

# Agent-Based Persistent Surveillance

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## *Problem: Human Endurance*

- n Anti-Terrorism and force protection require concerted, persistent vigilance
  - 24/7 surveillance for changes in environment
  - Consistent surveillance with persistence -- weakest link is monitored just as well as strongest link
  
- n Humans cannot maintain THREATCON Delta-level alertness for longer than 96 hours, but...
  - Terrorists can maintain low-level surveillance indefinitely
  
- n Defense in depth requires multiple layers of surveillance
  - Manually operated or monitored multiple sensor networks and ops centers increase AT/FP manpower requirements
  
- n Persistent surveillance generates voluminous data
  - One estimate has quantified the challenge at 5 terabytes per second

## *Solution: Assistive Intelligent Software...*

### n Persistent

- Software agents perform tedious, repetitive surveillance functions 24/7 with no care and feeding

### n Unifying

- Fuse sensors, sentries, C2 systems in unified semantic space
- Maintain secure transactions

### n Self-Organizing

- Analyze, correlate multiple disparate events autonomously for changes in situation

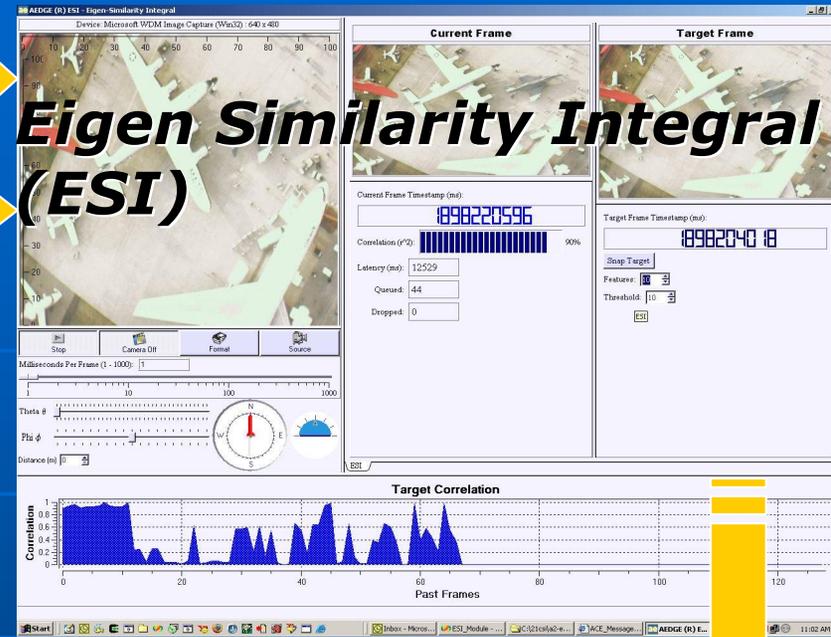
### n Autonomous

- State-of-the-art effective algorithms applied to the voluminous data (automated image processing, etc.)

### n Assistive Decision Support

- Provide alerts, queuing, cueing, and tactical recommendations to the warfighter

# Persistent Surveillance Enabling Technologies



Combining/leveraging complimentary technologies to enable persistent surveillance

- ESI: Computationally effective image feature processing of real-time images is a key enabling technology for persistent surveillance
- HiRSA: Integrated Urban AT/FP Tactical Picture
  - Autonomic Control of LLTV, FLIR, Video Sources
  - Incorporates High Resolution GIS Data
  - DTRA Plume Model Representation
  - Wireless Wearable Computer Links
  - Traditional Tactical Data Links
- HiRSA to deploy Aug 2004 with 1MEF in Iraq

