOINT APPLICATIONS

- Cargo Scanning
- Body Scanning
- Small Parcel Scanning (Schools, Hospitals, Office Buildings)
- Satellite Image Enhancement & Identification
- Illegal Currency & Drug Detection

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