



UNRESTRICTED
WARFARE
SYMPOSIUM

14 - 15 MARCH 2006

MEETING THE UNRESTRICTED
WARFARE THREAT:
INTEGRATING STRATEGY,
ANALYSIS AND TECHNOLOGY

Tagging, Tracking, Identifying, and Locating Humans: A Systems Approach

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Background

- **Adversary networks are complex**
 - No two are the same
 - Composed of people and things
- **To disrupt the network you have to find the network—or its critical components**
- **Humans are at the heart of the networks, regardless of the size or the complexity**

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Significant TTIL Findings

- **Defense Science Board: Summer 2004 Study**
 - Provide a cohesive ability to localize, identify, and track unconventional war targets—such as people
 - Payoff is a balance/advantage to our troops and the process of peace
 - Added benefit will be realized for first responders, law enforcement, etc.
- **OSD: Quadrennial Defense Review**
 - Locate, Tag, Track Initiative
 - Irregular Warfare Initiative
- **OSD: Investment Strategy for Nontraditional Applications of Biotechnology for the DoD**
 - Basic and applied research is required to develop a benign tag for tagging a terrorist and terrorist networks

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TTIL Humans: Objectives and Methods

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Objectives

- Apply a comprehensive first principle systems approach to TTIL of human targets
 - Optimize technology to phenomenology
 - Integrate data, command and control, and CONOPS
 - Perform human TTIL demonstrations

Methods

- Functional decomposition and cataloging of the phenomenology associated with the human body
- Catalog sensing/measuring technologies
- Determine unique means and methods to gain access to the phenomenology of interest
- Identify concepts of operation and concepts of employment

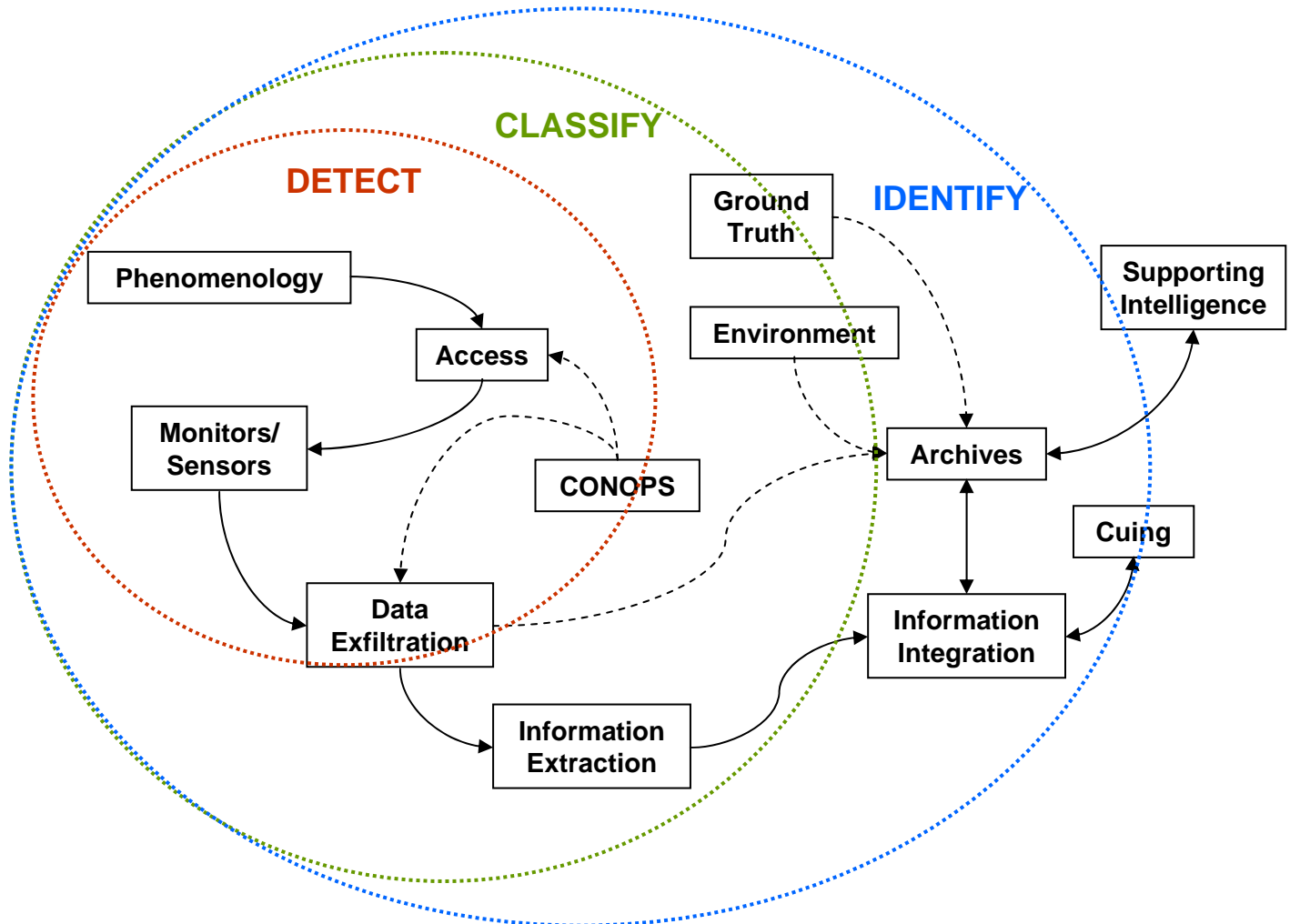


TTIL Humans: Approach

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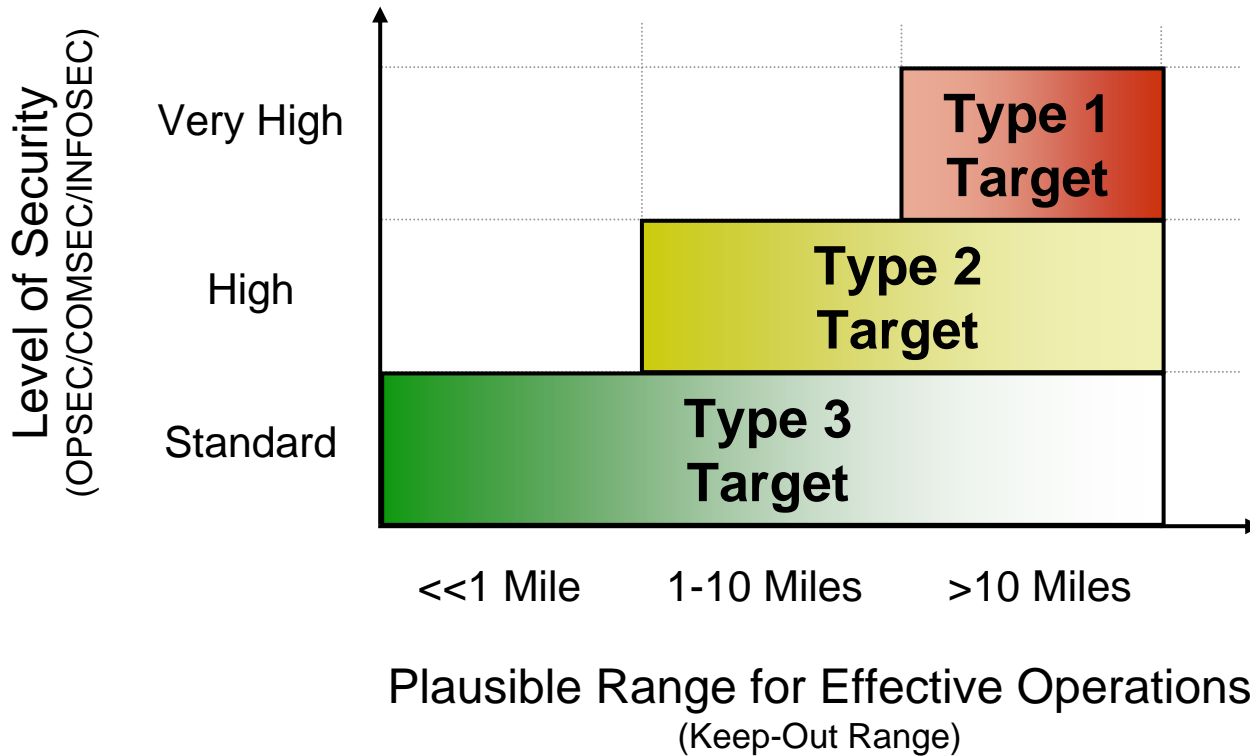


TTIL Humans: Target Characterization

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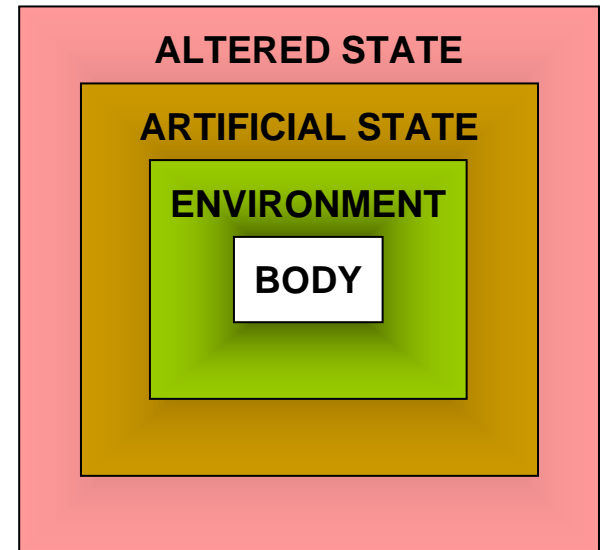
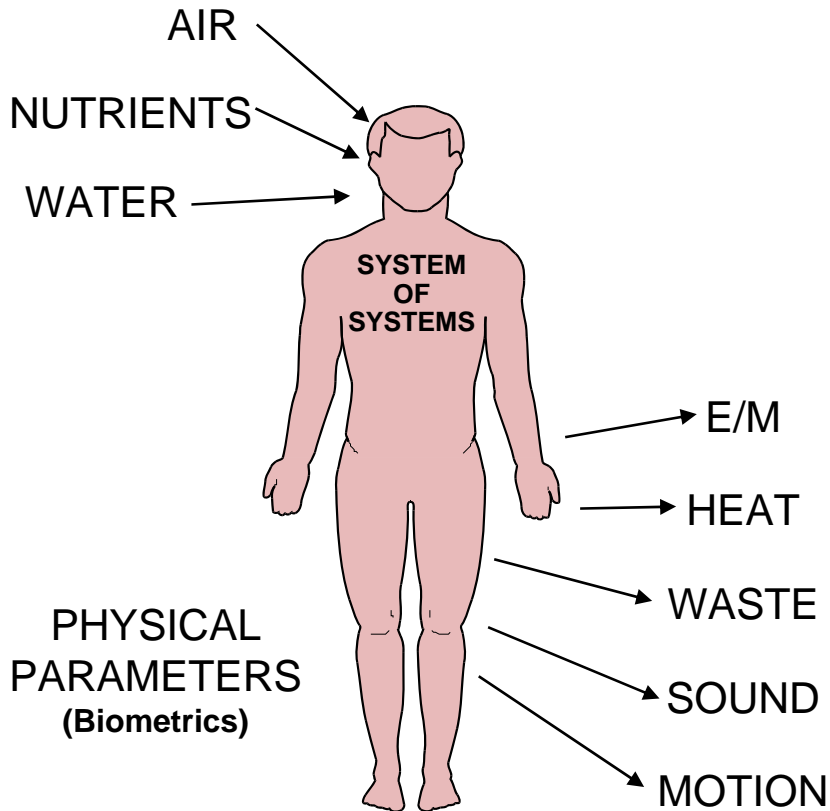


TTIL Humans: Phenomenology

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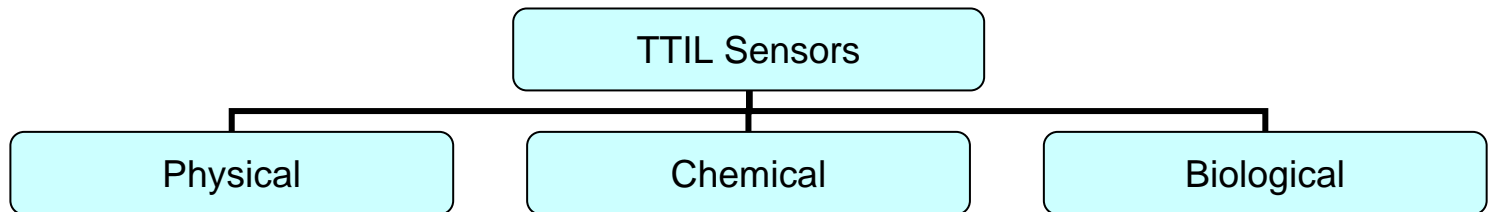


TTIL Humans: Sensors/Monitors

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- **Electro-Optic**
- **Terahertz**
- **Radio-Frequency**
- **Acoustic**
- **Electric Field**
- **Nuclear**

- **Mass Sensor**
- **Optical Sensor**
- **MEMs Sensor**
- **Gas Chromatography**
- **Conductometric**
- **Electrochemical**
- **Ion Mobility**
- **Mass Spectrometry**

- **Fluorescence**
- **Bioluminescence**
- **Optical sensor**
- **Mass sensor**
- **Electro-chemical**
- **DNA (Genetic)**



TTIL Humans: Way Forward

- **Technology Options Matrix**
 - Technology means to prosecute signatures
- **Concept Development**
 - Scenarios
 - Context for organizing technology “toolkits”
 - Impart CONOPS and connectivity
 - Technology Toolkits
 - Orthogonal phenomena
 - Complementary characteristics

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TTIL Humans: Acknowledgements

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Reach out and touch someone...
Anywhere,
Any time!

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