

# Homeland Protection and ETD Technology

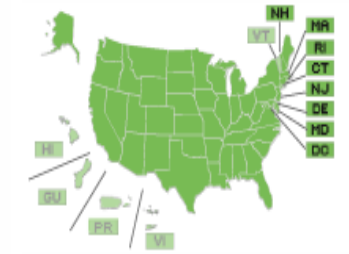
Singapore, 21<sup>st</sup> November 2006



# Assessing the Risk to the Homeland

## Assessing the risk:

- What is the threat?
- Who poses the threat?
- How does the threat manifest itself?
- Is the threat changing?
- If so, how?



## Homeland Security, Law Enforcement and Crime Prevention agencies should keep in mind that:

- There may be more than one threat at a time.
- Risk evaluation is an ongoing process that is used to determine what security procedures must be implemented.
- As threats change, procedures may change.



# Assessing the Risk to the Homeland

An effective security system is based on accurate evaluation of risks.

Once the evaluation is made, a system is then implemented to protect against those risks using five important elements:

- Personnel
- Equipment
- Procedures
- Intelligence
- Control

**Personnel:** Good people are the most important part of the system!  
Alert, dedicated, responsible, flexible, courteous, well-trained  
Trustworthy and team-oriented individuals.



# What is ETD?

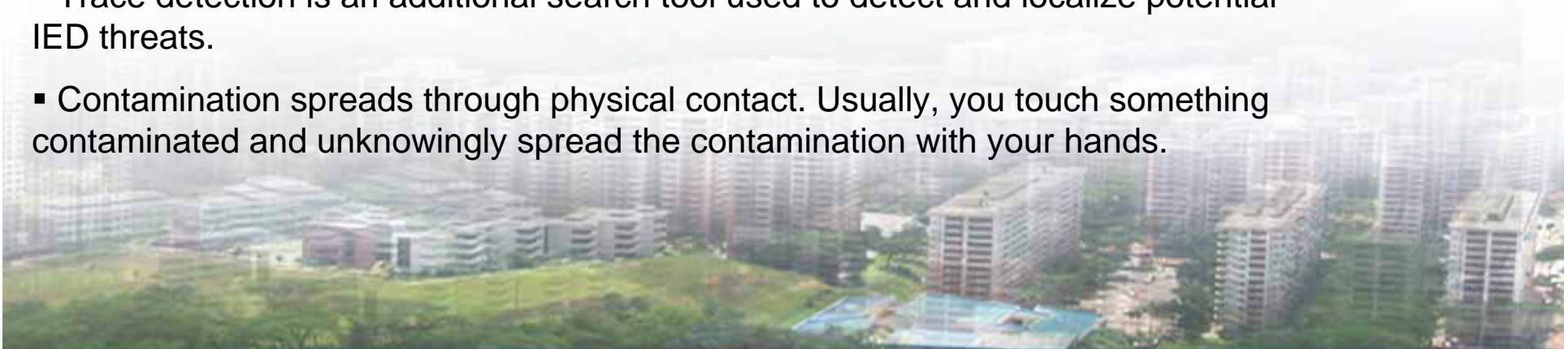
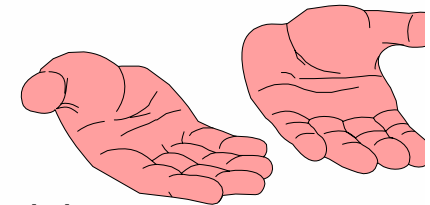
## ETD definition:

- ETD is a technology that detects microscopic amounts of explosive material called Traces.
- Explosives Trace Detection depends on the fact that explosive material particles are sticky and cling to anything they touch.
- Anyone or anything that comes in contact with explosive material is “Contaminated” and is also contaminating everything they touch.



## Why use ETD?

- Trace detection improves the security personnel’s ability to detect the “Explosive Component” of an IED.
- Trace detection is an additional search tool used to detect and localize potential IED threats.
- Contamination spreads through physical contact. Usually, you touch something contaminated and unknowingly spread the contamination with your hands.



# The Pains of the Industry

## Limited Detection Capabilities

- Need to detect home-made explosives
- Slow adaption & response to new threats
- Need for “One-Stop Shop” solutions
- Stand alone technologies

## High Cost of Ownership

- Cost of ownership (price & maintenance)
- Annual cost of consumables
- ETD is generally limited to airports only

## Limited Operational Suitability

- Desktop systems are not portable
- Portable systems are not reliable enough
- Cumbersome sampling methods



# Scientific Breakthroughs

## Sensitivity - Physics

- HF-QCM sensors
- Unique design of sensor array
- “Electronic-Nose”

## Selectivity - Chemistry

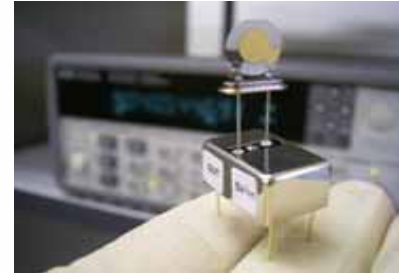
- Active chemical coatings
- Chemical deposition technology
- Molecular identification

## Pattern Recognition

- Digital signature database
- Pattern recognition algorithms

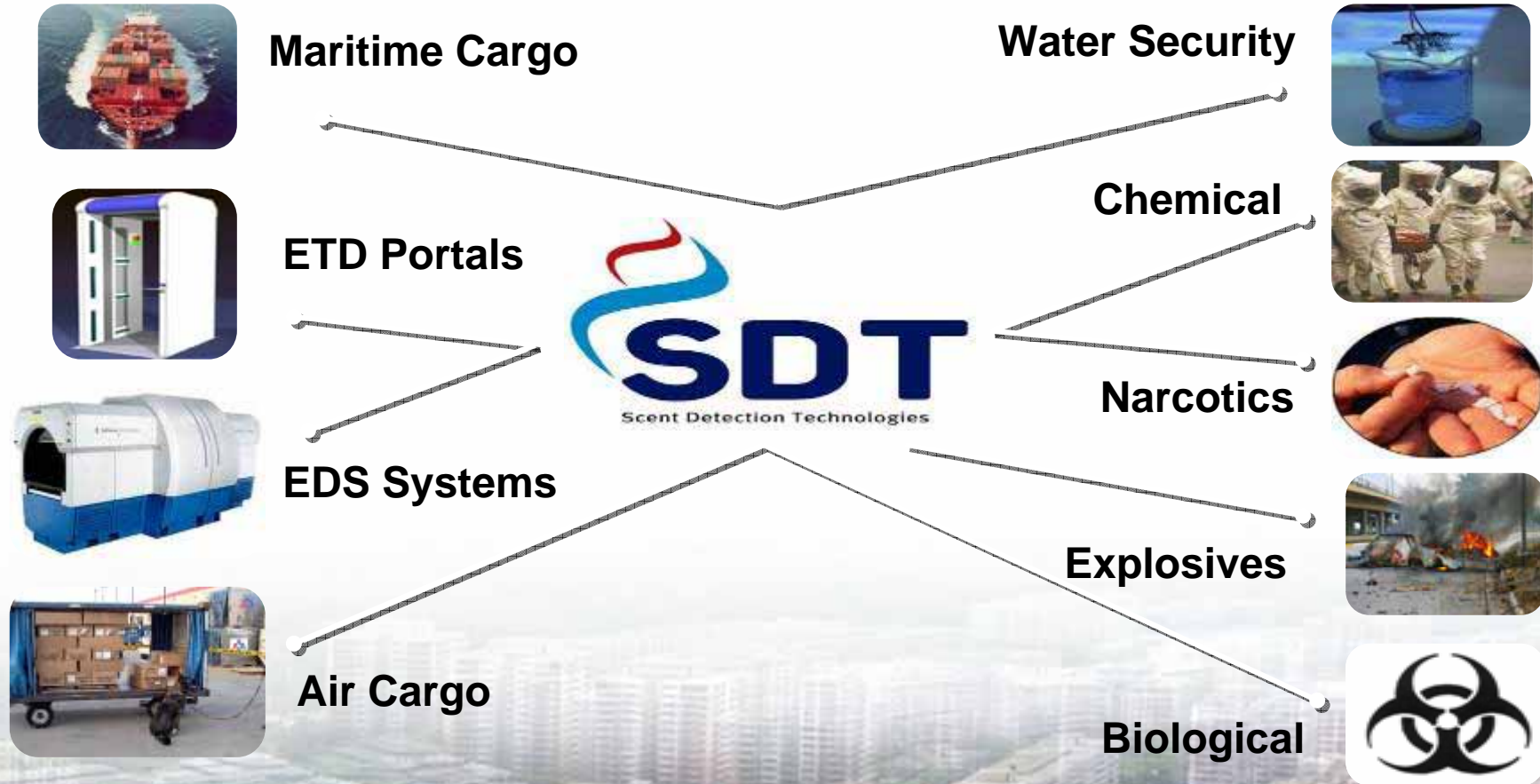
## Electro- Mechanics

- Self-diagnostics & calibration
- Automatic cleaning process



# What Differentiates SDT?

**Core Sensors' Technology with a Wide Range of Applications**



# Mini-Nose™ 1000 Series

**PCS**  
SECURITY  
MAKE IT S CU

## Competitive advantages:

- Sensitivity & selectivity to all explosive materials
- Detection & identification of improvised explosives
- Lightweight & portable
- Non-radioactive / green technology
- Fast warm-up time
- Self adaptable to different working environments
- Self cleaning & calibration
- Field maintainable
- Wi-Fi & Bluetooth transmission
- Tested & certified by the Israel Military Industries (IMI)



## Fills a significant gap in the market:

- Urgent need to detect improvised explosives
- Global market need for portable & easy-to-use trace detectors



# Operational Testing & Evaluation

## **ETD pilot programs:**

- Operational Testing and Evaluation of the Mini-Nose 1000 Series
- Applications include the use of ETD in aviation and non-aviation sectors

## **The first 3 pilots have been initiated at:**

- Ben-Gurion International Airport - Israel Airport Authority
- Tel-Aviv Central Rail Station (Mass Transit) - Israel Railway Authority
- High-threat facilities - Israel Military Industries

## **The next pilots will be initiated in the Q4 of FY06 and Q1 of FY07:**

- The Israeli Parliament in Jerusalem - Government of Israel
- Special Forces - Israel Defense Forces
- International Border Crossings - Israel Police
- Other pilots will be carried in the US, Europe and Asia/Pacific region



# Ongoing R&D Activities

## SDT is continuing Research and Developments efforts to:

- Increase explosives detection capabilities
- Improve screener/operator efficiency and effectiveness
- Maintain or increase throughput per lane
- Enhance and update operational procedures and training requirements
- Conduct studies to facilitate improvement to screening equipment from the perspective of the field operators.
- Routinely evaluate testing processes and procedures covering:
  - Readiness for duty
  - Vigilance under conditions of stress
  - Preserve passenger privacy while maintaining an effective security posture.
  - Further ETD miniaturization to optimize portability and minimize installments investments.
  - Ensure technology does not introduce a health risk for screeners or passengers.



## Questions & Answers

**Thank you !**

