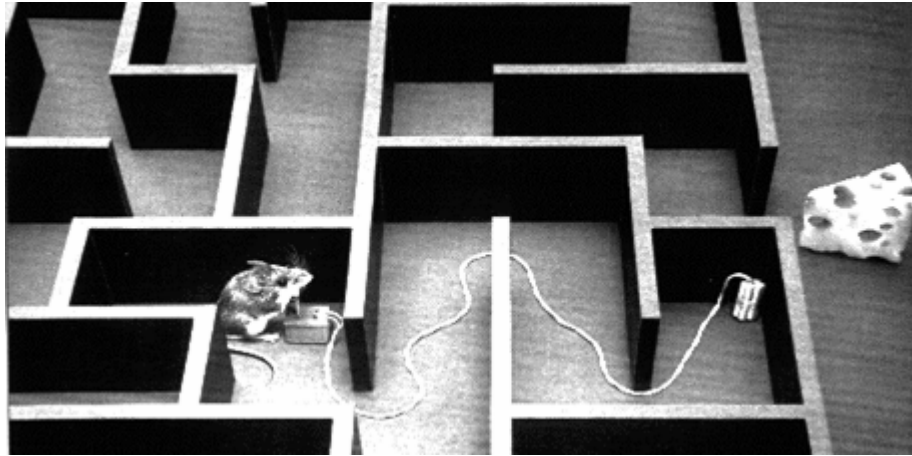


Technology Transition Overview



How do I get the Cheese?

October 25, 2005

PRESENTED TO:
Conference on Science & Technology
for Chem-Bio Information Systems
Albuquerque, NM
October 25, 2005

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Chief, Advanced Technology
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“A hiatus exists between the inventor who knows what they could invent, if they only knew what was wanted, and the soldiers who knew, or ought to know, what they want and would ask for it if they only knew how much science could do for them. You have never really bridged that gap yet.”

***Winston Churchill
The Great War, Vol. 4***





Vision

Develop and Sustain a Comprehensive, Agile, and Flexible Transition Program that:

- **Improves integrated, modular, network-centric material response to CBDP Capability Needs**
- **Provides Multiple Program, Agency, Vendor Access**
- **Facilitates Multiple Acquisition/Procurement Opportunities**
- **Maximizes Opportunity For Best Capability at the Right Time**
- **Technology Transition Agreement Process**
 - **Transition Handbook – Jul 05**
 - **Technology Push**
 - **Technology Pull**

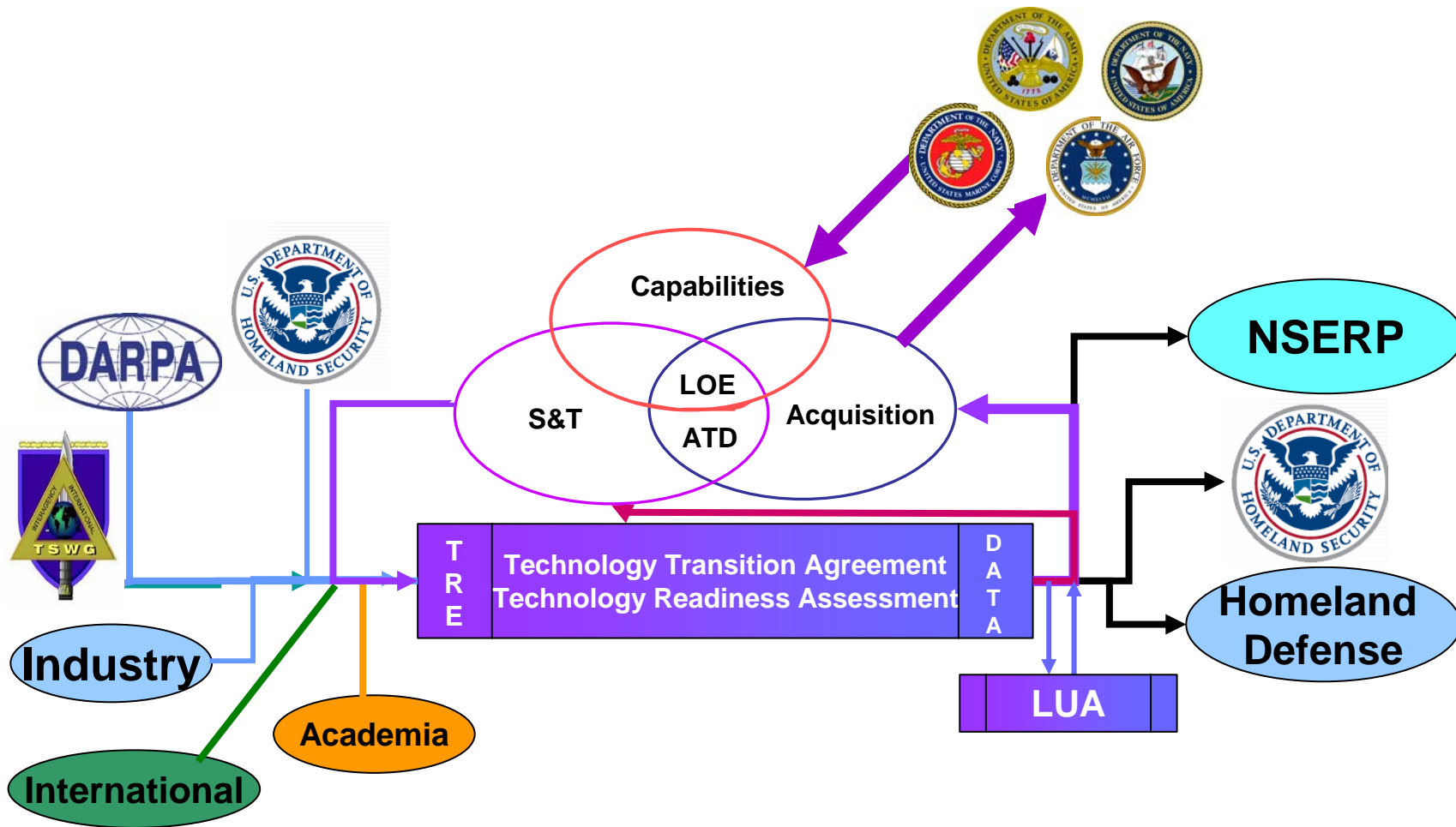


Transition Drivers

- **Shape Future Force Agility, Flexibility and Capability**
 - **Common Interfaces for Systems of Systems**
 - **Modular, Tailorable, and Networked**
 - **Broad Spectrum Capability to Complex CBRNE Environment**
- **Ensure Program Alignment**
 - **Technology Transition Agreement**
 - **S&T Exit Criteria**
 - **Rational POM Build**
- **Defined S&T Strategy**
 - **Traceability**
 - **Trade-Offs**

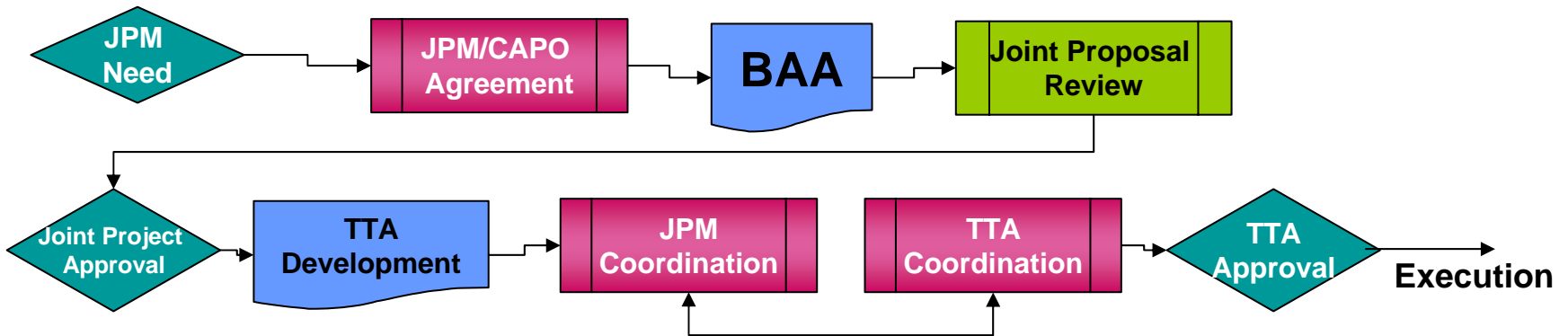


Integrated Transition Process

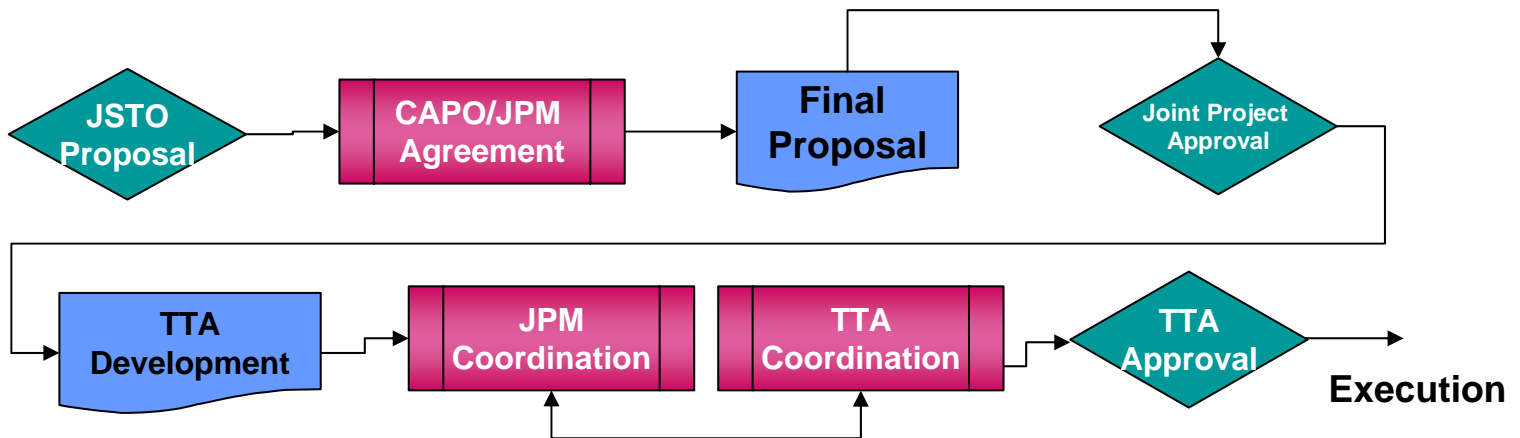


Sources for Capability Development

Technology Pull

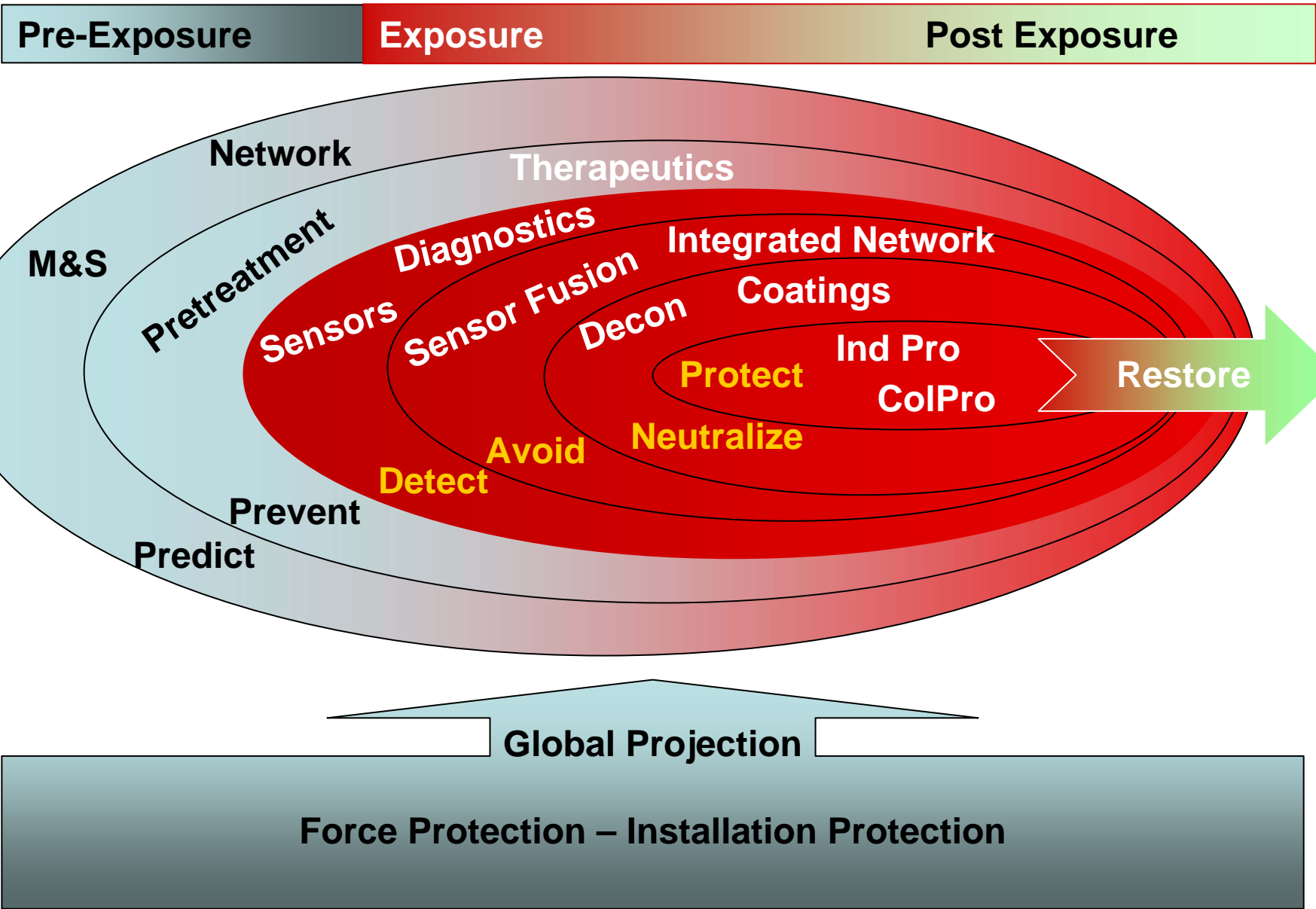


Technology Push







System Solutions to Mitigating the CB Threat



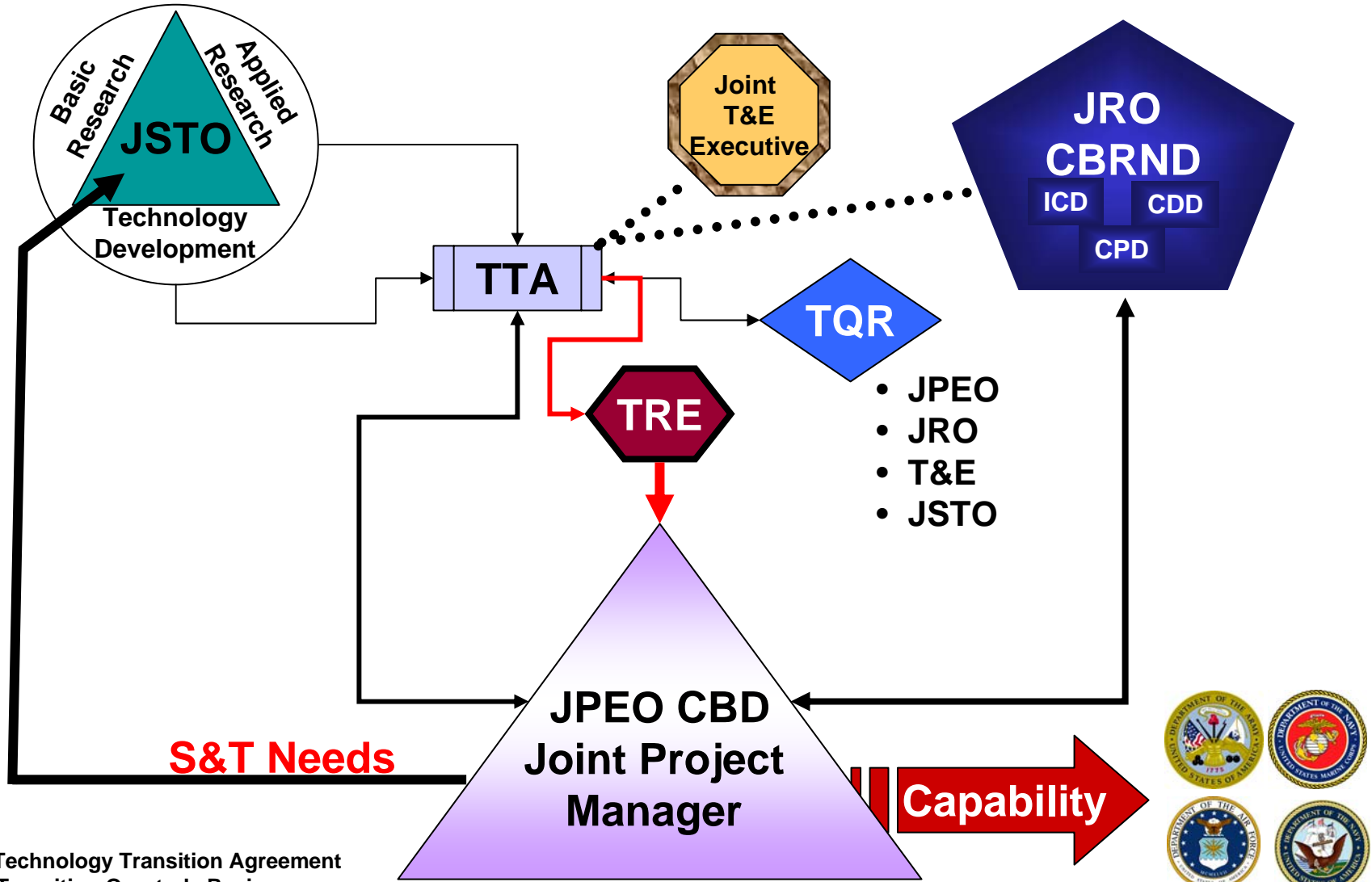


Technology Transition Agreement

- **Required for 6.3 Programs**
 - Identifies Target Program of Record
 - Concept of Use
 - Traceability
- **Technology Development Strategy**  **Acquisition Strategy**
- **Test and Evaluation Strategy**  **TEMP**
- **Contains Information Necessary to Conduct Technology Readiness Assessment (TRA)**
 - Exit Criteria (to include defined Technology Readiness Levels)
 - Receiver Operator Characteristic (ROC) Curve/ Spider Chart (s)
 - Metrics
 - Attributes
- **Agreement Between the JPM and CAPO with Joint T&E Executive Concurrence**

TTAs for 6.3 Programs starting in FY06

Technology Development and Review



TTA: Technology Transition Agreement
 TQR: Transition Quarterly Review
 TRE: Technology Readiness Evaluation



Test and Evaluation Strategy

- **Supports TEMP Development**
- **Developed by the TTA Team**
 - CAPO
 - JPM
 - T&E
- **Coordinated with T&E Executive**
- **Identify Test Process and Infrastructure Impacts Early**
- **Supports Development of the Test and Evaluation Master Plan (TEMP)**



Technology Development Strategy

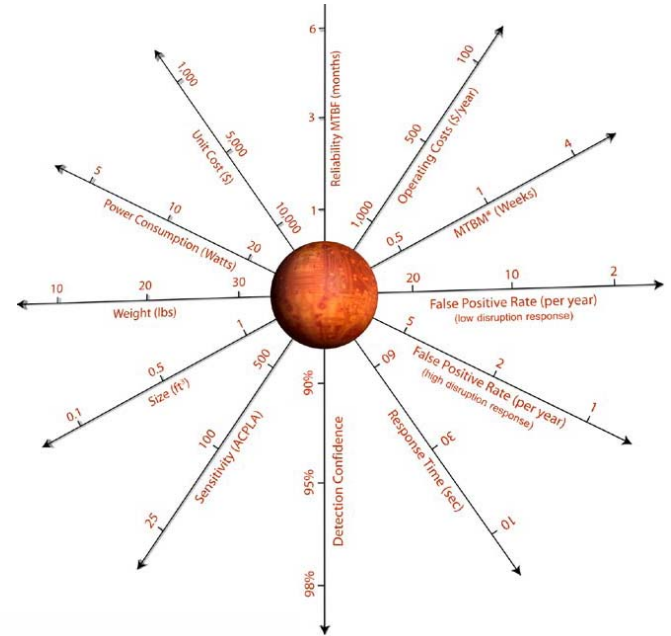
TDS Facilitates:

- **Acquisition Strategy**
 - **Rationale for Evolutionary/ Spiral or Single-Step**
- **S&T Management Strategy**
 - **Cost, Schedule, Performance Goals of S&T Program (Includes Exit Criteria)**
 - **Capability Metrics and Attributes**
- **Complete Description of Technology Demonstration or TRE**
 - **Test Plan**
- **Responsibility of JPM**
 - **Receiver Operating Characteristic Curve**
 - **Spider Chart**
 - **Technology Metrics and Attributes**
- **Captured in TTA for Most CBDP Efforts**

Tools



- Historically, Technologies Transition without Metrics and Attributes to conduct Trade-Off Analyses
- ROC Curves and Spider Charts Characterize the Trade Space:



Key Metrics

- Sensitivity
- Probability of detection
- False positive rate
- Response time

Other Attributes

- Cost
- Power consumption
- Reliability
- Maintenance/Logistics
- Size and weight

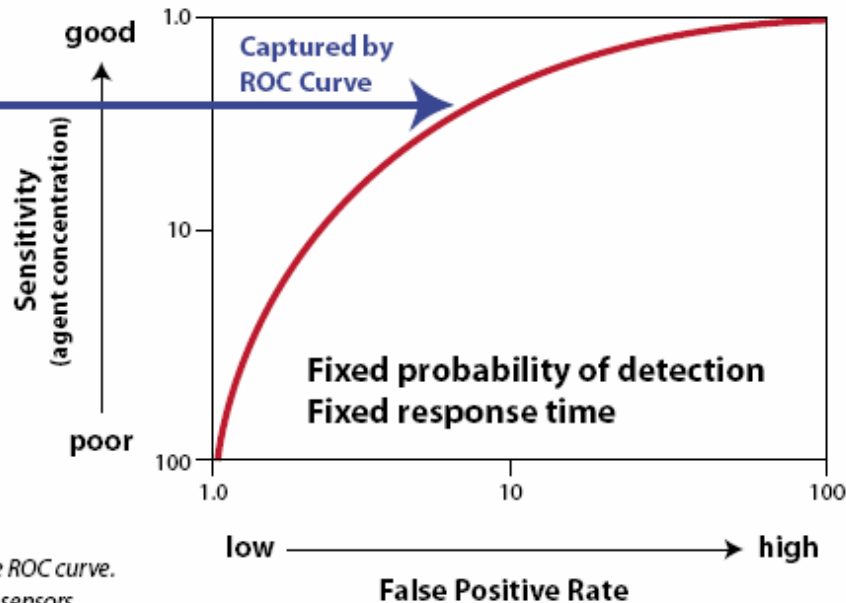


Figure A. The key sensor metrics and their relation to the ROC curve. Other attributes also strongly affect the utility of specific sensors.



Technology Readiness Evaluation

- **Does Not = Test at Dugway**
- **Data to Support Technology Readiness Assessment (TRA)**
 - **Paper Studies and/or Laboratory/ Field Tests**
- **Used to Determine Effectiveness and Suitability of a Technology to Meet Program Criteria as Defined in the TTA**
- **Conducted Prior to a Transition Event to Support a MS Decision, P³I, or Transition to Advanced Development**
- **Responsibility of JSTO ICW JPM**



Technology Readiness Assessment

- **Review of Specific Component or System Determined to Have Met Criteria in the TTA**
- **Conducted By Assessment Panel**
 - **Chaired by JSTO**
 - **JPM and Joint T&E Representation**
- **Conducted Prior to Transition to Advanced Development**
- **All Critical Technologies Assessed**
- **Responsibility of JSTO**



Technology Readiness Levels

Program Development Phase

Basic/Applied Research	Advanced Technology Development	Advanced Component Development	System Development and Demonstration	Production and Operational System Development
1-2-3-4	5-6	6-7	7-8	8-9
<p><u>TRLs</u></p> <p>1 – Basic Principles Observed</p> <p>2 – Technology Concept Formulated</p> <p>3 – Proof of Concept</p> <p>4 – Laboratory Environment Component/Breadboard Demo</p> <p>5 – Relevant Environment Component/Breadboard Demo</p>			<p>6 – Prototype Demo in Relevant Environment</p> <p>7 – Prototype Demo in Operational Environment</p> <p>8 – System Qualified through Test and Demo</p> <p>9 – System Proven in Operation Conditions</p>	

- JPM Defines and Assigns TRLs
- JSTO Responsible for TREs
- Overall System TRL Determined By Lowest TRL of Components and/or Subcomponents



Transition Quarterly Review

- **Organizations Represented:**
 - **JSTO**
 - **JPEO-CBD**
 - **Joint T&E Executive**
 - **JRO-CBRND**
- **Monitors Progress of Technology Transition**
 - **Identify Candidate S&T Technology Areas/Programs for Future Transition and Plan for this Transition**
 - **Review Transition Testing Programs and Plans for Tests and Test Methodology Development**
 - **Report on Transition Tests and Results**
 - **Develop Future Year Program Transition Requirements**
 - **Review Status and Currency of TTAs**



Bottom Line

- **CAPO and JPM Must Coordinate Effectively in Order to Complete Documentation and Processes Necessary to Meet CBDP Technology Transition Needs**
- **JPEO-CBD and DTRA-CBX will Assist/Facilitate this Process**
- **Transition Process Results in Best Available Capabilities to the Right Programs**

**Best Available Capability for the Warfighter
at the Right Price and the Right Time!**



The Reason for Our Success...



... Our People



Joint Program Executive Office



Chemical and Biological Defense