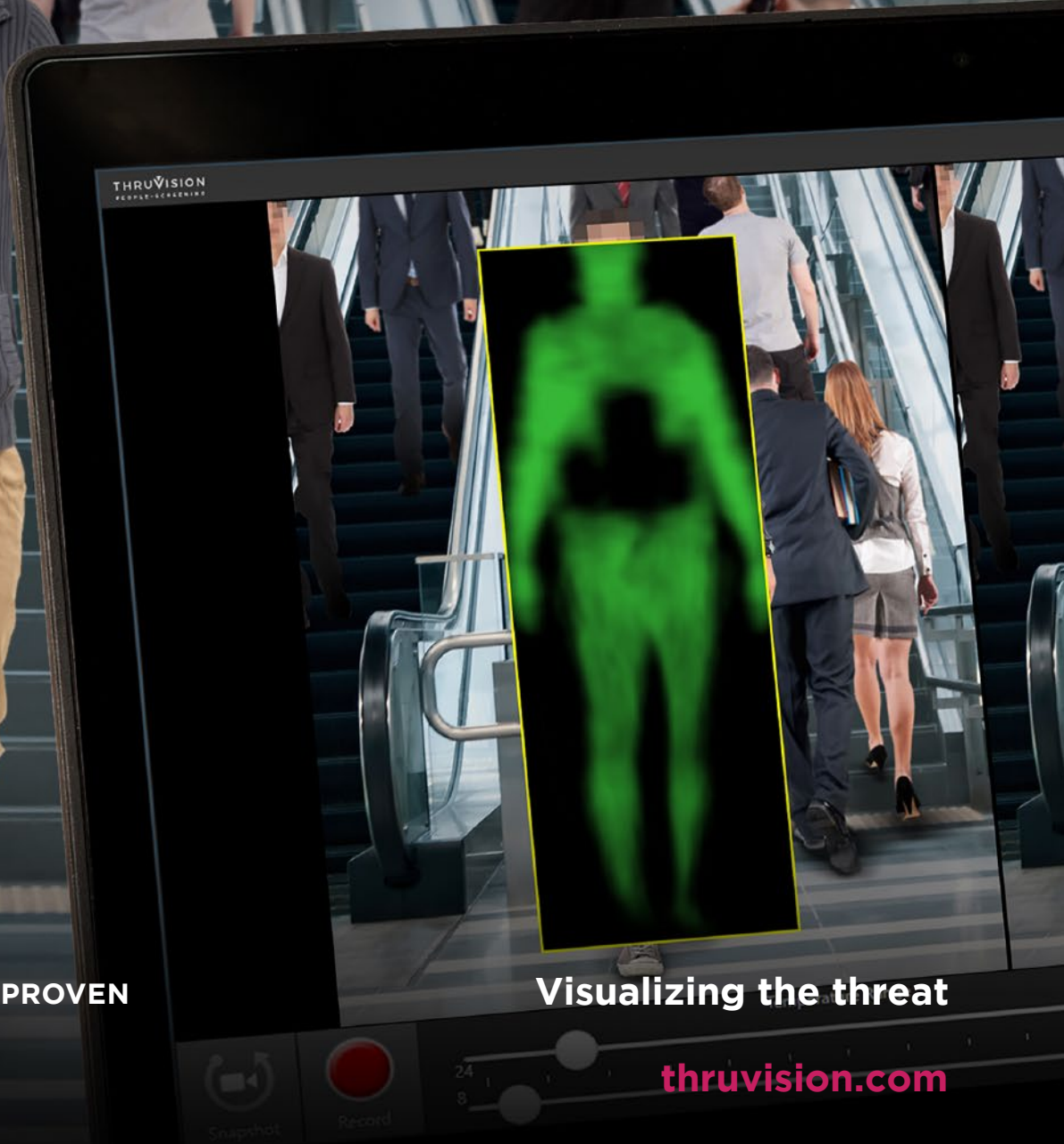


# Stand-off People Screening: Revolutionizing the Security Checkpoint

A Whitepaper from Thruvision



FAST ▼ SAFE ▼ PROVEN

Visualizing the threat

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# Stand-off People Screening: Revolutionizing the Security Checkpoint

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### Executive Summary

Terrorist attacks on public venues and surface transportation has made *high throughput, "stand-off" people screening* an urgent security requirement. But while the concept is straightforward, implementing solutions that are fast, safe and effective has been a major challenge.

This whitepaper reviews the people screening technology landscape and shows how *passive terahertz technology* represents the best solution for this critical security requirement.

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### The Growing Security Imperative for High Throughput Stand-Off People Screening

While aviation remains a major target, terrorists are increasingly targeting surface transportation and public venues. A 2015 MIT study, "Has Successful Terror Gone to Ground?" concluded there is strong evidence that terrorists have shifted to attacking surface transit using concealed person-borne threats. Attacks at Port Authority of New York & New Jersey, Times Square, and the Boston Marathon underscore this conclusion.

### New Security Requirements and Limitations of Current Security Checkpoints for People Screening

For decades, the model for people screening has been the "checkpoint": persons divesting items, and then going one-by-one through metal detectors or body scanners.

But in light of terrorism's changing modus operandi, where busy, crowded public venues are at risk, new requirements for people screening have emerged:

- **"Stand-off" threat detection:** Stand-off threat detection refers to the ability to detect a concealed threat at a distance from both security personnel and a potential target. Given that suicide attacks have become a standard terrorist tactic, security personnel need stand-off technologies that can detect concealed threats – well before they reach a checkpoint or target.
- **Safety, privacy and respect:** The screening of people raises issues of health, privacy and respect. The use of ionizing radiation has caused public backlash against current types of airport body scanners. Another issue is privacy, specifically the fear that people screening could reveal anatomical details of a person. Finally, there is the issue of respect: people do not want to be repeatedly scanned by a metal detector, or have a physical pat down.
- **Detection of non-metallic as well as metallic threats.** Terrorist tactics have evolved to use non-metallic threats concealed in their clothing. Airport body scanners have severe limitations which limit their real-world effectiveness: they are slow, immobile and expensive to operate.
- **Real time threat visualization:** In a busy public venue or surface transportation facility, security personnel have to make decisions quickly. Mistakenly responding to false alarms can be very costly. Security personnel need information in real time, and they need to know the shape, size and location of the threat. Current people screening technologies operate on a non-real time "alarm" only basis: they can tell "something" is concealed but little else. And they suffer from high false alarm rates. Worse, they require divestiture of any items that could cause a false alarm – further slowing the screening process.
- **High throughput:** People screening technologies must maintain an acceptable level of user throughput – or they will simply be rejected by the public. Adding to this challenge: "acceptable throughput" at an airport checkpoint is much lower than "acceptable throughput" in surface transportation. Airport checkpoints can process at best *hundreds* of passengers per hour, surface transport and public venues must handle *thousands* of rapidly moving people per hour, and people screening technologies must be able to deal with this volume.
- **Flexibility and mobility:** Metal detectors and body scanners are hard to move and require dedicated power and space for screening lanes, staff, divestment tables etc. Moving them to respond to changing requirements takes days. To be effective, people screening technology must be compact, easily moved and redeployed, with no fixed infrastructure.

## Limitations of Current People Screening Technologies

### Metal Detectors

The most common people-screening technology – metal detectors – are relatively inexpensive and can be effective for detection of guns and knives. However, they cannot detect non-metallic threats such as plastic or liquid explosives, and due to high false alarm rates, they can require a secondary physical (and highly intrusive) pat down.

### Airport Style Body Scanners

Like metal detectors, they have a high rate of false alarms, requiring divestment procedures. As a result, systems are slow (maximum throughput of about 250 persons per hour), and raise privacy and safety concerns due to their use of ionizing radiation. Finally, they are immobile, have a significant physical footprint, and require fixed infrastructure for deployment.

### K-9 Dog Teams

K-9 dog teams have been used for people screening for many years. They have a deterrent value, are mobile and are effective at narcotics and explosives detection. However, they are expensive to operate and they require specialized handling, training, and re-certification, they are not suitable for as a primary people screening tool.

As Table 1 indicates, all of these people screening solutions have significant shortcomings:

	Walk Through Metal Detectors	Airport Style Body Scanners	K-9 Dogs
Stand-off Threat Detection			
Real Time Threat Visualization			
High Throughput			
Safety, Privacy and Respect			
Flexibility and Mobility			
Detect Non-metallic Threats			

Table 1: Current People Screening Solutions Comparison Matrix

*Stand-off threat detection provides security personnel the time and space to take action to stop mass casualty weapons like Personnel Borne-IEDs.*

### Thruvision's Passive Terahertz Technology

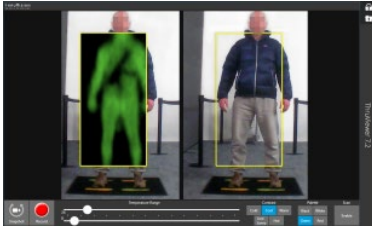
Passive terahertz imaging has unique properties that make it well suited for stand-off people screening:

- Passive terahertz technology does *not* emit radiation.
- Provides instant stand-off threat detection – it can identify concealed objects at distances up to 25 feet, in real time.
- Does not generate images of anatomical details – only of the concealed object.

Thruvision has developed the first high throughput, stand-off people screening system:

- **Stand-Off Detection:** Thruvision can detect concealed threats at up to 8 meters or 25 feet. This gives security personnel the time to stop threats from reaching their target.
- **Safe and Respectful.** Thruvision does not emit energy. It is passive: it gathers energy naturally emitted by persons, and generates images of a concealed item, not a person's anatomical features. Thruvision is completely safe and may be used to screen any person, including pregnant women and people with pacemakers.
- **Comprehensive threat visualization.** Thruvision detects any object concealed beneath a person's clothing. This includes metallic threats as well as IEDs, plastic explosives, ceramic threats and liquid threats.

- **High Throughput Real Time Threat Visualization.** Thruvision detects threats on people as they move and does not require time consuming divestment. Combined with its real time threat visualization capability, Thruvision reduces false alarms. Thruvision can screen up to 2,000 people per hour.
- **Mobile and Flexible.** Thruvision is lightweight and compact (about size of a large tower PC). It does not require special power or fixed infrastructure and can be rapidly moved based on customer requirements.
- **Low total cost of ownership.** Thruvision has significantly lower total cost of ownership than either airport body scanners or K-9 dog teams, and is easier to operate and maintain as well.



	Walk Through Metal Detectors	Airport Style Body Scanners	K-9 Dogs	Thruvision Passive Terahertz
Stand-off Threat Detection	⊘	⊘	⊘	●
Real Time Threat Visualization	⊘	⊘	⊘	●
High Throughput	●	⊘	●	●
Safety, Privacy and Respect	●	⊘	●	●
Flexibility and Mobility	●	⊘	●	●
Detect Non-metallic Threats	⊘	●	●	●

Table 2: Current People Screening Solutions vs. Thruvision Passive Millimeter Wave System

Over 200 Thruvision systems have been successfully deployed worldwide. Having successfully passed US Transportation Security Administration (TSA) testing, Thruvision is being used for facility protection, customs and border control, mass transit and aviation security, and public area security screening.

## Conclusion

People screening has long been one of the toughest challenges facing security professionals. Thruvision's passive terahertz people screening solution has demonstrated that it can be effective in a variety of applications. Given the significant recent technical advances, security professionals should make time to further investigate this exciting and powerful new technology.

### About Thruvision

Thruvision is a global security technology firm with offices in Washington DC and Oxford, England. To learn more, visit [www.thruvision.com](http://www.thruvision.com).

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Thruvision Passive Terahertz People Screening System