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# **Advanced Technology Clusters**

**Northwest Aerial Robotics Cluster**

**May 20, 2010**



# Purpose

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Discuss development Advanced Technology Clusters to:

## **Support Administration Goals**

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Support small businesses and stimulate regional economic recovery

Develop skilled science and technology workforce

Address robotics as a national security imperative (economy and defense)

## **Support OSD Imperatives**

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Reconnect Academia, Industry and Government Labs

Drive innovation and S&T transition paths

Rapidly prototype and transition compelling concepts to the warfighter



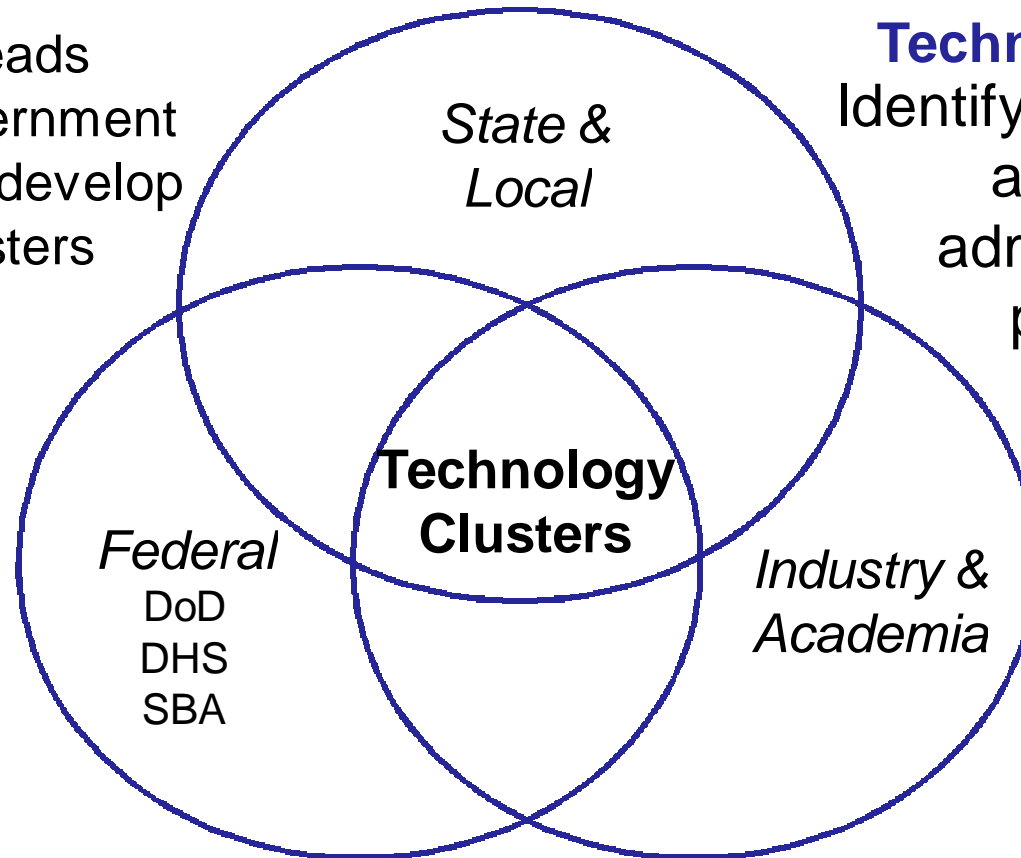
# Emerging Technology Cluster Model

## National Economic Council

Economic leads throughout government collaborating to develop regional clusters

## Office of Science and Technology Policy

Identifying technology areas and administration priorities



**Vision: An integrated National Framework of industry, and government to achieve national defense and economy imperatives**



# Advanced Technology Focus

## Current robotics posture

- Japan the leader in service robotics, US second (National Intelligence Council)
- \$1.0B commercial R&D investment from Japan, Korea and EU
- \$1.05B U.S. R&D investment; 95% from DoD

## DoD historical robotics support

- Tip of the spear in 2001, first in the fight
- Mainly small business technology

## Strategic direction

- Reduce warfighter risk while increasing mission effectiveness (force multiplier)
- Stimulate future workforce
- Develop new economic opportunities

## Expansion to other technology areas

- Support future DoD needs
- Clean energy, manufacturing, etc.



“I believe that robotics can inspire young people to pursue science and engineering”

**Leverage DoD Investment to Support Tomorrow's Economy**



# Mentor Protégé Robotics Initiative: Background (FY2005 - Present)

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- Unmanned Systems Critical Technologies Identification
  - Warfighter Capability Assessments
  - CONOP analysis
  - System performance requirements
  - Enabling technologies
- Protégé Selection
  - Small Business Innovative Research participants
  - Technology demonstrations and assessments
  - Statutory requirements (SDB, WOSB, SDVOSB, HUBZone, Organization Employing Severely Disabled)
- Mentor Protégé Agreement Execution
  - Protégé/Mentor(s) needs assessment
  - MP Agreement w/infrastructure and technology transition objectives
  - Government team serves as facilitator
    - Intra-team collaboration
    - Technology Transition Programs



# Robotics Initiative: Critical Technologies

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- Sensor Processing
  - Automated detection, classification, identification
  - Self Diagnosis
- Data Fusion
  - Mission level COP
  - 4D Visualization
- Sensing Technologies
- Net-Centric Architecture
  - Service Oriented Architecture
  - Data Management
  - Scalable
- Alternative Energy Sources
- Autonomous and Collaborative Systems
  - Dynamic reconfiguration
    - Mid mission
    - Between missions
  - Environmental response
  - Mission level control
  - Self diagnosis
- Secure Wireless Networks
- Modularity
- Open Standards
- Autonomous Launch, Recovery, Maintenance



# A Mentor Protégé Case Study: Lockheed Martin - Geodetics

## The Military Need - Precision Positioning and Navigation



## The Solution - Epoch-by-Epoch™ Network Positioning Unit (ENPU)

- ISO 9001 Certified
- DCAA Approved Accounting System
- Export/Import Licenses
- Full benefits to all employees
- Nunn-Perry Award Winner 2007/2009

## The Results



### Headline News...

**March 2007**

Geodetics Receives Nunn-Perry Award

**August 2007**

Geodetics awarded Army IDIQ Contract for delivery of positioning systems at White Sands

**May 2008**

Boeing, Geodetics Team awarded AF Common Range Instrumentation Contract

**March 2009**

Geodetics Receives Nunn-Perry Award

*"Geodetics growth and expansion of customers' base is*

*of the success of the MP program". – Dr. Lydia Bock, CEO, Geodetics*

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*"Starting as a software only provider, Geodetics is now a full turn-key manufacturer of sophisticated location determinati hardware that DoD is using extensively in their Test & Evaluation community." – Dr. Bill Munslow, MP PM, LMCO*



# Evolution of DoD/SBA Robotics Technology Clusters

## 2008 Hawaii Maritime Autonomous Robotics Cluster

- OSD
- SBA
- Navy/SPAWAR
- University of Hawaii
- HTDV
- AUVSI
- PACOM
- ASA(I&E)

**Focus Areas: Environmental Remediation and  
Maritime Domain Awareness**

## 2009 Michigan Auto Robotics Cluster

- OSD
- SBA
- Army/TARDEC
- Oakland University
- AUVSI
- MI Economic Dev. Corp.

**Focus Areas: Logistics, Force Protection,  
and Medical**

## 2010 Hampton Roads Sensors Cluster

- OSD
- SBA
- ONR/NASA
- Old Dominion University
- AUVSI
- DHS
- Hampton Roads Military Federal Facilities Alliance

**Focus Areas: Port/Harbor Security and  
Critical Infrastructure Protection**

## Current Status

### Small Business Administration

- Actively engaged in small business cluster formation and development
- Developing strategy and structure for small business cluster support.
- Seeks mutually supportive team with DoD to maximize small business success.
- SBA now engaged in the three clusters shown opposite.
- Pursuing MOU/MOA with DoD

### Emerging Cluster Efforts

- Northwest Aerial Robotics Cluster
- Austin, TX
- San Diego, CA

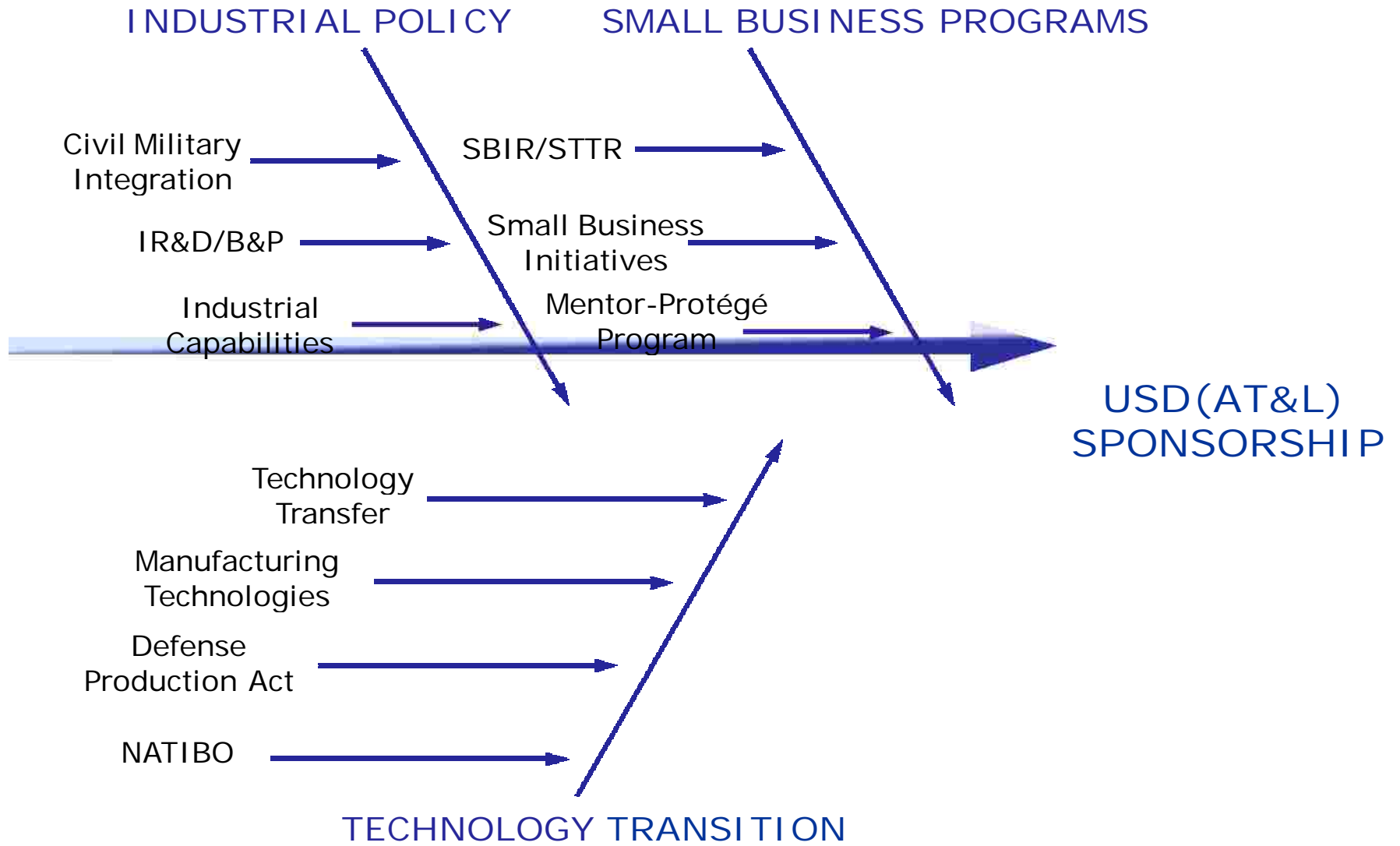
### Teaming Occurring across Clusters

- DTRA Robotic Underground Munition RFI





# What OSD Brings To Technology Clusters





# What SBA Brings to Technology Clusters

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## *Small Business Development and Mentoring*

- Develop “clusters” of small companies that together may team, or individually provide, responsive technology solutions to DoD requirements.
  - Ø Candidates for Mentor / Protégé Program.
  - Ø Candidates for developmental funding
- Identify promising small business technology to DoD
- Identify DoD requirements to small business regional clusters



# Summary

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- **The Advanced Technology Cluster Initiatives offer an excellent opportunity to support the Administration's goals for:**
  - Supporting economic recovery and developing sustainable regional economies
  - Increasing collaboration across agencies among strategic partners such as the Department of Defense and Small Business Administration
  - Supporting the growth of technology based small businesses that are vital in the reset of the American economy
- **The Clusters demonstrate a model for increasing small business market share opportunities by:**
  - Providing regional economic collaboration through joint industry, academic, and government cooperation
  - Providing needed infrastructure to support prototype fabrication, system level evaluation, and business services focused on the individual needs of each participant
  - Providing small business a "seat at the table" early in the requirements formulation stage of a leap ahead capability