



Beyond SBIR Phase II:

“Bringing Technology Edge to the Warfighter”

Arlington, VA

21-23 August 2007

Agenda

**TUESDAY AUGUST 21, 2007
GOVERNMENT PERSPECTIVE**

Technology Transition and Acquisition Excellence: Taking It to the Next Level

Panelists:

- Honorable Claude M. Bolton, Jr., Assistant Secretary of the Army for Acquisition, Logistics and Technology
- Honorable Delores Etter, Assistant Secretary of the Navy, Research, Development and Acquisition
- Honorable Sue C. Payton, Assistant Secretary of the Air Force
- Ms. Katrina G. Wahl, Deputy for Acquisition Management, Missile Defense Agency

Sourcing Innovation in a Consolidated Industry: Sustaining Competitive Edge

Moderator: Ms. Kathleen Harger, Assistant Deputy Under Secretary of Defense for Innovation and Technology Transition

Panelists:

- Mr. John Shakespeare, Washington DC Operations for Enterprise Strategic Growth, The Boeing Company
- Dr. John Waszczak, Director Advanced Technology and SBIR/STTR, Raytheon Company

Leveraging SBIR to Address Technology Needs

Moderator: Mr. Richard McNamara, PEO Submarines, Naval Sea Systems Command

Panelists:

- Ms. Kay Griffith-Boyle, PEO C3T Army
- CAPT Shane Gahagan, USN, PEO(A) Program Office, Navy
- Mr. Paul Koskey, Advanced Technology Innovation Team Leader, MDA

Tapping Small Business for Technology Solutions: SBIR in DoD Agencies

Moderator: Dr. Andre Van Tilborg, Deputy Under Secretary of Defense, Science & Technology

Panelists:

- Dr. Robert F. Leheny, Deputy Director, DARPA
- COL Benjamin T. Hagar, USA, Deputy Director Chemical/Biological Technologies Directorate, Joint Science & Technology Office for CB Defense, Defense Threat Reduction Agency (Invited)

Commercialization Pilot Program (CPP) Overview

Moderator: Mr. Michael Caccuito, DoD SBIR/STTR Program Administrator

Panelists:

- Ms. Susan Nichols, Army SBIR Program Manager
- Mr. John Williams, Director, Navy SBIR and STTR Programs
- Mr. Richard Flake, Air Force Senior Planner

Technology Pipeline Initiative: Dr. John Parmentola, Director for Research and Laboratory Management, Army

Open Innovation: Ms. Joanne Hyland, President, Radical Innovation Group

WEDNESDAY AUGUST 22, 2007
FOCUS ON SBC ISSUES

Data Rights and Liscensing

Panelists:

- Mr. Jere Glover, Brand & Frulla
- Mr. Jesse Erlich, Burns & Levinson LLP

Open Architecture

Panelists:

- Mr. Douglas Marker, PEO IWS TT/7ST, Navy Advanced Technology
- Ms. Joan Marano-Goyco, APEO(T)- OPen Architecture

Venture Capital Financing Issues

Moderator: Mr. Thomas Weithman, Vice President and Managing Director, CIT GAP Fund

Mentor-Protege Program

Moderator: Mr. Cliff Hudson, Joint Robotics Program Manager/SPAWAR

- Mr. Chris Mailey, Engineer, Unmanned Systems, DoD Mentor Protege Program

Panelist:

- Mr. Carl Pompei, Anthrotronix, Inc.

THURSDAY AUGUST 23, 2007
SELF-HELP SUPPORT FOR THE SBC

T&E/Manufacturing

Panelists:

- Mr. Doug Schaefer, Director Manufacturing & Producibility, Missile Defense Agency (MDA)
- Mr. Tab Wilkins, Senior Technology Advisor
- Ms. Cynthia Gonsalves, Deputy Director, Offi ce of Technology Transition & Transfer ODUSD(AS&C)

DARPA Transition Pilot

Moderator: Ms. Connie Jacobs, SBIR PM, DARPA

Panelists:

- Mr. Mark Heiferling, Bluetronix
- Dr. Praveen Chawla, President, EDaptive
- Ms. Mary Ann Beyster, Foundation for Enterprise Development (FED)

Commercialization Pilot Program (CPP) Overview: Ms. Carol Van Wyk, Small Business Innovation Research Commercialization Pilot Program

Army Beyond SBIR Phase II: Ms. Susan Nichols, Army SBIR Program Manager

Navy Beyond SBIR Phase II: Ms. Lee Ann Boyer, DoN CPP Manager
Best Manufacturing Practices Center of Excellence: Mr. John S. Craighill, Senior Systems Engineer

Air Force Beyond SBIR Phase II: Mr. Richard Flake, Air Force Senior Planner

Beyond SBIR Phase II: Bringing Technological Edge to the Warfighter



August 21-23, 2007
Hyatt Regency Crystal City
Arlington, VA



If you have a technology ready for commercialization or are looking for a new and innovative technology to address a need, you cannot miss this Conference! Come armed with plenty of business cards and be prepared to participate fully in the **best networking** opportunity of its kind.

The need for diverse warfighter capabilities requires government funded R&D projects to be identified and quickly transitioned into the field. The Beyond **Phase II** SBIR Conference offers pre-arranged technology matchmaking meetings for prime contractors, government acquisition managers, the investment community, manufacturing firms, and SBIR Phase II firms with technologies to discuss commercialization opportunities and partnerships.

Why Invitees Should Participate:

Small Businesses with Phase II Technologies ready to transition can explore teaming arrangements with government and industry partners to discuss every aspect leading to commercialization of your SBIR-supported technologies. This Conference is by invitation only.

Large Businesses/Prime Contractors can initiate business partnerships to complement your technology portfolio, extend your R&D efforts, and maintain your competitive edge.

Innovative Government Leaders will discover cutting-edge technologies that fit acquisition program needs. Utilize the ingenuity, flexibility, and rapid response small businesses provide to meet today's ever-changing mission needs.

Manufacturing Firms can increase opportunities to recommend and provide manufacturing strategies by networking with Small Businesses with Phase II Technologies ready to take the next step.

Venture Capital Firms can discuss their programs and how they can be utilized to enhance transition success.

MONDAY AUGUST 20, 2007

12:00pm Registration Opens

12:00pm-5:00pm Exhibit Set-Up

**TUESDAY AUGUST 21, 2007
GOVERNMENT PERSPECTIVE**

7:00am-7:00pm Registration

7:00am-8:00am Continental Breakfast

8:00am-8:45am **Welcome:** Mr. Anthony Martoccia, Director, Office of Small Business Programs

Keynote Speaker: Dr. James I. Finley, Deputy Under Secretary of Defense (Acquisition & Technology)

Conference Format and Logistics: Mr. Michael Caccuitto, DoD SBIR/STTR Program Administrator

8:45-9:45am **Technology Transition and Acquisition Excellence: Taking It to the Next Level**

Moderator: Dr. James I. Finley, Deputy Under Secretary of Defense (Acquisition & Technology)

Panelists:

- Honorable Claude M. Bolton, Jr., Assistant Secretary of the Army for Acquisition, Logistics and Technology
- Honorable Delores Etter, Assistant Secretary of the Navy, Research, Development and Acquisition
- Honorable Sue C. Payton, Assistant Secretary of the Air Force
- Ms. Katrina G. Wahl, Deputy for Acquisition Management, Missile Defense Agency

9:45am-10:00am Break

10:00am-11:00am **Sourcing Innovation in a Consolidated Industry: Sustaining Competitive Edge**

Moderator: Ms. Kathleen Harger, Assistant Deputy Under Secretary of Defense for Innovation and Technology Transition

Panelists:

- Mr. John Shakespeare, Washington DC Operations for Enterprise Strategic Growth, The Boeing Company
- Dr. David Whelan, Vice President for Enterprise Strategic Growth, The Boeing Company
- Dr. Ray Johnson, Senior Vice President and Chief Technology Officer, Lockheed Martin Corporation (Invited)
- Dr. John Waszczak, Director Advanced Technology and SBIR/STTR, Raytheon Company
- Mr. Rich Mendelowitz, Vice President, Business Strategy and Chief Technology Officer, General Dynamics, Information Technology
- Dr. Tom Romesser, Vice President of Technology Development, Northrop Grumman Space Technology

11:00am-12:00pm **Leveraging SBIR to Address Technology Needs**

Moderator: Mr. Richard McNamara, PEO Submarines, Naval Sea Systems Command

Panelists:

- Ms. Grace Xiang PEO C3T, Army
- Ms. Kay Griffith-Boyle, PEO C3T Army
- CAPT Shane Gahagan, USN, PEO(A) Program Office, Navy
- CAPT Thomas Payne, USN, Joint Strike Fighter (JSF) Air Systems Requirements
- Mr. Paul Koskey, Advanced Technology Innovation Team Leader, MDA

12:00pm-12:30pm **Luncheon Speaker:** Mr. Zack Noshirwani, Vice President IDS - Integrated Supply Chain, Raytheon

1:00pm - 7:00pm Exhibit Hall Open

12:30pm-1:30pm Networking Lunch

1:30pm-4:30pm Poster Session

1:30pm-2:15pm **Tapping Small Business for Technology Solutions: SBIR in DoD Agencies**

Moderator: Dr. Andre Van Tilborg, Deputy Under Secretary of Defense, Science & Technology

Panelists:

- Dr. Robert F. Leheny, Deputy Director, DARPA
- COL Benjamin T. Hagar, USA, Deputy Director Chemical/Biological Technologies Directorate, Joint Science & Technology Office for CB Defense, Defense Threat Reduction Agency (Invited)

2:15pm-3:00pm **Commercialization Pilot Program (CPP) Overview**

Moderator: Mr. Michael Caccuitto, DoD SBIR/STTR Program Administrator

Panelists:

- Ms. Susan Nichols, Army SBIR Program Manager
- Mr. John Williams, Director, Navy SBIR and STTR Programs
- Mr. Richard Flake, Air Force Senior Planner

3:00pm-3:30pm Break in Exhibit Hall

3:30pm-4:15pm **Technology Pipeline Initiative:** Dr. John Parmentola, Director for Research and Laboratory Management, Army

4:15pm-5:00pm **Open Innovation:** Ms. Joanne Hyland, President, Radical Innovation Group

5:00pm-7:00pm Opening Reception

7:00pm-9:00pm Open Innovation Evening Session - *limited availability for the first 30 registrants who register onsite*
Description: There is increasing evidence of the importance of radical or breakthrough innovation to long-term firm success in the competitive marketplace today. Although this recognition has permeated many established companies, there is uncertainty about how to accomplish such innovation. Ms. Hyland will address the uncertainty about how to accomplish such innovation and offer strategic imperatives to successfully implement radical innovation.

WEDNESDAY AUGUST 22, 2007
FOCUS ON SBC ISSUES

7:00am-5:00pm	Registration
7:00am-8:00am	Continental Breakfast in Exhibit Hall
7:00am-5:00pm	Exhibits Open
8:00am-10:00am	Concurrent One-on-One Matchmaking Meetings
8:00am-8:30am	2008 SBIR Reauthorization Discussion <i>Government Perspective:</i> Mr. Edsel Brown, Assistant Administrator, Office of Technology Small Business Administration (SBA) <i>Congressional Perspective:</i> Mr. Bill Behn, House Committee on Science & Technology (S&T)
8:30am-9:30am	Data Rights and Liscensing <i>Moderator:</i> Mr. Steve Guilfoos, SBIR/STTR Program Manager, Air Force <i>Panelists:</i> - Mr. Jere Glover, Brand & Frulla - Mr. Jesse Erlich, Burns & Levinson LLP - Mr. Dan Dzara, Intellectual Property Office - Dr. Ken Peoples, ITAR Representative, DTSA
9:30am-10:00am	Open Architecture <i>Moderator:</i> Mr. John Williams, Director, Navy SBIR and STTR Programs <i>Panelists:</i> - Ms. Christine Lee, Deputy for Business Division, Joint SIAP System Engineering - Ms. Windy Joy Majumdar, SIAP JPO Systems Engineering and Development, GS-15, DoN - Mr. Douglas Marker, PEO IWS TT/7ST, Navy Advanced Technology - Ms. Joan Marano-Goyco, APEO(T)- OPen Architecture
10:00am-10:30am	Break in Exhibit Hall
10:30am-12:00pm	Dedicated One-on-One Matchmaking Meetings & Exhibit Visits
12:00pm-1:00pm	Networking Lunch
1:00pm-2:00pm	Venture Capital Financing Issues <i>Moderator:</i> Mr. Thomas Weithman, Vice President and Managing Director, CIT GAP Fund <i>Panelists:</i> - Mr. Don Rainey, Partner, InterSouth Partners - Mr. Gian Brown, SAIC Ventures - Mr. Rohit Shukla, CEO, LARTA Institute - Mr. Ted Hobart, Partner, Chart Venture Partners (Invited)

1:00pm-3:00pm	Concurrent One-on-One Matchmaking Meetings
2:00pm-3:00pm	Mentor-Protege Program <i>Moderator:</i> Mr. Cliff Hudson, Joint Robotics Program Manager/SPAWAR Mr. Chris Mailey, Engineer, Unmanned Systems, DoD Mentor Protege Program <i>Panelists:</i> - Mr. Carl Pompei, Anthrotronix, Inc. - Mr. Steve Cary, Director of Business Development, RE2 - Mr. Larry Cutshaw, Vice President of Business Development, Referentia Systems
3:00pm-3:30pm	Break in Exhibit Hall
3:30pm-5:00pm	Dedicated One-on-One Matchmaking Meetings & Exhibit Visits

**THURSDAY AUGUST 23, 2007
SELF-HELP SUPPORT FOR THE SBC**

7:00am-5:00pm	Registration
7:00am-8:00am	Continental Breakfast in Exhibit Hall
7:00am-5:00pm	Exhibits Open
8:00am-10:00am	Concurrent One-on-One Matchmaking Meetings
8:00am-9:00am	Successful Marketing: Ms. Margit B. Weisgal, Sextant Communications
9:00am-10:00am	Primer for Prime Contractors: How to Work with SBIR Firms for the 1st Time <i>Moderator:</i> Mr. Victor Ciardello, Director Small Business Technology and Industrial Base, OSBP OUSD AT&L <i>Panelists:</i> - Mr. Rich Hendel, Senior Principal Specialist, SBIR Program Manager, Boeing - Mr. Tizoc Loza, Corporate Project Manager SBIR Programs, Northrop Grumman - Mr. Mario Ramirez, Corporate Manager, SBIR/MPP, Lockheed Martin
10:00am-10:30am	Break in Exhibit Hall
10:30am-11:15am	T&E/Manufacturing <i>Moderator:</i> Mr. Mike Zammit, Missile Defense Agency (MDA) <i>Panelists:</i> - Mr. Doug Schaefer, Director Manufacturing & Producibility, Missile Defense Agency (MDA) - Mr. Tab Wilkins, Senior Technology Advisor - Ms. Cynthia Gonsalves, Deputy Director, Office of Technology Transition & Transfer ODUSD(AS&C)
10:30am-12:00pm	Concurrent One-on-One Matchmaking Meetings

11:15am-12:00pm	DARPA Transition Pilot <i>Moderator:</i> Ms. Connie Jacobs, SBIR PM, DARPA <i>Panelists:</i> - Mr. Mark Heiferling, Bluetronix - Mr. Ace Sarich, VoxTec - Dr. Praveen Chawla, President, EDaptive - Ms. Mary Ann Beyster, Foundation for Enterprise Development (FED)
12:00pm-1:00pm	Networking Lunch
1:15pm-5:00pm	Concurrent One-on-One Matchmaking Meetings
1:00pm-1:15pm	Commercialization Pilot Program (CPP) Overview: Ms. Carol Van Wyk, Small Business Innovation Research Commercialization Pilot Program
1:15pm-2:00pm	Army Beyond SBIR Phase II: Ms. Susan Nichols, Army SBIR Program Manager
2:00pm-2:45pm	Navy Beyond SBIR Phase II: Ms. Lee Ann Boyer, DoN CPP Manager * Best Manufacturing Practices Center of Excellence: Mr. John S. Craighill, Senior Systems Engineer
2:45pm-3:30pm	Air Force Beyond SBIR Phase II: Mr. Richard Flake, Air Force Senior Planner
3:30pm-4:00pm	Break in Exhibit Hall
4:00pm-4:30pm	<i>Open CPP Discussion</i>
4:30pm-5:00pm	<i>Open Conference Discussion</i>
5:00pm	Conference Concludes

Thank you to our Promtional Partners

Northrop Grumman Corporation

Northrop Grumman Corporation, headquartered in Los Angeles, Calif., is a \$30 billion global defense and technology company whose 120,000 employees provide innovative systems, products, and solutions in information and services, electronics, aerospace and shipbuilding to government and commercial customers worldwide.

Northrop Grumman's vision is to be the most trusted provider of systems and technologies that ensure the security and freedom of our nation and its allies. In so doing, the company will become our customers' provider of choice, our industry's employer of choice and our shareholders' investment of choice.

Founded in 1939, Northrop Grumman represents the successful integration of nearly 20 marquee companies into an enterprise that covers the entire battlespace spectrum. The companies that became part of Northrop Grumman achieved historic accomplishments, from transporting Charles Lindbergh across the Atlantic to carrying astronauts to the moon's surface and back.

Today, Northrop Grumman is defining the future with an extraordinary portfolio of capabilities, technologies and products, which span from undersea to outer space and into cyberspace. The company's competencies are aligned with the current and future needs of our customers, including the evolving security priorities of global reach, improved intelligence, precision strike and missile defense. These competencies also address homeland security and large-scale civil information systems that enhance city, county and state government services.

Lockheed Martin

Lockheed Martin is a customer focused, global enterprise principally engaged in the research, design, development, manufacture and integration of advanced technology systems, products, and services for government and commercial customers. Lockheed Martin operates in the same context as its customers and is deeply involved in solving the problems and meeting the demands and expectations of its customers. Moreover, it leads the way in showing customers new systems-based possibilities and opportunities.

The Corporation's core business areas are: Electronic Systems, Aeronautics, Space Systems, Information Systems and Global Services. Lockheed Martin's vision is to be the world's best systems integrator in aerospace, defense and technology services; to be the company our nation and its allies trust most to integrate their largest, most complex, and most important advanced technology systems. Our goal is to provide the best value to our customers, growth opportunities to our employees, and superior returns to our stockholders.

Lockheed Martin had 2006 sales of \$39.6 billion and employs 140,000 employees in the United States and internationally.

Thank you to our Promtional Partner

Raytheon

Raytheon is a technology leader specializing in defense, homeland security, and other government markets throughout the world. With a history of innovation spanning more than 80 years, Raytheon provides state-of-the-art electronics, mission systems integration, and other capabilities in the areas of sensing; effects; command, control, communications and intelligence systems, as well as a broad range of mission support services.

Working as “One Company”, Raytheon’s strategy is to achieve above-market growth in four strategic areas: Missile Defense; Precision Engagement; Intelligence, Surveillance and Reconnaissance; Homeland Security. Through this effort we intend to earn customer confidence as a company that listens, anticipates, responds and performs as we leverage our strengths in technology, integration and services for superior customer solutions.

Raytheon is committed to building an inclusive culture that recognizes uniqueness, empowers each employee, values all contributions and contributors, and leverages its diverse workforce and supply base to maximize Raytheon’s competitive advantage, thereby enhancing company performance and profitability.

Community Involvement

Raytheon Company places the highest value on People, Integrity, Commitment and Excellence.

Ethics

We at Raytheon are proud of our reputation for excellence, a reputation based on our commitment to the highest ethical standards.

Diversity

Diversity is the centerpiece of our workplace culture. At Raytheon, Diversity is about inclusiveness, an inclusive culture that fully engages all employees and stakeholders to deliver superior business performance.

Corporate Governance

We strive for excellence in corporate governance and to reaffirm the principles that are the foundation of investor trust.

Vision

To be the most admired defense and aerospace systems supplier through world-class people and technology.

Businesses

- Integrated Defense Systems – Headquarters in Tewksbury, Massachusetts
- Intelligence and Information Systems – Headquarters in Garland, Texas
- Missile Systems – Headquarters in Tucson, Arizona
- Network Centric Systems – Headquarters in McKinney, Texas
- Space and Airborne Systems – Headquarters in El Segundo, California
- Raytheon Technical Services Company LLC – Headquarters in Reston, Virginia



Raytheon

SBIR Transition Support at DARPA

**Foundation for
Enterprise Development**

Mary Ann Beyster
President

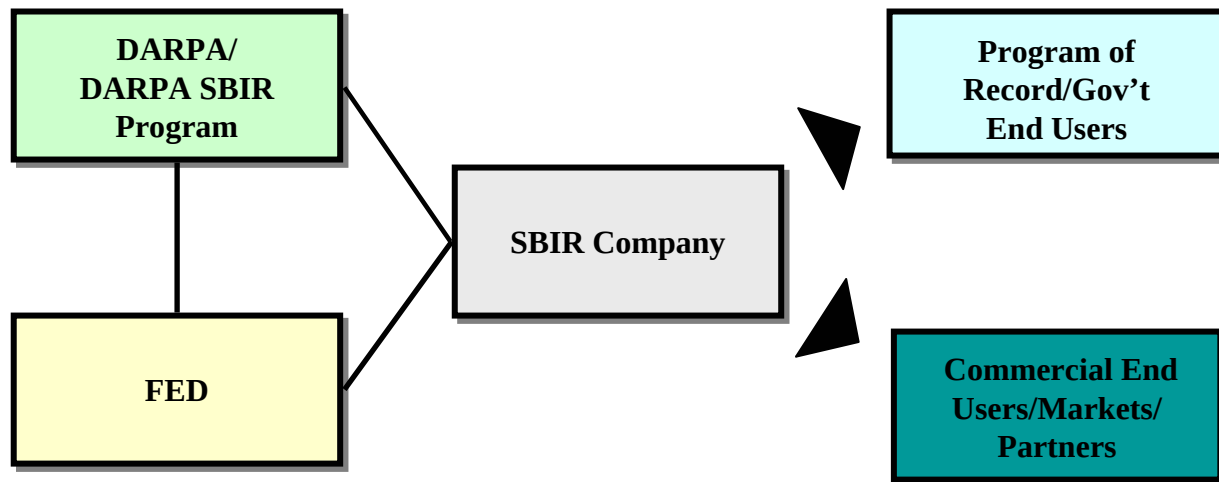
**Beyond Phase II Conference
Panel Briefing**
August 23, 2007

Overview of The Foundation for Enterprise Development (FED)

- Established in 1986, La Jolla, CA, by Dr. J. Robert Beyster
- Focused on educating and training entrepreneurship and employee ownership in US and over 40 countries.
- Have strong emphasis on working with science and technology companies to help prepare their companies for growth and to maintain ownership with those who grow the company.
- Have full and part-time affiliates working from in La Jolla, a satellite office in Washington DC, the San Francisco Bay Area, and other U.S. cities

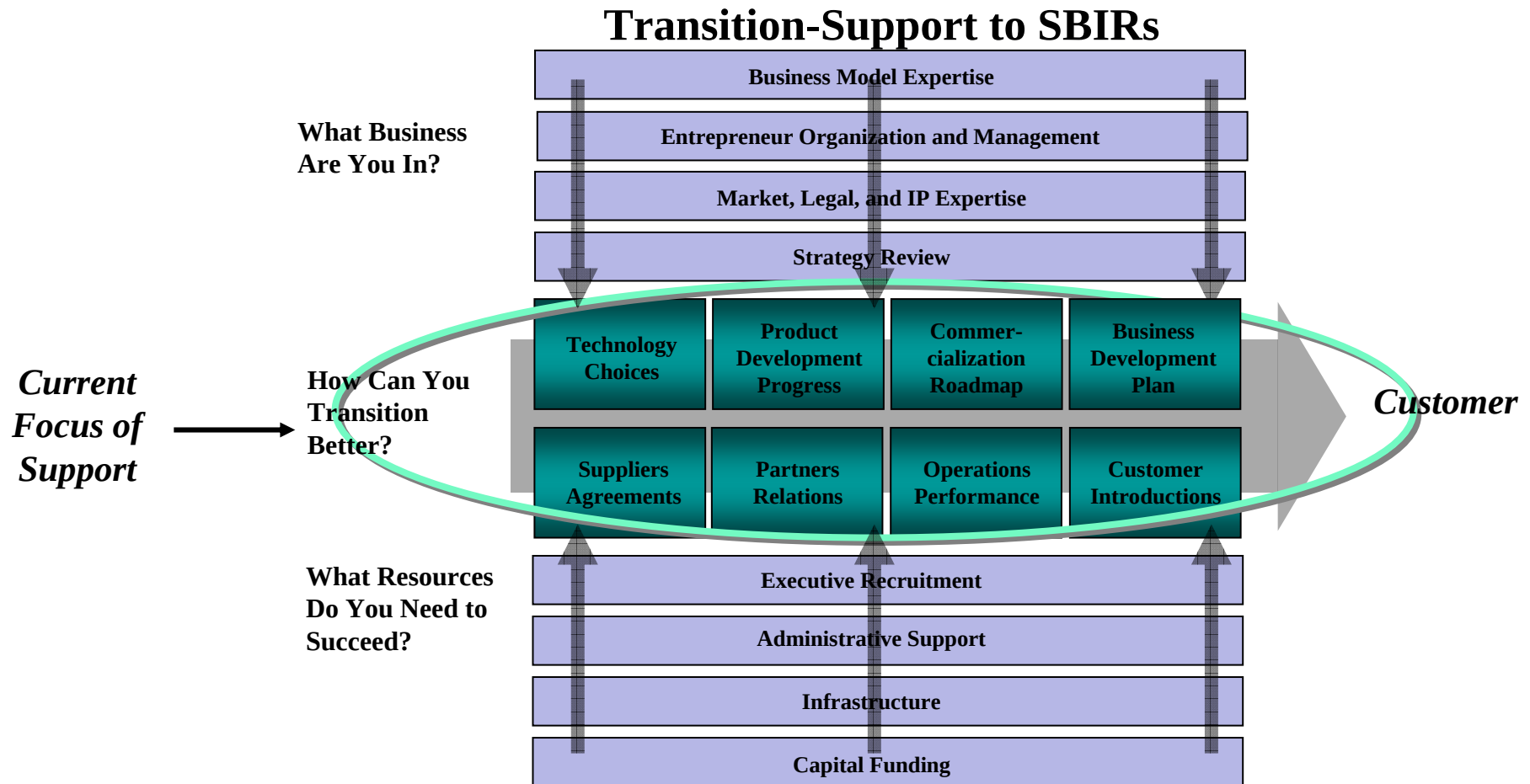
The FED Provides Transition Expertise, Support, and Oversight

- In support of DARPA and the SBIR Program, the FED provides support in creating linkages with potential end-users and defining/executing roadmaps for technology transition.



The Objective: Focus on Transition

- DARPA's transition-support is designed for small companies transitioning state-of-the-art technology.



The FED's Model: Matching Experienced Mentors to SBIR Needs

- The FED's transition support services involve:
 - Matching a former senior executive from government markets to serve as a mentor/liaison for each SBIR company
 - Using close-quarter mentoring (e.g., playing an active role in addressing SBIR transition issues)
 - Focusing primarily on marketing and sales tasks that lead to revenue
- Mentors are selected for individual companies based on their knowledge and expertise with government and technology markets and their contacts with potential customers and partners
- The FED conducts independent assessments of technology potential and of market opportunities
- Transition-support is focused on tactical support with high potential for strategic results

Recent Transition Support to Three SBIR Companies

Bluetronix	Edaptive Computing	Voxtec International
Autonomous Routing Algorithms	Development, Verification & Security of Complex Systems	Handheld/Wearable Voice Translation Devices
Early Adoption Phase Transition Issues/Needs: (January 2007)	Launching Phase Transition Issues/Needs: (January 2007)	Mainstreaming Phase Transition Issues/Needs: (January 2007)
- Finding money to continue development - Finding best initial application/ use for technology - Getting support/sponsor from DoD users - Creating credibility/trust with stakeholders	- Finding market niche in services to secure sales pipeline - Defining value prop/ unique advantage - Developing knowledge of selling into DoD - Implementing sales capture process	- Creating steady growth with commercial and DoD - Sales resources - Building the management team to go to the next stage - Preparing next generation technology position
Big Opportunities With FED:	Big Opportunities With FED:	Big Opportunities With FED:
- Introduction to key partner/s - Develop selling skills and process - Create demand from DoD users for Bluetronix concept - Get the next contract through a prime contractor	- Create contacts for ECI to pursue - Develop knowledge of government marketing/ sales requirements - Find services opportunity directly with gov't and through prime contractor	- Introduction to key partner/s - Consult on transition/growth issues - Help use new IDIQ - Create non-DoD revenue in law enforcement/public safety market

Key Findings of Recent Transition-Support Activities

- Transition-oriented marketing and sales support:
 - Has high impact ranging from strategic advice to tactical editing of collateral and introductions
 - Varies with their readiness to commercialize their technologies and prior government experience
 - Often generates early wins after initial intensive mentoring sessions with regular follow-up
- The DARPA program manager and SBIR program manager are essential to making the transition process work.
 - Provide oversight, muscle, and opportunities

- Next Panelists:
 - Mark Heiferling, Bluetronix
 - Praveen Chawla, EDActive Computing
 - Ace Sarich, Voxtec International
- SBIR-company perspectives on technology-transition approaches, issues, and needs

Technology Transition & Acquisition Excellence: Taking It To The Next Level



**Beyond SBIR Phase II:
Bringing Technological Edge To The Warfighter**

**The Honorable Claude M. Bolton, Jr., DSc
Assistant Secretary of the Army
(Acquisition, Logistics and Technology) &
Army Acquisition Executive**

August 21, 2007

Overall Goal

- **With Technology Transition Comes Acquisition Excellence**
- **Combining Small Business and Premier Nonprofit Research Institutions Brings Much Needed Innovation to Our Warfighters**



DESIGN • DEVELOP • DELIVER • DOMINATE
We Make Soldiers Strong



Challenges

- **Time**
- **Relevance**
- **“Not Invented Here” Syndrome**



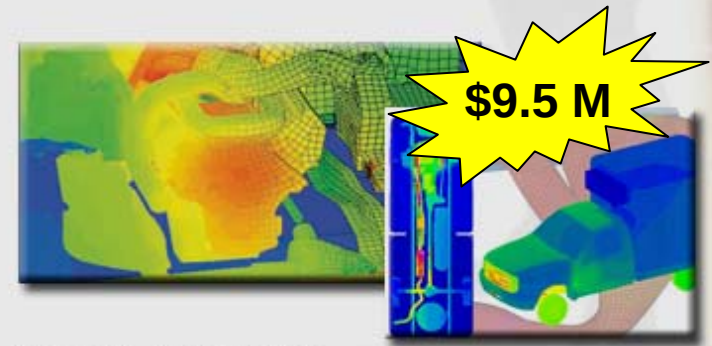
DESIGN • DEVELOP • DELIVER • DOMINATE
We Make Soldiers Strong

SBIR Successes

Universal Display Corporation
Ewing, NJ:
Flexible Color Displays



21st Century Systems Inc.
Herndon, VA:
Single Integrated Space Picture



Thermoanalytics, Inc.
Calumet, MI:
Vehicle Thermal Design Tool



DESIGN • DEVELOP • DELIVER • DOMINATE
We Make Soldiers Strong



Navy CPP the Details

Miss Lee Ann Boyer
DoN CPP Manager
August 23, 2007



Agenda

- ☐ What's New?
- ☐ Roles & Responsibilities
- ☐ Benefits of CPP
- ☐ ONR
- ☐ NAVAIR
- ☐ NAVSEA
- ☐ DoN CPP Points of Contact
- ☐ Dawnbreaker – CPP Program Support
- ☐ Best Manufacturing Practices Center of Excellence



What's New in FY07/08?

- ❑ SBIR process to maximize the potential for transition by:
 - ❑ Focusing Topics on Navy priorities and managing projects to meet acquisition timelines
 - ❑ Increasing the involvement of key transition decision-makers throughout the process
 - ❑ Expanding support to both firms and Navy program personnel for transition efforts
 - ❑ Implementing best practices and removing barriers to transition

A Lean Six Sigma Kaizen Event will be scheduled in FY08 to develop the detailed processes for accomplishing these objectives.



CPP Roles & Responsibilities

- ❑ PEO
 - ❑ Develop topics to support your future program needs
 - ❑ Negotiate and monitor transition plans and agreements for relevant SBIR technologies
 - ❑ Include SBIR technology considerations in your acquisition strategy, technology roadmaps, and program/milestone reviews
 - ❑ Encourage prime contractors and system integrators to assess the feasibility of using SBIR technologies and in identifying barriers to their use
 - ❑ Ensure that the SBIR PM office and transition managers are kept abreast of changes in acquisition requirements and milestone schedules that could impact the viability of SBIR technologies under development
 - ❑ Continue to work with the SBIR PM and transition manager to ensure that funds provided to SBIR firms for technology development result in program transitions – a ROI vice a “tax”



Roles & Responsibilities Cont.

- ❑ PEO SBIR Technology Managers
 - ❑ Work with PEOs and topic authors to insure that the right topic is prepared and issued at the right time
 - ❑ Monitor on-going projects to make sure they are working towards “real requirements”
 - ❑ Help in the early identification of potential changes in requirements or deadlines to avoid wasted effort
 - ❑ Assist the SBIR PM office, contracting office and others in assessing the potential for transition of a proposed technology
 - ❑ Key player in bringing together the relevant parties for negotiation of the TTP and TTA



Roles & Responsibilities Cont.

- ❑ SYSCOM SBIR PM
 - ❑ Oversee the topic solicitation process across the PEOs and obtain required approvals
 - ❑ Manage the proposal selection and evaluation process in accordance with Navy/SYSCOM requirements
 - ❑ Manage requests for non-financial assistance from/for SBIR firms
 - ❑ Provide information and data inputs for SYSCOM, Navy and DOD review of SBIR, and CPP efforts



Roles & Responsibilities Cont.

☐ SBIR Firm

- ☐ Think about who your customer is going to be early in the process and get to know them
- ☐ Know what is required of you now (read your contract) and in the near future (plan for what comes next)
- ☐ Remember it isn't enough to be able to do it once; you must have a well documented, repeatable and predictable process
- ☐ Think about the entire product life cycle when deciding whether or not you will manufacture an item yourself
- ☐ Don't forget the "small stuff" (e.g., training manuals, spares, warranty, configuration control documentation, material lead-times, etc.)
- ☐ Know the intended environment and end-user of your product



Benefits of CPP

- ❑ Greater likelihood of transition
 - ❑ High Priority Need
 - ❑ Transition Agreement in Place
 - ❑ Assistance in Qualifying Products/Testing
 - ❑ Assistance in Risk Management and Manufacturing to become “Responsible Supplier”
 - ❑ Technical Management against Program Milestones Mapped to Transition Strategy
 - ❑ Early Involvement of Program Sponsor and/or Prime Contractor/System Integrator



Benefits of CPP

- ❑ SBIR firms sell more products and grow their business
- ❑ Navy gets access to new technology and gets a return on its SBIR investment
- ❑ Taxpayers see more money spent in the U.S. economy instead of having jobs and technology transfer overseas
- ❑ Warfighters get a product that can help them do their job better

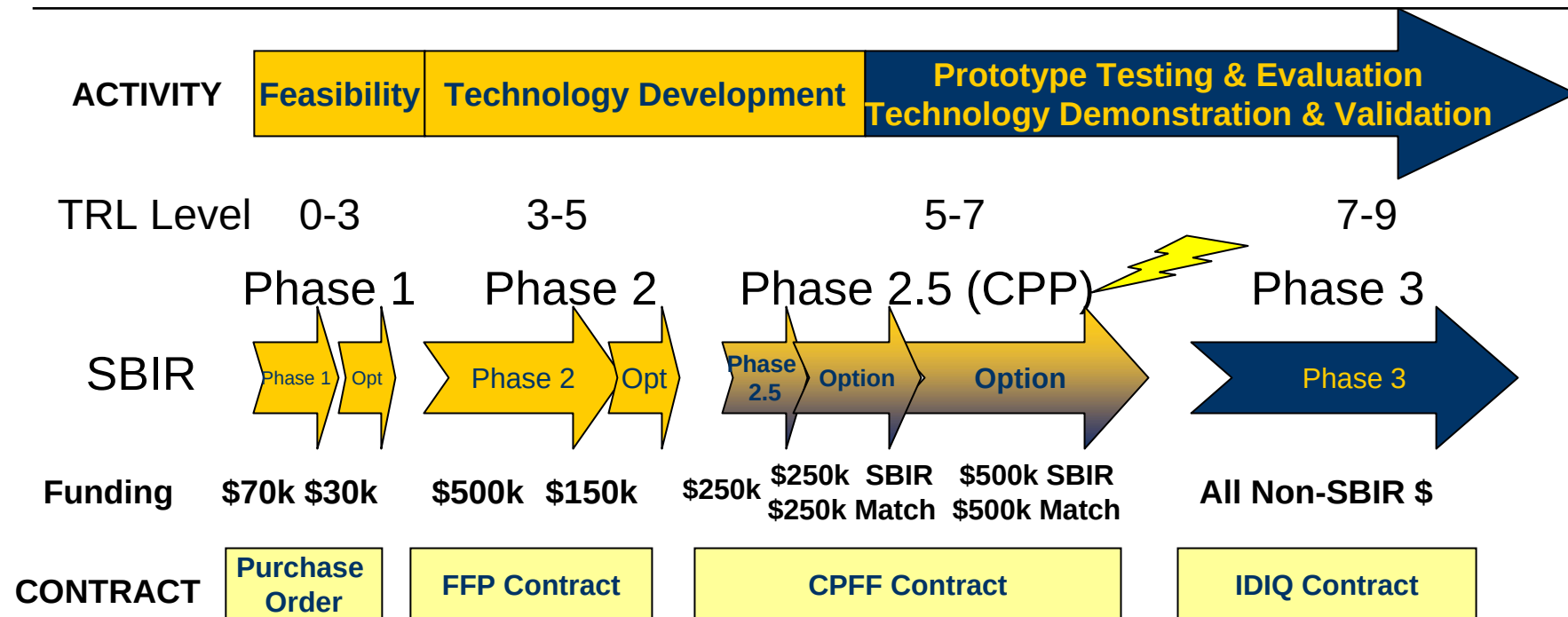


Office of Naval Research Commercialization Pilot Program





ONR SBIR Pilot Process For FY08



Using a standardized firm fixed price contract with detailed milestones and common deliverables should allow for faster and easier cost analysis and contract award. By limiting award value to \$650k there is no requirement for certified cost and pricing data. All of this should reduce administrative burden and costs to the firm and the government and also help shorten the gap between Phase I and II. Firms would also have time to develop approved accounting systems and find matching funds for Phase 2.5 (CPP) awards. The amounts listed for Phase 2.5 options are average and may vary depending on the amount of SBIR and matching funds available.

NOTE: This is a generalized model and some variation in individual awards may be justified when they are determined to be in the best interest of the Navy





ONR's Future Phase I's

- ❑ ONR continues the use of purchase orders for faster award of Phase I
- ❑ Phase I Final Reports will include:
 - ❑ Quad Chart (format to be provided)
 - ❑ Assessment of current technology readiness level
 - ❑ Identification of transition target (either program or platform)
 - ❑ Whether or not firm intends to manufacture or license production and interactions with Primes/Systems Integrators
 - ❑ Current manufacturing readiness level if firm intends to be the manufacturer of any items





ONR's Phase II Pilot

- ❑ ONR will alter the Phase II process to more clearly identify transition targets and programmatic benchmarks required for continued program support
- ❑ Validation of requirements will be made prior to award and exercise of option
- ❑ A Technology Transition Plan must be in place prior to award
- ❑ ONR supports use of Firm Fixed Price contracts with specific milestones/deliverables to shorten contract lead times
- ❑ Increased use of risk assessments for firms and technologies
- ❑ Manufacturing assessment for firms who plan to produce, and/or support the developed technology as part of the TTP
- ❑ All Phase II recipients will be eligible to participate in CPP.





ONR's Phase II.5 Pilot (CPP)

- ☐ Validation of requirements will be made prior to award and exercise of option
- ☐ A Technology Transition Agreement must be in place and signed by the Program of Record funding sponsor prior to award
- ☐ Matching (Non-SBIR) funds are required
 - ☐ $\approx$ 50% in Option 1
 - ☐ $\approx$ 1-1 in Option 2
- ☐ Activities covered include test and evaluation, preparation for manufacturing, supplier certification requirements, and other efforts necessary to meet contract/transition requirements



**All Phase II.5 awards are CPP;
but, not all CPP are Phase II.5**



Non-Phase 2.5 CPP Participants

- ❑ Phase II firms whose transition assistance requirements do not involve additional financial resources to achieve TRL level 6.
- ❑ Firms who transition technologies prior to completion of Phase II efforts.
- ❑ Firms who receive targeted technical and business support during Phase II without receiving Phase 2.5 awards.
- ❑ Firms who transition to Phase III based on TTP/TTA signed prior to or during the Phase II.





Naval Air Systems Command Commercialization Pilot Program





2006 NAVAIR CPP Approach



- ☐ Improve CPP pipeline by implementing improvements in the topic development process and strengthening PEO/PMA/Prime involvement.
- ☐ Better coordination between PMA Acquisition Plans, the Requirements community, and linkage to SBIR technology Maturation.
- ☐ Bureaucracy busting and process improvement through proactive action throughout the NAVAIR SBIR process.
- ☐ Supplier Risk Identification & Risk Mitigation Assistance to CPP Phase II projects with potential for rapid transition.



NAVAIR CPP Candidate Transition Issues

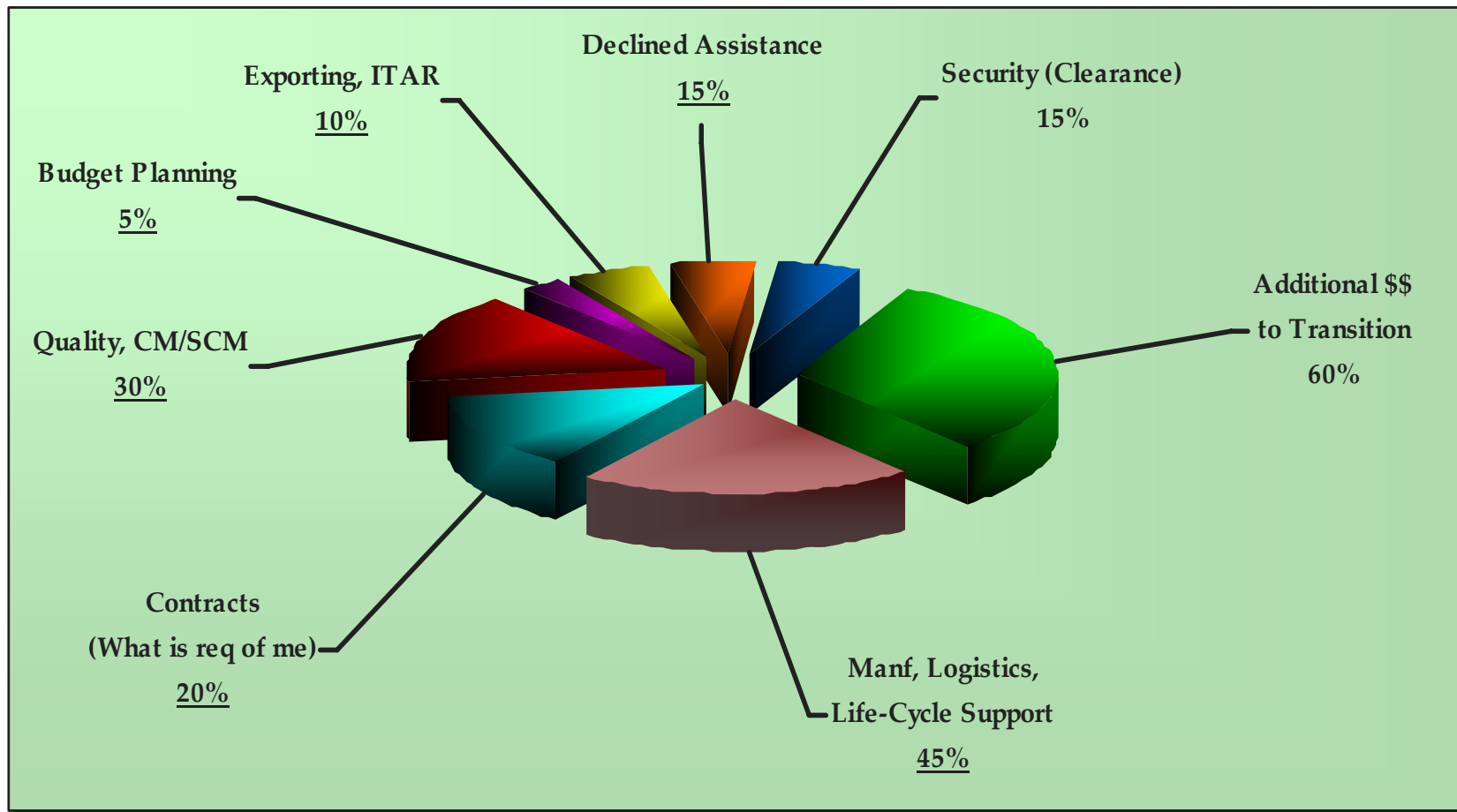


Figure 1: (CPP) Candidate PHASE III Transition Issues



FY07 NAE CPP Approach



- ☐ Develop a process to identify SBIR technologies ready for transition into a Program of Record within 2 years.
- ☐ Develop transition roadmaps for technologies selected by PMAs.
- ☐ Perform risk assessment of technology.
- ☐ Provide assistance to small company as necessary to prepare for transition.



FY07 NAE CPP Selections



- “CPP Project” Selections will be made by an NAE Review Board consisting of PEO SBIR Technology Managers and the NAVAIR SBIR PM
 - ❖ Made continuously as requirements and maturity of technology dictate
- **Leading indicators:**
 - High Military Need – Program of Record has a known requirement for the technology
 - Transition Potential(TRL/MRL, Risk, and \$)
- **Considerations**
 - NAVAIR SBIR Phase II Listing (2nd year Phase II’s)
 - SAT Companies not recommended for SAT 06 funding but flagged by PEO/PMA/TPOC as “topic of interest”



NAE CPP Selection Criteria



- **Requirements and criteria:**
 - Identification of Program Of Record (or fielded system)
 - Increased performance
 - Added capability within requirements
 - Reduced cost
 - Improved Safety
 - Other benefits to NAE
 - Program Of Record transition funding identified.
 - TRL maturation to 6+
 - < 2 year Execution



"Proposed" FY-07 NAVAIR CPP Selection Process

Step (2)

Quad charts reviewed by TPOC & Mapped to PMA's.

Topic transition assessment.

- TPOC's coordinate PMA topic review and transition assessment.
- Topic Transition Assessment: (one of five categories selected by PMA)

- ☒ Support
- ☒ Endorse
- ☒ Interest
- ☒ Pass
- ☒ Concern

▪ PMA Topic Ranking

- Level of matching non-SBIR funds (if known)
- Endorsed Topics priority ranked

Step (3)

PMA

Endorsed / Ranked Topics Briefed to PEO's (if Req)

PEO's

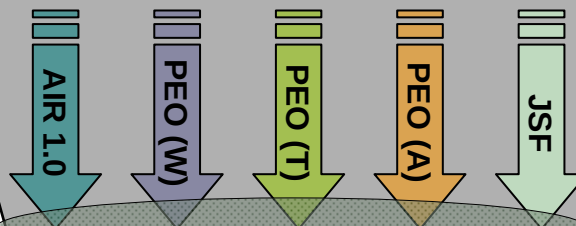
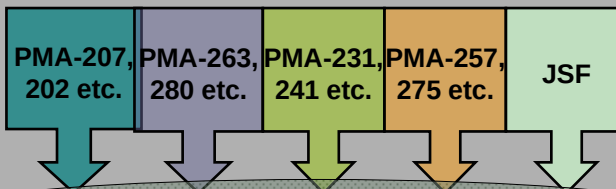
Select / Prioritized /Endorse CPP Projects

Requirements

- ☒ PM funding
- ☒ PMA Endorsement
- ☒ Transition to POR



ELIGIBLE Phase II SBIR's



Endorsed "CPP" Candidates

Endorsed "CPP" Projects

Phase II's

Step (1)

SBIR Portfolio Review

- ☒ All (2nd yr) Phase II Topics mapped to TPOC's & PMA's.
- ☒ All Phase II (enhancements)
- ☒ SAT Companies not recommended for SAT 06 funding but flagged "of interest"
- ☒ ATRB SBIR Endorsed Topics

SBIR firms

- ☒ Prepare Quad Charts

Step (4)

PEO/SBIR PM Final Selection

- Budget constraints
- ✓ NAE Requirements prioritization
- ✓ Multi Platform applicability

Step (5)

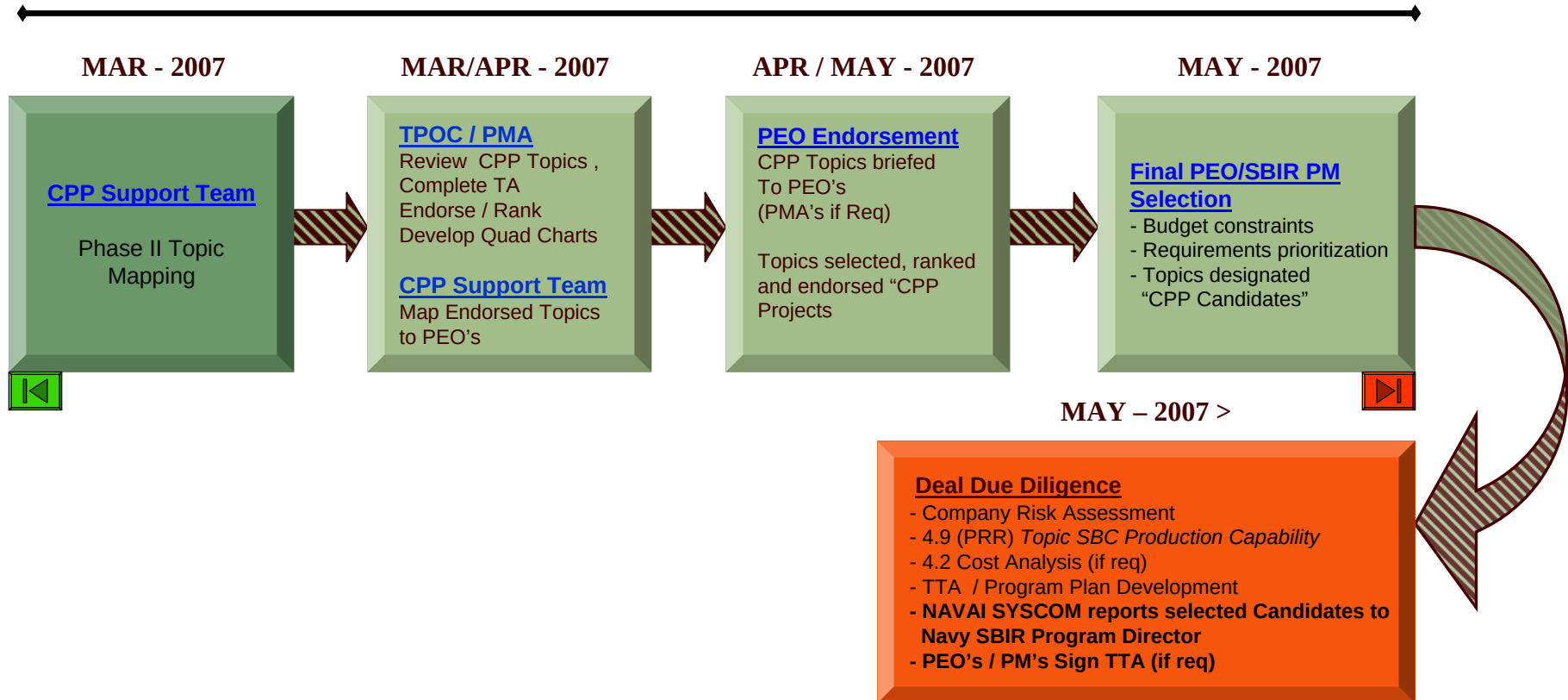
Deal Due Diligence



NAE CPP Selection Time Line



90 ≤ Day Selection Process





Naval Sea Systems Command Commercialization Pilot Program





NAVSEA CPP FY06 & FY07 Selections

- “CPP Project” Selections made by the NAVSEA PEO SBIR Sponsors and the NAVSEA SBIR PM from inputs developed and initially selected by each Sponsor
- **Leading indicators:**
 - High Fleet Need – identified by Acquisition Programs
 - Transition Potential – insertion in Acquisition Roadmaps targeted
- **Annual selection process**
 - Project identification by PEOs and Directorates
 - Selection – projects reviewed and prioritized by NAVSEA Board of SBIR Sponsors



NAVSEA CPP Selection Criteria

- **Requirements and criteria:**
 - Identification of Transition Program of Record (or fielded system)
 - Increased performance
 - Added capability within requirements
 - Reduced cost
 - Improved Safety
 - Other benefits to Fleet
 - Program of Record transition funding identified
 - Executed Transition Memorandum
 - Potential to executed in < 2 years





NAVSEA CPP Support Overview

- ❑ Major Focus areas:
 - ❑ Ensure early and continued planning/interaction between the NAVSEA Transition Support Team (Sponsors, TPOCs, Transition Program Mgrs, Tech Authorities, Fiscal Support Officers) and the Small Business
 - ❑ Provide informational resources, and automated transition support tools
- ❑ Automated Support Guidance and Execution aides
 - ❑ Facilitate and track all actions in support of CPP
 - ❑ CPP Report Generation system (at Sponsor, SYSCOM Levels)
 - ❑ Integrate/interface with Navy SBIR PM Database
- ❑ Key Participants
 - **SYSCOM PM/Program Office**
 - **PEO Sponsors**
 - **TPOCs**
 - **Reservists**
 - **Small Businesses**





NAVSEA CPP

Support Action Mgt. Sys. (SAMS)

- ❑ Objective: Assist the SBIR office in reporting CPP performance metrics to Congress
- ❑ On-line web based **CPP Support Action Management System (SAMS)**
 - ❑ Assist small business transitions to Phase III of the SBIR Process by providing instant access to informational resources and automated Q&A
 - ❑ Achieve increased efficiencies in the execution of the CPP SAMS through **data interoperability within SBIR CPP DB and Navy PM DB**
 - ❑ Provides CPP SB Contractors with direct documented access to **NAVSEA Transition Support Team** for Transition Guidance and Assistance when needed
 - ❑ Track all support provided to the Phase II Small Businesses in support of their transition to Phase III
 - ❑ Track baseline CPP support metrics that show the effectiveness of SBIR commercialization support over time
 - ❑ Provide real-time management metrics to SBIR Office





Who do I Contact for More Info?

- ☐ DoN/ONR CPP
Program Manager
Lee Ann Boyer
leeann.boyer@navy.mil
- ☐ CPP Database Manager
Program Support
Lore-Anne Ponirakis
loreeanne.ponirakis.ctr@navy.mil
- ☐ NAVAIR CPP
Program Manager
Kim Berche
kimberly.berche@navy.mil
- ☐ NAVSEA CPP
Program Support
Michelle Willis
michelle.e.willis@navy.mil
- ☐ SPAWAR CPP
Program Support
Elizabeth Rogers
elizabeth.rogers@navy.mil
- ☐ Marine Corps CPP
Program Manager
Paul Lambert
paul.a.lambert@usmc.mil



The Department of Defense Small Business Innovation Research Commercialization Pilot Program Overview

Beyond SBIR Phase II: Bringing Technological Edge to the Warfighter

Michael J. Caccuitto
DoD SBIR/STTR Program Administrator
OUSD(AT&L)/OSBP

August 21, 2007



Section 252 of NDAA for FY06: Commercialization Pilot Program (CPP)

- CPP intended “to accelerate the transition of technologies, products and services developed under SBIR to Phase III, including the acquisition process”
 - Authorization explicitly granted to SECDEF & Secretary of each military department, 4-year duration
- Identify SBIR programs with rapid transition potential
- Annual report to Small Business and Armed Services committees of both the House and Senate
- Authorizes use of up to 1% of SBIR set-aside funds to support the CPP administration

This legislation focuses on the perennial challenge of improving technology transition—and provides unique opportunity to experiment.



USD(AT&L) Goals seek enabling technologies...and robust supplier base



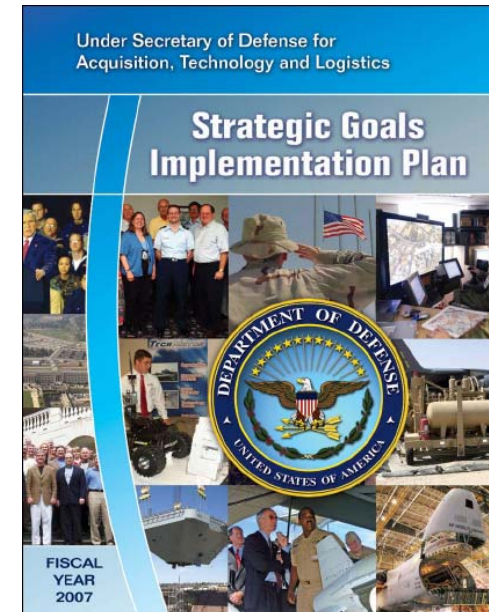
Acting USD (AT&L)
The Honorable Mr. John Young



DUSD (A&T)
The Honorable Dr. Jim Finley

3 (of 7) AT&L Goals:

- Focused Technology
- Reliable and Cost-effective Industrial Capabilities
- Strategic & Tactical Acquisition Excellence



www.acq.osd.mil/goals

Small businesses are critical for the Department to provide future technologies to enable priority-critical warfighting capabilities.



The Fundamental SBIR Management Challenge

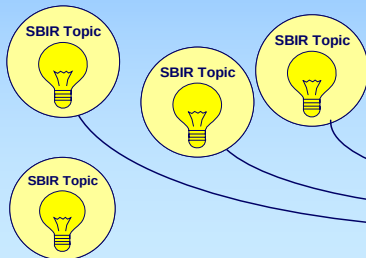
“Digging to the Future”

*Today's
Technology Ideas &
Investments*

*Future
Combat Capability
Needs*

*Will The “Tunnels”
Meet?*

SBIR Transitions



SBIR “Pipeline”

**Technology Investment
Focus**

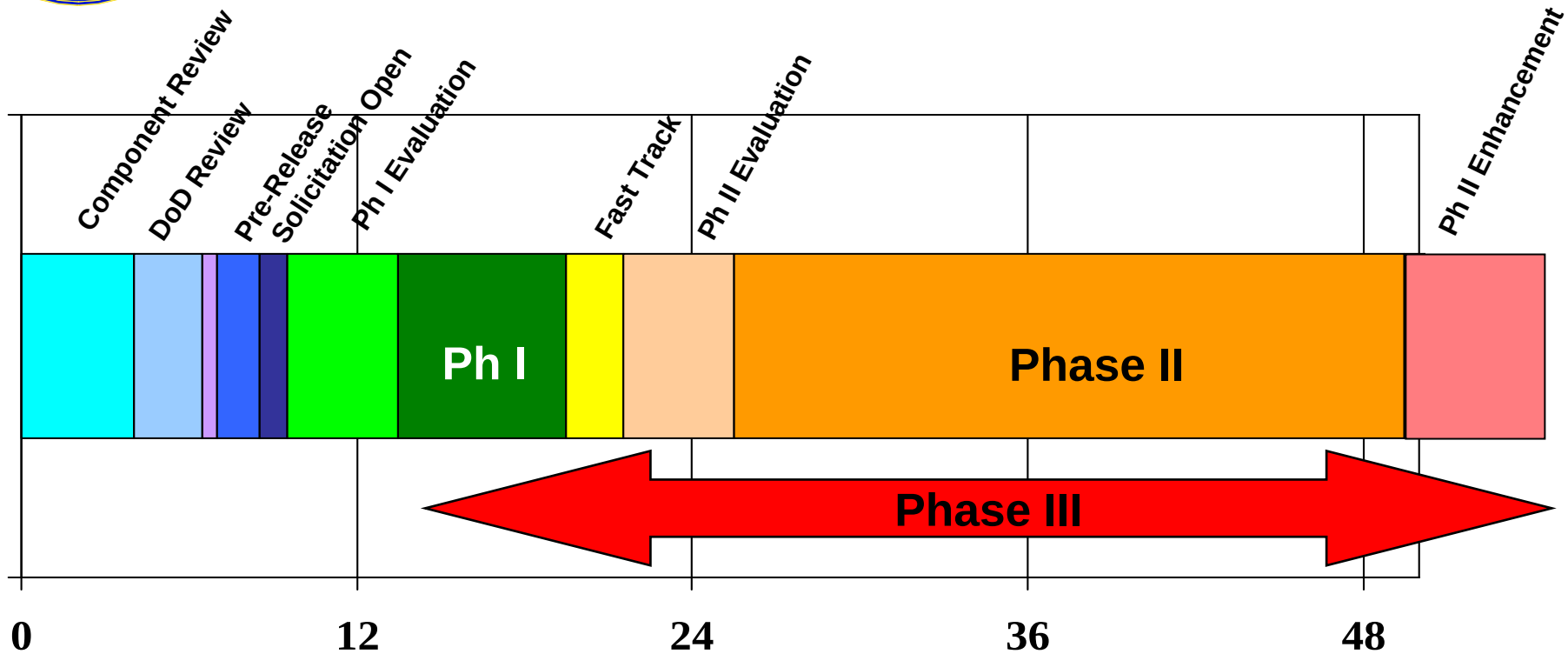
**Transition
Success**

**Approaching
Future Needs**

Transition success hinges upon strategically aligning technology investment with future capability needs.



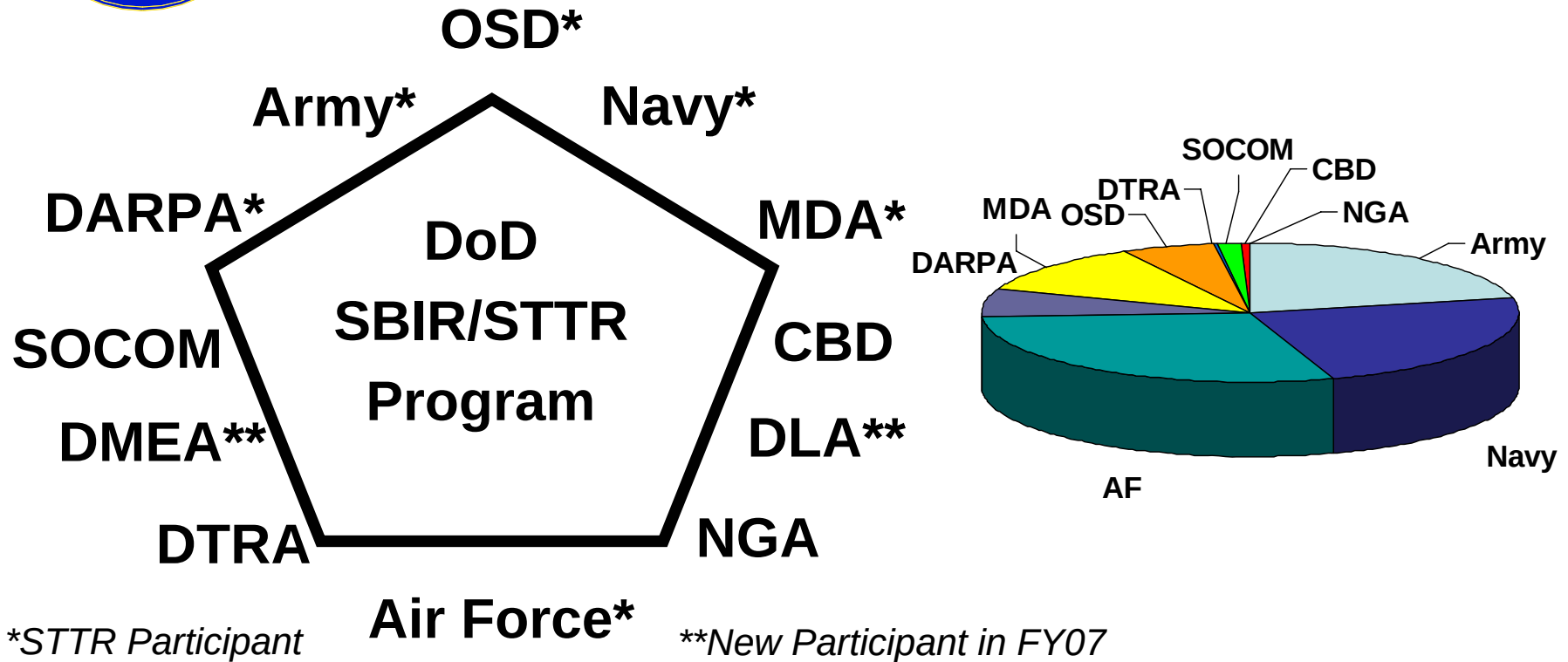
SBIR Program is deceptively Complex...



CPP enables rapid value extraction, from any phase of program execution.



DoD SBIR/STTR Program Organization Drives Implementation Approach



The DoD SBIR Program has twelve participating components, STTR has six—Military Departments comprise over 75% of budget.



CPP Implementation: Initial USD(AT&L) Direction



THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

JUN 27 2006

MEMORANDUM FOR SECRETARY OF THE ARMY
SECRETARY OF THE NAVY
SECRETARY OF THE AIR FORCE

SUBJECT: Small Business Innovation Research (SBIR) Program

Section 252 of the National Defense Authorization Act for Fiscal Year 2006, Public Law No. 109-163 (NDAA), contains several provisions regarding the Small Business Innovation Research (SBIR) program. Among other things, section 232 modifies section 9 of the Small Business Act (15 U.S.C. 638), to add a new subsection 9(y) that authorizes a Commercialization Pilot Program (CPP) under the Secretary of Defense and the Secretary of each Military Department. To fund the administrative cost of such a pilot program, but not fund Phase III awards, section 9(y) authorizes use of up to an amount equal to 1% of the SBIR set-aside budget.

The purpose of the CPP is to accelerate the transition of SBIR-funded technologies to Phase III—specifically into systems being developed, acquired and maintained for the warfighter. This can be done through activities that enhance the connectivity among SBIR-firms, prime contractors, and DoD science & technology and acquisition communities. It can also be accomplished by improving a SBIR-firm's capability to provide the identified technology to the Department, directly or as a subcontractor. Since leveraging the SBIR program to meet identified technology needs is a goal of the Department, I request that you develop a CPP utilizing this new authority.

Section 9(y) requires the identification of SBIR research projects with the potential for rapid transition to Phase III, and the Secretary of the Military Department concerned certify in writing that the successful transition of the research program into Phase III and the acquisition process is expected to meet high priority military needs of the Department. To accomplish this effectively, I request that you conduct a portfolio review of recent SBIR Phase II projects to identify technologies with the greatest potential to meet known technology needs of programs of record. Current SBIR policy requires that at least 50% of SBIR topics have acquisition community endorsement or sponsorship. Since this endorsement or sponsorship should be derived from an identified need, awards resulting from these topics should be a good place to start. Please provide this list of projects, the programs to which you expect them to transition, and a description of the portfolio review process you use to identify high-potential SBIR Phase II projects to the Office of Small Business Programs by September 15, 2006. Additionally, please provide at that time the details of your CPP plans, including the

amount of funds employed to support the CPP, how you intend to use the funding authority, to include activities and incentives you plan to employ to facilitate the transition, and what results you expect to achieve.

To aid identification of SBIR technologies with the highest transition potential, the Department will sponsor an annual "Beyond Phase II" conference in early 2007 to bring together recent SBIR Phase II award winners with major prime contractors and DoD system developers and acquirers. This will allow you and system contractors to survey directly SBIR Phase II award technologies from across the Department as well as from within your Component to identify those that meet a need. We will explore the development of activities adjunct to the annual conference to expand it as a tool to enable successful technology transition. I request your full support of this event.

The SBIR Program has long been a source of innovation—we must make it serve the warfighter better. Beyond the above actions in response to the new section 9(y) of the Small Business Act, it is important to improve how the SBIR program is implemented and used within our institutions. We must identify and proliferate best practices to be sure we are developing the right technologies and effectively transitioning them. This means ensuring we are generating and funding the right projects, employing the right incentives, and leveraging all available technology transition tools. I request your personal support and attention to accomplish this. My office has recently been asked by the Senate and House Small Business Committees to report on our progress. Mr. Frank Ramos, Director of Small Business Programs on my staff, will be contacting you for support in developing a status report.

cc:
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARY OF THE ARMY (ACQUISITION, LOGISTICS
AND TECHNOLOGY)
ASSISTANT SECRETARY OF THE NAVY (RESEARCH, DEVELOPMENT AND
ACQUISITION)
ASSISTANT SECRETARY OF THE AIR FORCE (ACQUISITION)

June 27, 2006 USD(AT&L)

Memo

- Requests 3 MILDEP Secretaries develop and implement CPPs
- Report plans and initial priority list to OSD by mid-September '06
- Support "Beyond Phase II" SBIR technology transition conference
- Make institutional and process changes required to improve SBIR program effectiveness

Requests MILDEPs make firm link between S&T and acquisition communities to address high priority military needs.



CPP Implementation, Cont'd: Further USD(AT&L) Direction

**July 12, 2007 Acting
USD(AT&L) Memo**



THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE BUILDING
WASHINGTON, DC 20301-3010

JUL 12 2007

MEMORANDUM FOR DEPUTY UNDER SECRETARY OF DEFENSE (SCIENCE & TECHNOLOGY)
DIRECTOR, DEFENSE ADVANCED RESEARCH PROJECTS AGENCY
DIRECTOR, DEFENSE LOGISTICS AGENCY
DIRECTOR, MISSILE DEFENSE AGENCY
DIRECTOR, DEFENSE THREAT REDUCTION AGENCY
U.S. SPECIAL OPERATIONS COMMAND
(ATTN: ACQUISITION EXECUTIVE)
DIRECTOR, JOINT SCIENCE AND TECHNOLOGY OFFICE
FOR CHEMICAL AND BIOLOGICAL DEFENSE
DIRECTOR, DEFENSE MICROELECTRONICS ACTIVITY

SUBJECT: Establishment of Small Business Innovation Research (SBIR) Program Commercialization Pilot Program (CPP)

Section 252 of the National Defense Authorization Act (NDAA) for FY 2006, Public Law No. 109-163, contains several provisions regarding the SBIR Program. Section 252 modifies Section 9 of the Small Business Act (15 U.S.C. 638) to add a new subsection 9(y) that authorizes a Commercialization Pilot Program (CPP) under the Secretary of Defense and the Secretaries of the Military Departments through FY 2009. Under the authority granted to the Secretary of Defense, this authority extends to all DoD components participating in the SBIR program. To fund the administrative cost of such a pilot program, but not fund Phase III awards, Section 9(y) authorizes use of up to an amount equal to 1 percent of the SBIR set-aside budget. Additionally, Section 9(a) of the Small Business Act authorizes discretionary technical assistance to firms receiving SBIR contracts.

The purpose of the CPP is to accelerate the transition of SBIR-funded technologies to Phase III – specifically into systems being developed, acquired, and maintained for the Warfighter. This can be done through activities that enhance the connectivity among SBIR-firms, prime contractors, and DoD science & technology and acquisition communities. It can also be accomplished by improving a SBIR-firm's capability to provide the identified technology to the Department, directly or as a subcontractor. We encourage you to develop a CPP under this new authority customized to meet your requirements.



Section 9(y) requires the identification of SBIR research projects with the potential for rapid transition to Phase III, and certification in writing that the successful transition of the research program into Phase III and the acquisition process is expected to meet high priority military needs of the Department. Should you use the authority, by October 5, 2007, please provide to the Office of Small Business Programs a description of your CPP plans, specifically addressing the identification process you intend to use and the tools you plan to employ to accelerate transition. If you obligate any SBIR CPP funding before this time, please also report the amount used and the details characterizing its employment.

To help you identify SBIR technologies with the highest transition potential and leverage other DoD SBIR investments, the Department is providing support to a National Defense Industrial Association-sponsored conference, "Beyond SBIR Phase II: Bringing Technological Edge to the Warfighter," August 20-23, 2007. This conference will bring together recent SBIR Phase II award winners with major prime contractors and DoD system developers and acquirers. It will also allow you and system contractors to survey directly SBIR Phase II award technologies from across the Department as well as from within your Component to identify those that meet your program requirements. We recommend you consider also providing this event support, including your participation and that of your relevant key technologists, system developers or acquirers.

The SBIR Program has long been a source of innovation. We must continue to make it serve the Warfighter better. Beyond the above actions in response to the new Section 9(y) of the Small Business Act, it is important to improve how the SBIR program is implemented and used within our institutions. We must work collaboratively to be sure we are developing the right technologies and effectively transitioning them. This means ensuring we are generating and funding the right projects, employing the right incentives, and leveraging all available technology development and transition tools and mechanisms. Your personal support and attention to addressing this legislation and improving the impact of the SBIR Program are appreciated.

Kenneth A. K. Lee

cc:
CJCS
DDR&E

2

- Encourages remaining DoD SBIR Components to develop and implement CPPs
- Report plans and initial priority list to OSD by early October '07
- Support "Beyond Phase II" SBIR technology transition conference
- Make institutional and process changes required to improve SBIR program effectiveness

Encourages *customized* utilization of CPP authority...and collaboration to develop and transition technologies needed by the warfighter.



Today's Panel and its Purpose

- Participants:
 - Army: Susan Nichols, SBIR Program Manager, RDECOM
 - Navy: John Williams, SBIR/STTR and T2 Programs Director, ONR
 - Air Force: Richard Flake, AF Senior Planner and CPP Manager, AFRL
- Key goals:
 - Describe CPP Vision
 - Provide insight into CPP Processes
 - Characterize Preferred Candidate for CPP



Back-ups



EDAdaptive
COMPUTING, INC.

Enabling System-of-Systems Design Automation™

System-of-Systems Trade-Off Analysis and Optimization
Verification and Validation
On-Board Diagnostics and Self-healing
Security and Anti-Tampering
Rapid Prototyping

Dr. Praveen Chawla
CEO & CTO
(937) 281-0790
p.chawla@edaptive.com

www.edaptive.com



Company Overview

We enable **Acquisition Managers, Primes and System Integrators** develop, verify and sustain **complex, reliable and secure systems and networks**

We have developed several innovative technologies leveraging over \$8M in SBIR investments from DARPA and six other DoD agencies. We are looking for opportunities to transition these to the Warfighter.

EDAdaptive Computing has a sole-source (Phase III SBIR) Navy IDIQ contract vehicle with a \$45+ million ceiling that can be used by any agency to apply these methods to complex system upgrades and re-certification.

SBA Certified 8 (a) (2005-2014), founded in 1997

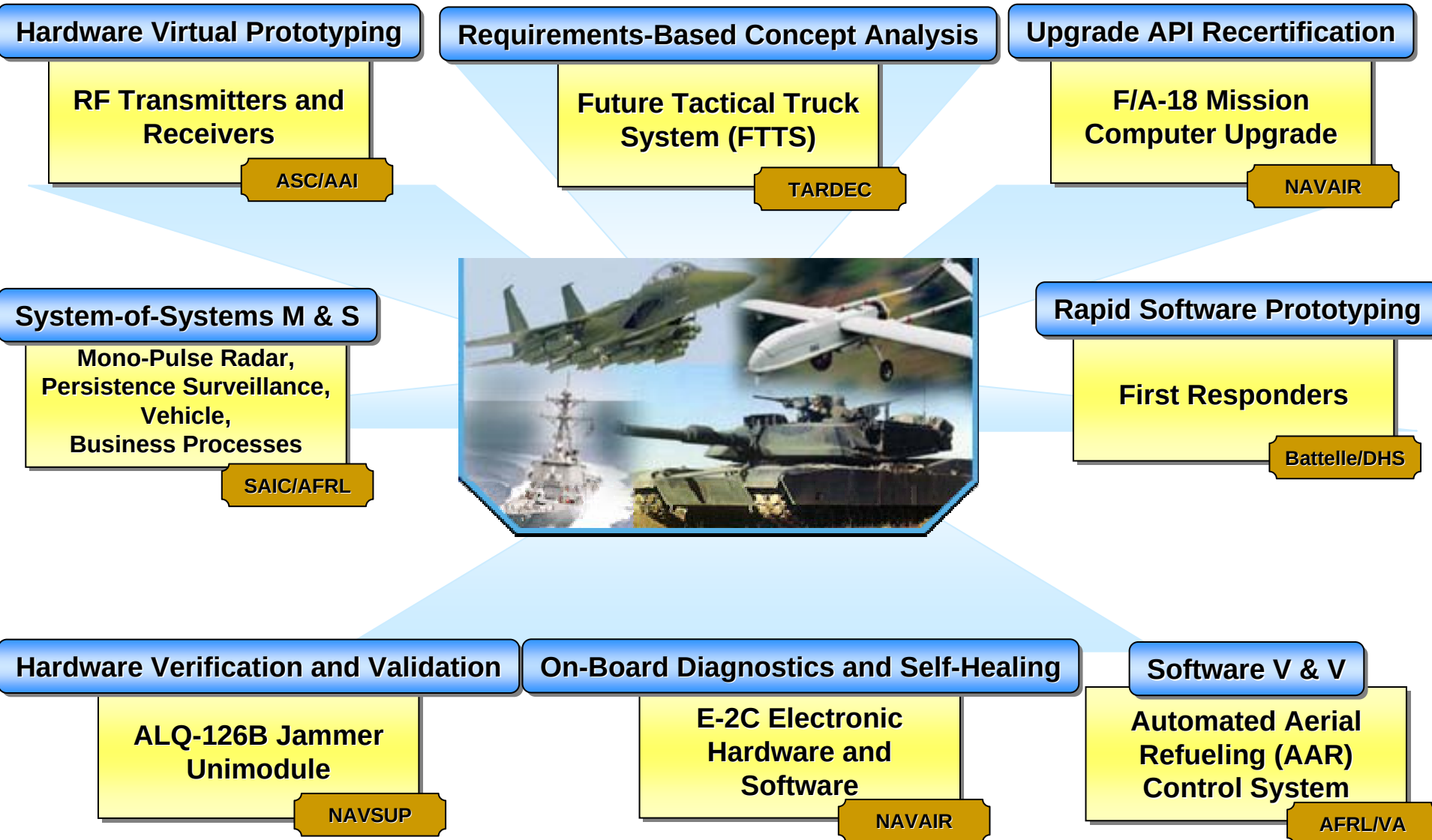
Locations:

- Dayton, Ohio (Headquarters)
- Satellite Offices (Washington DC, Springfield, OH, San Diego, CA)

Technology Overview

Enabling System-of-Systems Design Automation™

Capability	Enabling Functionality	Applications
<i>System-of-Systems Design</i>	Executable Specification with System Level Design Language, Graphical Tool Suite, Parameterizable model library	What-if analysis of concepts, requirements, designs and upgrades; Analysis of cost, schedule and performance risks; Interoperability analysis; Automating processes and procedures; Business Process Optimization
<i>Rapid Prototyping</i>	FPGA design skills, Reusable software assets	Rapid prototyping of digital electronics; Retargeting legacy systems; Rapid implementation of complex software applications
<i>Verification and Validation</i>	Automated test generation, Formal methods	Acceptance tests; IV&V of new systems and upgrades; Formal verification; Safety and reliability analysis of flight and mission critical systems
<i>On-Board Diagnostics and Self-Healing</i>	Model-based monitoring and self-healing	On-board diagnostics and self-healing; Autonomic computing; Network intrusion detection and prevention
<i>Anti-Tampering and Trust Assurance</i>	Tools and techniques to prevent reverse engineering, and assure trustworthiness of FPGAs	Protect Intellectual Property; Protect against reverse engineering; Assure trustworthiness



Product	Capability	Functionality	Tools
EDASTAR™	System-of-Systems Trade-Off Analysis and Optimization, Verification and Validation	System-of-Systems executable models, verification of safety and correctness properties using formal techniques, automated test generation, trust assurance tests, assertion generation and insertion for safety assurance, development of monitoring models	Syscape™, VectorGen™, SpecSafe™, ModSpec™
EDASHIELD™	Security and Anti-Tampering, On-Board Diagnostics and Self-Healing	Generation and insertion of Anti-Tamper logic in FPGAs, Protection of software using Co-Processors, monitoring models for diagnostics, intrusion detection and self-healing	SystemCritics™, OCT ² ANE™, SAMURAI™
Professional Services	Model development, Product customization and enhancement, Solution development leveraging reusable assets	Highly qualified and experienced staff and mature processes	Sole-Source IDIQ Phase III SBIR, 8(a), Commercial Catalog, GSA



Transition Milestones/Successes

- Record of SBIR Success
 - 12 Phase II; 2 Phase III awards
 - Over \$8M invested by DARPA, USAF, USN, USA, NASA, MDA, OSD, NSF
- Key Milestones
 - **Successfully completed (3/05) Phase III contract from Air Force**
 - **Awarded (6/04) 5 year Phase III IDIQ contract from NAVAIR with over \$45+M ceiling**
- Partnerships/Collaborations
 - **Lockheed Martin Mentor under Mentor-Protégé project (12/03-12/05)**
 - **Transitioning our SBIR technologies to Springfield Solutions Center under SAIC sponsorship**
 - **Transitioning our SBIR technologies to DHS first responders for assessment of gaps & alternatives under Battelle sponsorship**
 - **Donated software to Wright State University for non-commercial use; Led to formation of EDaptive Computing BPM Research Center**
 - **Member of national NACMAST Consortium – Network Attack Characterization Modeling And Simulation Test Center**
 - **Member of NSF I/UCRC Intelligent Maintenance Systems**
 - **Member of DHS Software Assurance Program Working Groups**
 - **Participating in IEEE DASC Working Group for Rosetta Standardization**
- Market Expansion
 - **Transition to DoD and NASA through collaboration with Primes**
 - **Transition to commercial market for Business Process Planning, Optimization**



Best Manufacturing Practices Center of Excellence

SBIR Programs

John S. Craighill
Senior Systems Engineer
(301) 405-9990

Johncr@bmpcoe.org
www.bmpcoe.org

23 August 2007



Contents

- MANTECH/BMPCOE
- BMP Core Competencies
- Red Teams
- Systems Engineering Model Process
- SBIR Assistance
- Points of Contact

MANTECH/BMPCOE

- MANTECH
 - Strengthens the U.S. industrial base by further broadening the reach of BMP's core competencies throughout government, industry, and academia
 - Focal point for developing, promoting and implementing policies that ensure a strong technologically superior defense industrial base
 - Sound link to industry and academia to improve manufacturing practices and train students
- The BMP Center of Excellence (BMPCOE)
 - Established in 1993 to foster Best Practices collection and implementation
 - Consequently, we have strong systems engineering, risk management, and production strengths
 - One of nine ONR Centers of Excellence under Manufacturing Technology (MANTECH) Program
 - Partnership among Dept of Commerce, University of Maryland and Office of Naval Research
 - Located on Campus at University of Maryland

BMP Core Competencies

- Best Practices Surveys - conducted to identify, validate, and document best practices, and encourage government, industry, and academia to share information and implement the practices
- Systems Engineering - facilitated by the Program Manager's WorkStation (PMWS), a suite of electronic tools that provide risk management, engineering support, and failure analysis through integrated problem solving (latest version and tutorial available at www.bmpcoe.org)
- Web Technologies - offered through the Collaborative Work Environment (CWE) to provide users with an integrated digital environment to access and process a common set of documents in a geographically dispersed environment
- Risk Management – Through TRIMS we conduct detailed process oriented risk assessments
- Production Support – support design reviews, design efforts for producibility (a design term), and production lines

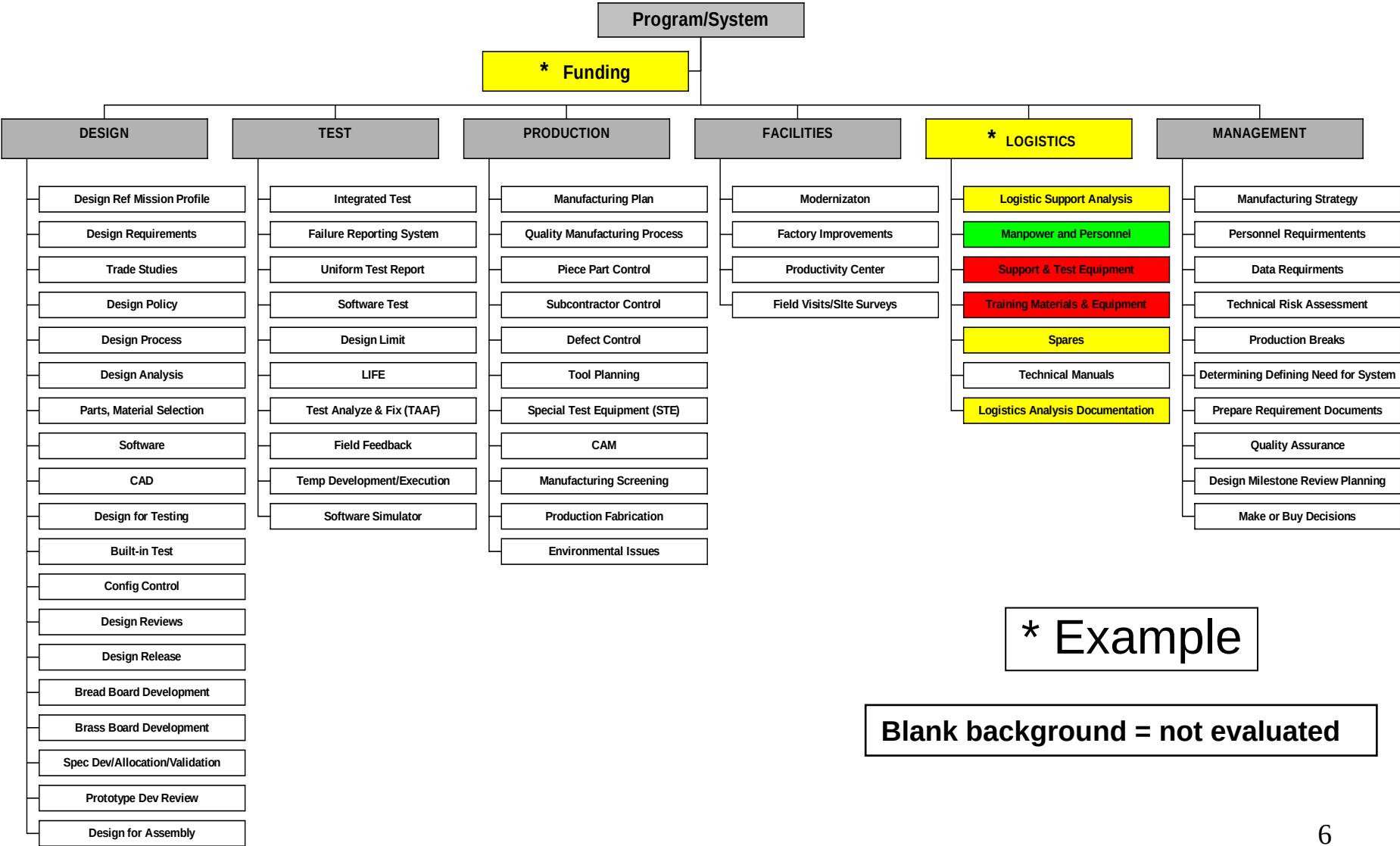
Red Teams

“We’re here to help!” – sure
“We’re happy to see you!” – right

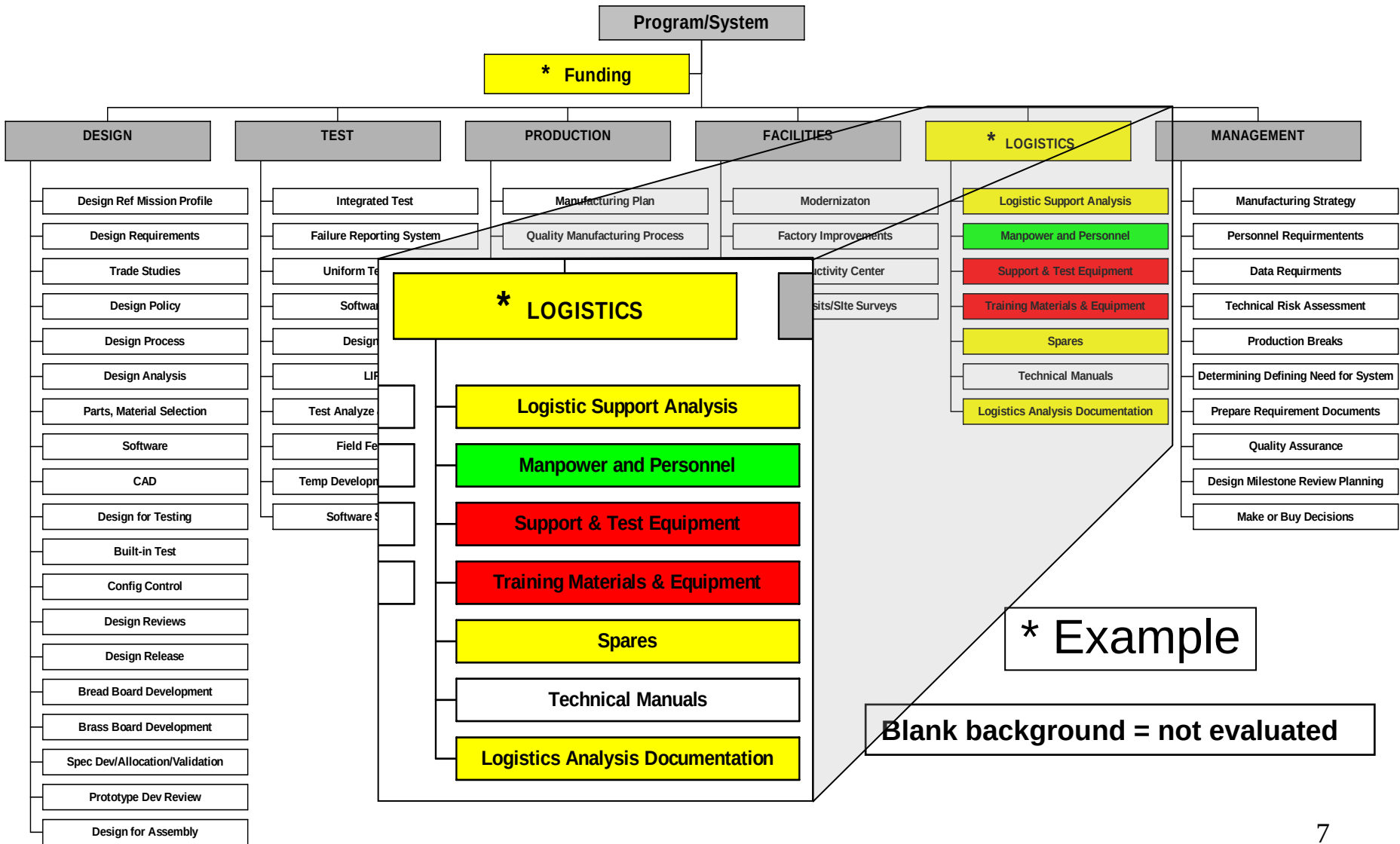
- We are not a government auditor
- BMP Red Teams assess risks to manufacturability:
 - Documents Review
 - Personal Interviews
 - Systems Hardware/Software
 - Overlay Analysis with BMP Systems Engineering Model
 - Baseline Risk Assessment
 - Contractor Review Process
 - Producibility Analysis
 - Risk Mitigation
 - Monitoring

We really are here to help!

TRIMS Systems Engineering Knowledge Base Template



TRIMS Systems Engineering Knowledge Base Template



BMPCOE SBIR Assistance

- Supporting ONR's SBIR Office
 - Initial Risk Assessment and Product Maturity Review – scaled down Red Team process focused on Small Business risk reduction
 - Completely funded by ONR
 - Initial phone calls/site visits
 - Govt reps (TPOC, Requirements and Resource Sponsors)
 - Specifically tailored team of 3 or 4 BMPCOE engineers conduct SBIR company site visit to assess risk to manufacturability
 - Follow-up as necessary
- BMPCOE Report to ONR – ONR may share some or all of team report with SBIR company
 - Product Description
 - Company Description
 - Risks
 - Programmatic (contract value, spending history, current status)
 - Observations
 - Conclusions – issues preventing forward progress
 - Recommended Way Ahead
- Assistance as desired by SBIR company as approved by ONR

Point of Contact

BMPCOE

John S. Craighill

Senior Systems Engineer

BMP Center of Excellence

4321 Hartwick Road, Ste 400

College Park, MD 20740

Johncr@bmpcoe.org

(301) 405-9990

www.bmpcoe.org

BURNS & LEVINSON LLP

RIGHTS TO GOVERNMENT FUNDED INVENTIONS MADE UNDER THE SBIR/STTR PROGRAMS

Beyond SBIR Phase II
NDIA

August 22 2007
Arlington, VA

Jacob (Jesse) N. Erlich, Esq., Partner

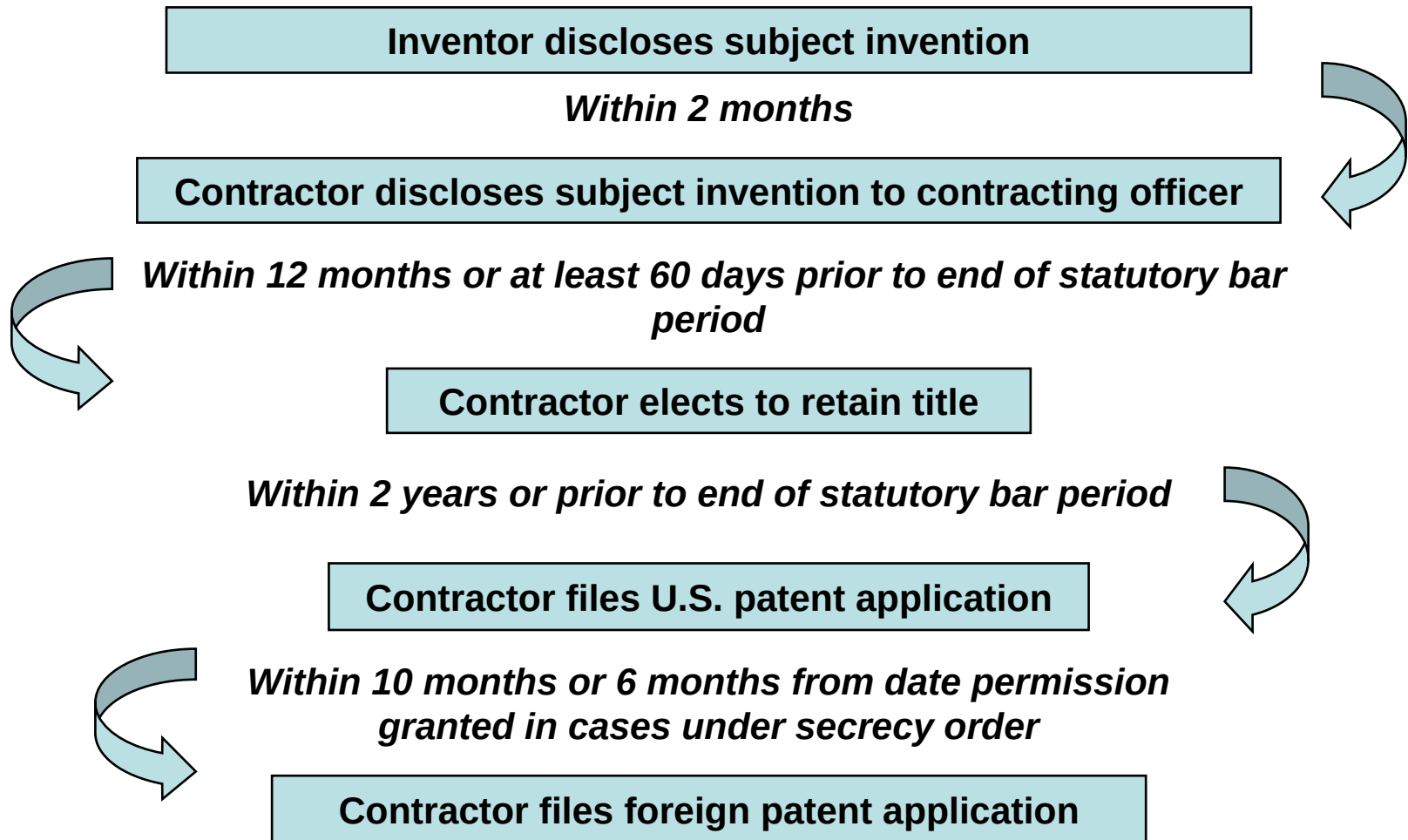
Key Definitions

- **Invention**
 - Any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code
- **Subject Invention**
 - Any invention of the contractor conceived or first actually reduced to practice in the performance of work under the contract.

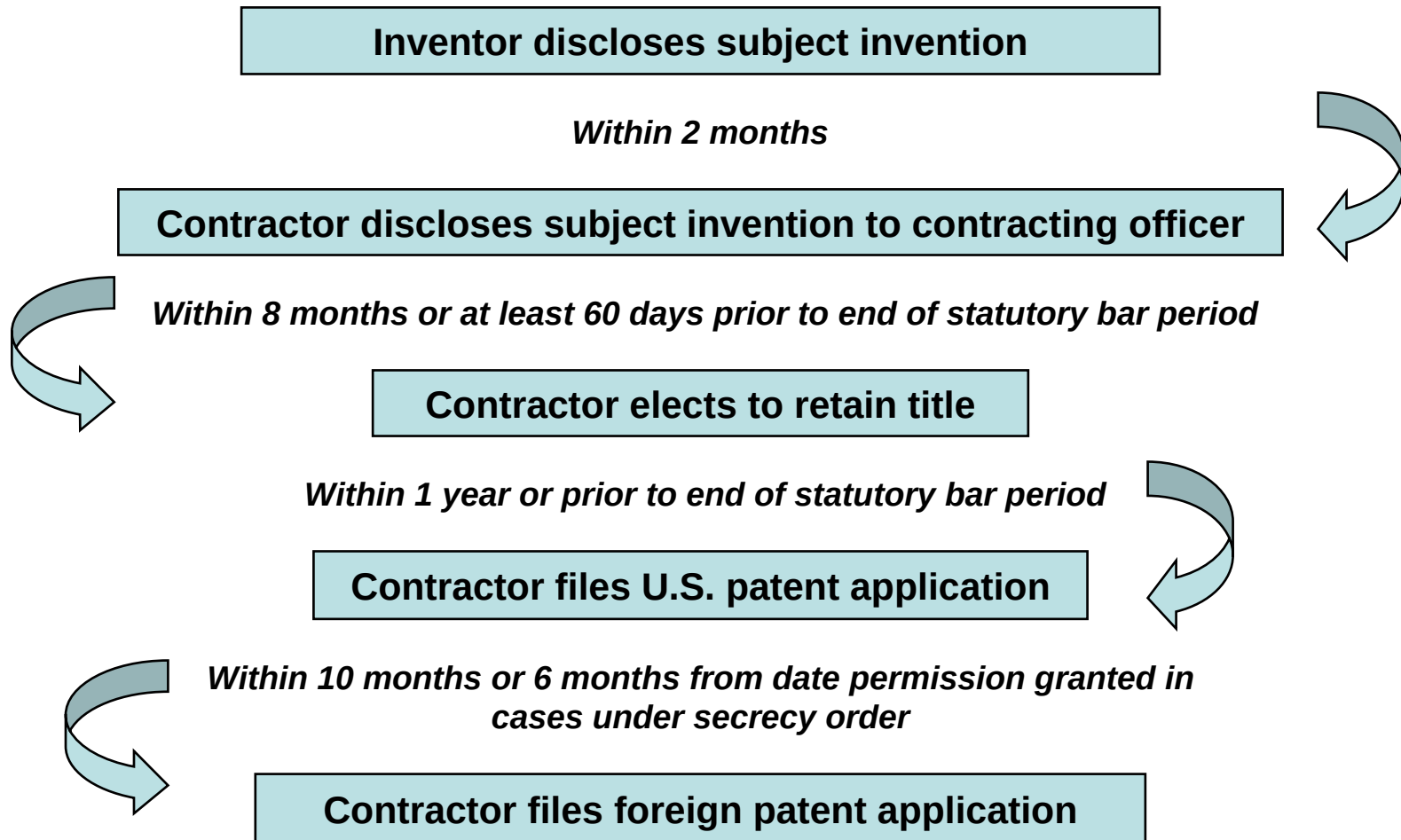
Contractor's Patent Rights Under FAR 52.227-11

- Contractor may retain the entire right, title, and interest throughout the world to each subject invention. With respect to any subject invention in which the Contractor retains title, the Federal Government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.
- With respect to any subject invention which the Government takes title, the Contractor shall retain a revocable, nonexclusive, royalty-free license throughout the world, except if the Contractor fails to disclose the subject invention to the Contracting Officer within the specified time.

Timeline - FAR 52.227-11



Timeline - FAR 52.227-12



What If ?

Contractor fails to
timely disclose
subject invention



Contractor fails to timely
elect to retain title to
subject invention



Contractor elects not
to retain title



Within 60 days of learning thereof, government may,
upon written request, obtain title to subject invention

Contractor fails to timely file patent



Government may, upon written request,
obtain title to subject invention

Contractor Must Take Following Action To Protect Government's Interest

- Execute or have executed all instruments necessary for Government to obtain title or obtain patent protection
- Require, by written agreement, its technical employees to disclose promptly in writing all subject inventions
- Notify Federal agency of any decision not to continue patent prosecution, pay maintenance fees, or defend reexamination 30 days prior to expiration of response period

Contractor Must Take Following Action To Protect Government's Interest, Cont.

- Include within specification of U.S. patent application on subject invention the following statement: “This invention was made with Government support under (identify contract) awarded by (identify Federal agency). The Government has certain rights in this invention.”
- Contractor shall establish and maintain active and effective procedures to assure inventions identified and disclosed (6 months of conception or actual reduction of practice)
- Submit appropriate reports

Subcontracts

- Subcontractor shall retain all rights as if subcontractor were contractor
- Contractor shall not, as part of consideration for awarding subcontract, obtain rights in subcontractor's inventions

Preference For U.S. Industry

- Contractor agrees that neither it, nor any assignee, will grant any person exclusive right to use or sell subject invention unless such person agrees to manufacture substantially in U.S. - waivers may be obtained

March-In Rights

- Federal Agency has right to require contractor, an assignee or exclusive licensee, to grant a non-exclusive, partially exclusive, or exclusive license in any field of use to responsible applicants if:
 - Contractor or assignee has not achieved practical application of invention
 - Health & Safety needs not satisfied by Contractor or assignee
 - Public use specified by public regulations if not satisfied by Contractor or assignee

Bringing the Technology Edge to the Warfighter

21 August 2007

Dr. Delores Etter

Assistant Secretary of the Navy

Research Development and Acquisition





ASN (RDA) Mission

To provide weapons, systems and platforms for the men and women of the Navy/Marine Corps that support their missions ***and*** give them a technological edge over our adversaries.





ASN (RDA) Goals

- Expedite GWOT acquisition programs as much as possible without compromising safety.
- Reduce volatility in current acquisition programs.
- Develop an investment/transition strategy for Science and Technology (S&T) to ensure future technological edge.
- Lead the Acquisition Enterprise component of the Naval Enterprise, in collaboration with OPNAV/HQMC and the fleet.





Our Changing Environment



Terrorist Actions



Failed States



Pandemic Flu



Natural Disasters



Counter Terrorism



Warfighter Operations



Coalition Operations



Humanitarian Operations

Desired Attributes of our Future Systems

- Develop and field systems that are:
 - Adaptable
 - Multi-Mission
 - Modular
 - Reconfigurable
 - Reusable
 - Affordable
- Open Architecture is the answer to many of these goals



Open Architecture Business Model

- We must adopt open architecture practices, opening our business models to
 - Using commercial standards as much as possible
 - Decoupling and reusing components
 - Opening competition on replacement components to third parties
 - Allowing new capabilities to be added with minimal dependency on integrators
- Small business is a key asset in the open architecture business model



Open Architecture Business Practices

- We must changes our contracts to:
 - Include OA requirements from our Program Managers Contract Guidebook
 - Obtain Government Purpose Rights (GPR) when the business case warrants
 - Award collaboration among multiple players
- We need internal business models to appropriately reflect accountability
- The SBIR and STTR programs provide education and opportunity to know how to participate in this process



Impacts of Open Architecture on our Partnership with Industry

- Challenges/Benefits:
 - Increases Competition
 - Allows Small Business to Compete
 - Changes Lead Systems Integrator Role
- To Be successful, our partnership must be based on :
 - Accountability
 - Transparency
 - Trust
 - Shared Risk
 - Measure Performance



How Can Small Business Participate?

- DoN SBIR Solicitation <http://www.navysbir.com>
- Repository and Collaboration Sites
 - Software Hardware Asset Reuse Enterprise (SHARE) for Surface Navy Combat Systems
<https://viewnet.nswc.navy.mil>
 - PEO C4I & Space Collaboration Site for Navy C4I and Space Systems
<https://sesi.spawar.navy.mil>
- Technology Collaboration Center
<http://www.fedbizopps.gov/>
 - Lockheed Martin
 - General Dynamics
 - Northrop Grumman





Looking Forward

- We need to:
 - Remain committed to making small business participation a priority
 - See successes in new areas
 - Collaboration in available centers
 - Develop a win-win strategy with industry



Department of the

NAVY

Research, Development & Acquisition

Search:

**Meet ASN
RDA**

Organizations

News

Programs

**Policy and
Guidance**

**Career
Management**

**Acquisition
One
Source**



Our Mission: *To provide weapons, systems and platforms for the men and women of the Navy/Marine Corps that support their missions and give them a technological edge over our adversaries.*

*Office of the Assistant Secretary of the Navy (Research, Development and Acquisition)
1000 Navy Pentagon, Washington, DC 20350-1000*

This is an official U.S. Navy web site (GILS Number: 001883).

*The Navy's Official Website | The Navy Recruiting Site | Official Navy FOIA
The Marine Corp's Official Website | The Marine Corp's Recruiting Site | Privacy Policy
Accessibility Help and Information | External Links disclaimer | Contact Us
Webmaster*

<http://www.acquisition.navy.mil/>



Air Force Small Business Innovation Research (SBIR) --Commercialization Pilot Program (CPP)

21 August, 2007

**Richard Flake
Technology Transition Division
Requirements Directorate
Air Force Research Laboratory
richard.flake@wpafb.af.mil**



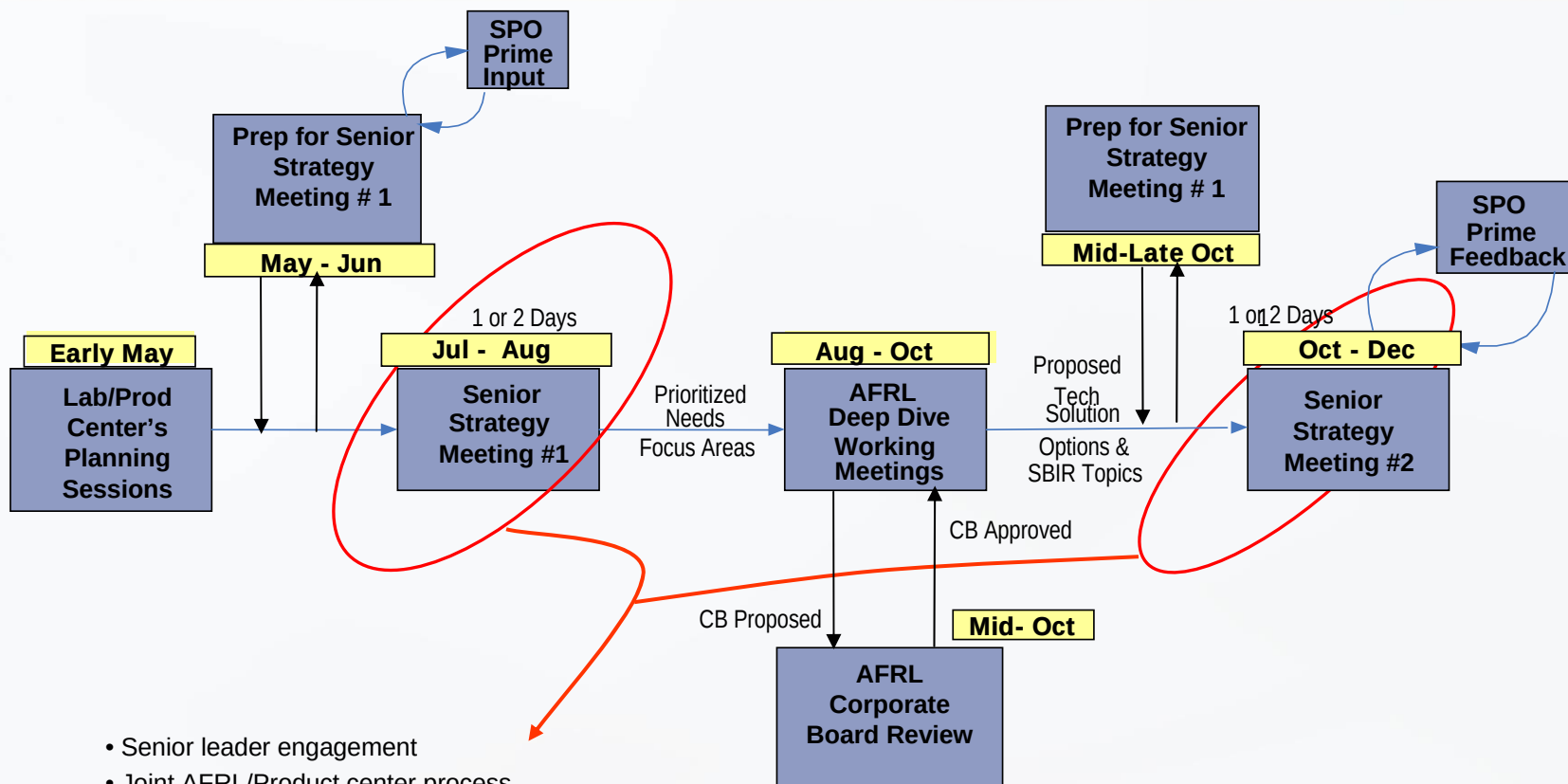
AF SBIR: What's New?

-- revitalization in progress

- New SBIR Topic Allocation Distribution
 - Based on \$\$ Contribution: 64% allocated to PEOs vice 47% last year
 - Goal: Focus on near term funded acquisition technology based needs
- Strategy vs Tactics
 - More strategic topic generation process with closer ties to acquisition community and prime contractors
- Air Force SBIR Commercialization Pilot Program (CPP)



Air Force Technology Needs Gathering Process

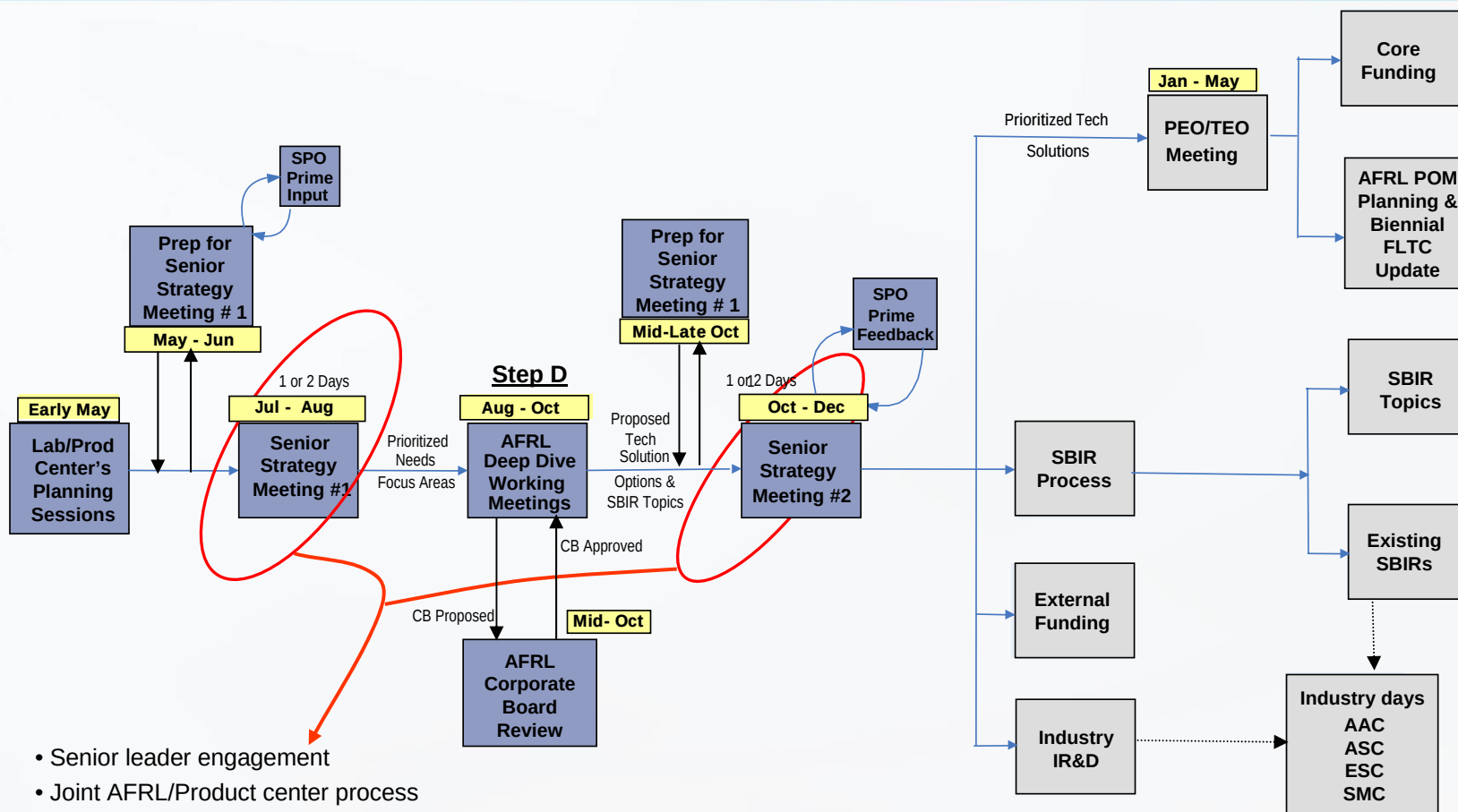


- Senior leader engagement
- Joint AFRL/Product center process
- Multi-directorate AFRL engagement
- PEO/TEO approval
- SPO Primes participation

Strategy Driven Process



Air Force Technology Needs Gathering Process



Strategy Driven Process



Air Force CPP Implementation

- The Air Force hired “Transition Agents” for each product center with responsibilities to:
 - provide a bridge between the laboratory and product centers and both program offices (JSF & F-22);
 - Product Centers:
 - Space and Missile Systems Center (SMC)
 - Aeronautical Systems Center (ASC)
 - Electronic Systems Center (ESC)
 - Air Armament Center (AAC)
- Use Hunter Gatherer process to identify SBIR Topics tied directly to Acquisition Technology Based Needs

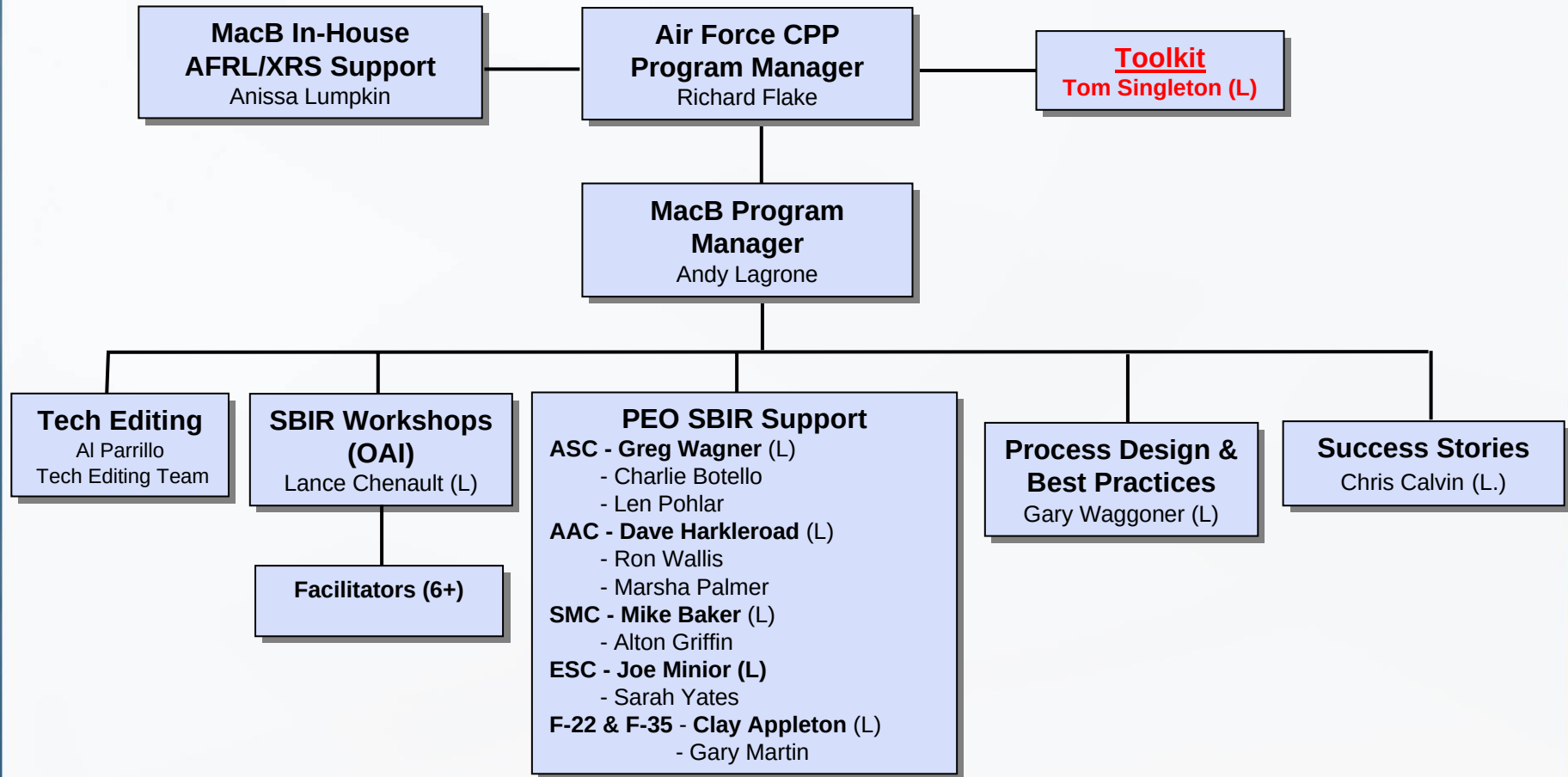


AF Strategy

- Utilize CPP to significantly strengthen the impact and appreciation of the SBIR Program for AF PEOs and staff
 - Strategic vs. Tactical framework
 - Improve connectivity among all critical AF SBIR program participants
 - PEO Organizations/Log Centers/Test Centers
 - AF Research Lab
 - PEO Prime Contractors and Suppliers
 - Increase technology transition opportunities to support the Warfighter



SBIR Transition Support Team





SBIR and IR&D Workshop

- Air Force planning an interchange between industry and each product center, JSF & F-22 Programs
 - Provides “match.com” service between Primes/Suppliers and SBIR contractors
 - Identifies SBIR Phase II efforts directly associated with Technology Based Needs
 - Acts as “Honest Broker”
 - 20 Apr 07 - Space & Missile Center/Industry Workshop
 - 12 & 13 Sep - Air Armament Center/Industry Needs Workshop
 - 14 & 15 Nov - (JSF & F-22)/Industry Workshop
 - Feb 08 - Electronic System Center/Industry Workshop
 - Summer 08 - Aeronautical System Center/Industry Workshop

Small Businesses - By invite only



Air Force Small Business Innovation Research (SBIR)

-- Commercialization Pilot Program (CPP)

23 August, 2007

**Richard Flake
Technology Transition Division
Requirements Directorate
Air Force Research Laboratory
richard.flake@wpafb.af.mil**



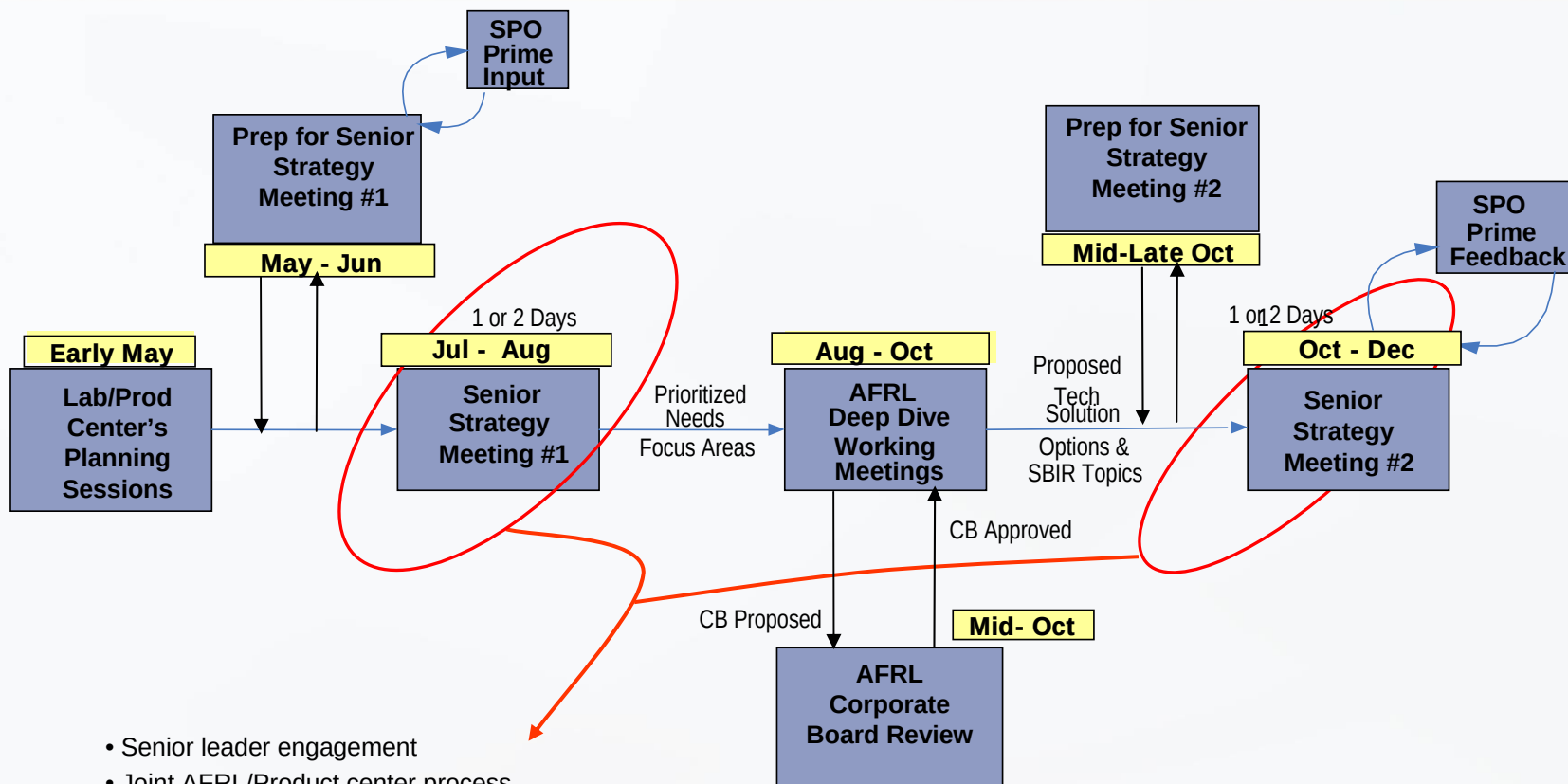
AF SBIR: What's New?

-- revitalization in progress

- New SBIR Topic Allocation Distribution
 - Based on \$\$ Contribution: 64% allocated to PEOs vice 47% last year
 - Goal: Focus on near term funded acquisition technology based needs
- Strategy vs Tactics
 - More strategic topic generation process with closer ties to acquisition community and prime contractors
- Air Force SBIR Commercialization Pilot Program (CPP)



Air Force Technology Needs Gathering Process



- Senior leader engagement
- Joint AFRL/Product center process
- Multi-directorate AFRL engagement
- PEO/TEO approval
- SPO Primes participation

Strategy Driven Process



Product Center Needs

-- Identification / Documentation Template

Program of Record: _____ Product Center Need Id # (ex. ESC-07-001): _____

Technology Need Description:

Technology freeze date if applicable: _____

Desired Key Performance Parameters:

Product Center's POC to support AFRL Deep Dive team (Name & Contact Info):

Related Development Efforts:

PEO Priority

High

☒

Medium

☐

Low

☐

System Specific?

☒

or

Pervasive Need?

☐

Prime Input to

YES

☒

Tech Need?

NO

☐



Product Center/AFRL

-- Tech Need Solution Template

Technology Challenge Description:

Product center defined need

Prog Office: F-15 (POC name)

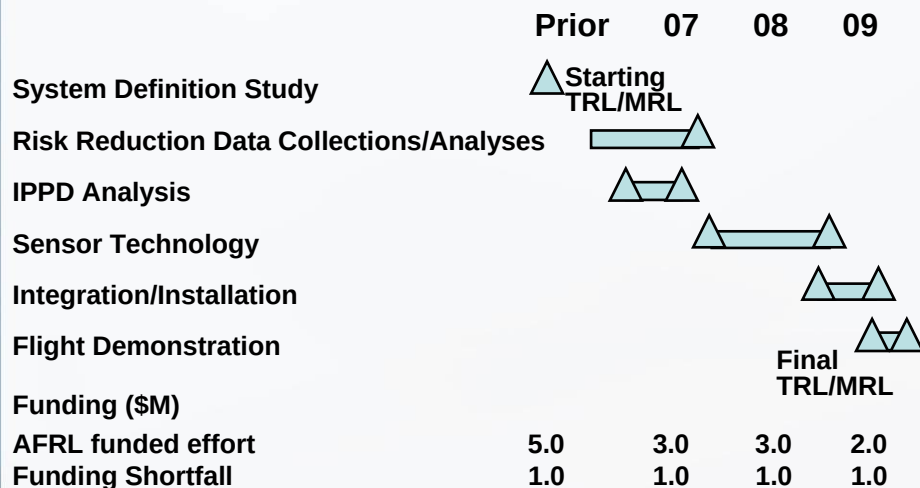
AFRL Proposed Approach:

- Brief description of the proposed solution

Core	☒
POM	☐
SBIR	☒
ManTech	☐
IR&D	☐
Referral	☐

List TDs participating in solution and Include Lead POC

Technology Investment Schedule (FY)

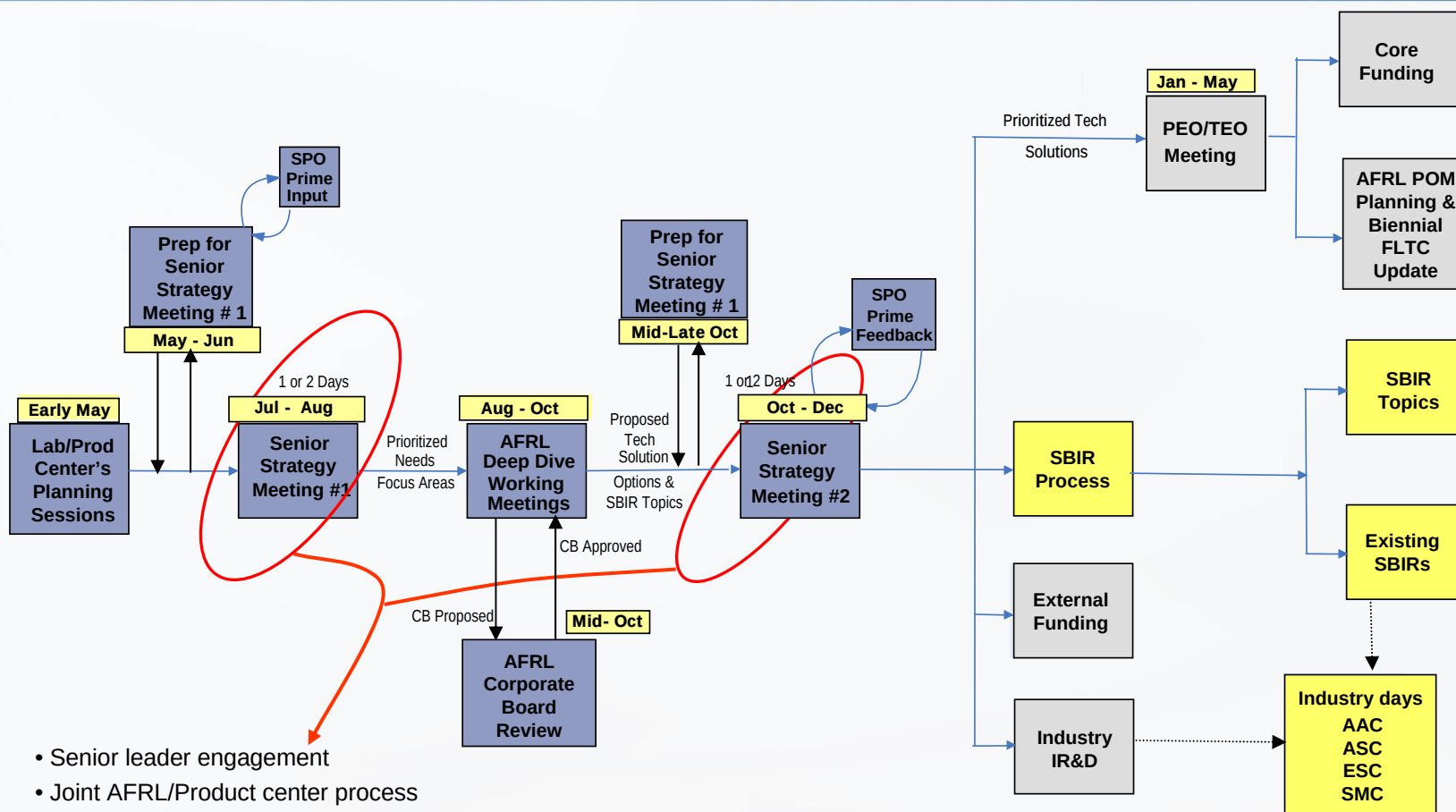


Solution Options:

- Core Funding - Modify existing program (6.2 or 6.3)
- New AFRL POM Initiative (6.2 or 6.3)
- SBIR
 - Topic: "Interesting SBIR prog" (ID potential Jumbo topics) in FYxx
 - Modify existing Phase I or II prog
- 7.8 (ManTech) Effort
- IR&D opportunity
- Identify other agency S&T efforts
- External programs (Customer, other agency)



Air Force Technology Needs Gathering Process



Strategy Driven Process



AF CPP Strategy

- Utilize CPP to significantly strengthen the impact and appreciation of the SBIR Program for AF PEOs and staff
 - Strategic vs. Tactical framework
 - Improve connectivity among all critical AF SBIR program participants
 - PEO Organizations/Log Centers/Test Centers
 - AF Research Lab
 - PEO Prime Contractors and Suppliers
 - Increase technology transition opportunities to support the Warfighter



AF CPP Strategy (con't)

--SBIR Transition Support Contract

- SBIR Phase 2 Success Stories
 - Track and record all AF SBIR product transitions (Phase III)
- Coordinates with Local AF SBIR Program Managers
 - Assists in identifying SBIR Phase 2 programs with high probability of transitioning
- Facilitates all aspects of SBIR Workshops



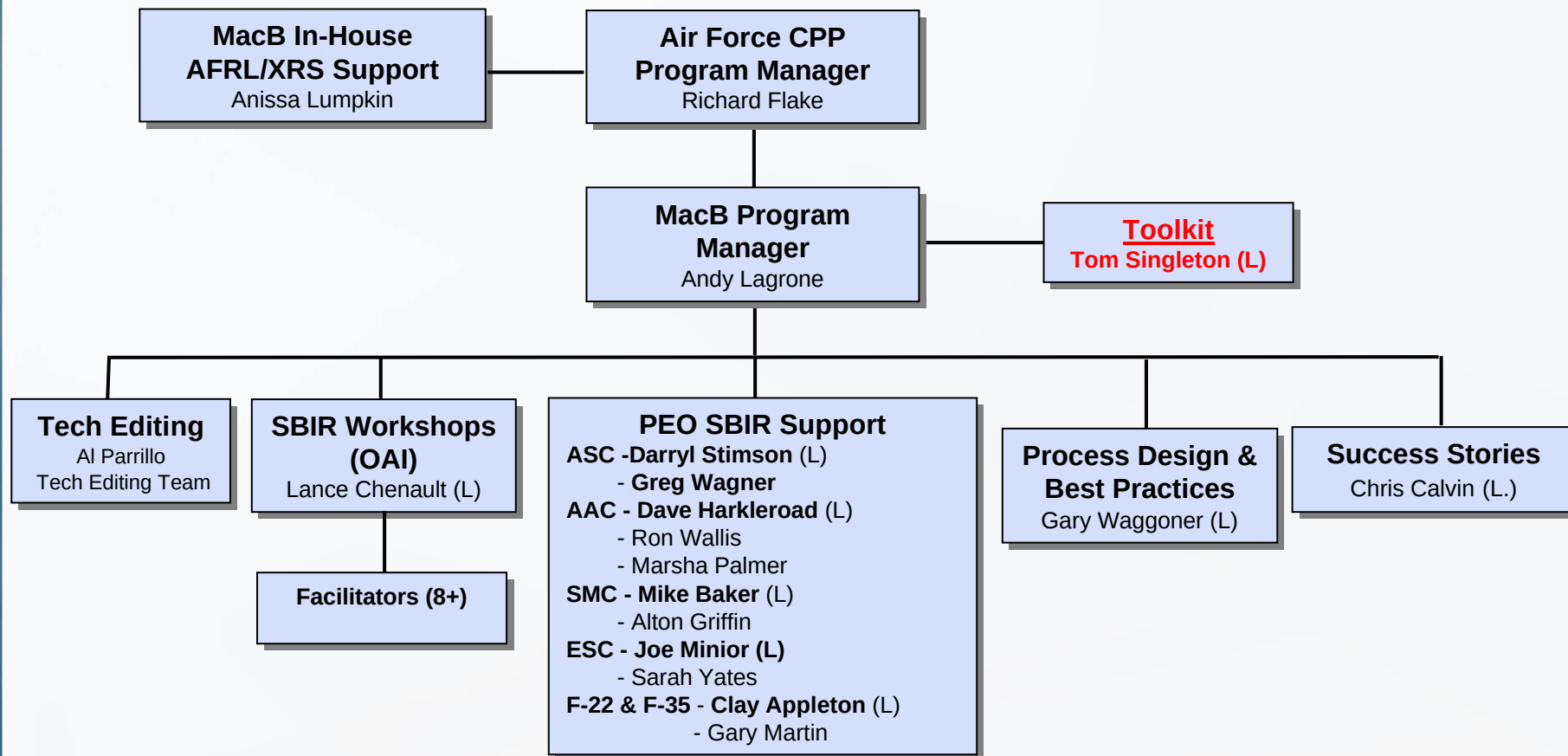
Air Force CPP Implementation

- Use needs gathering process to identify SBIR Topics tied directly to Acquisition Technology Based Needs
 - Transition Agents are Active members on AF PEO Need gathering teams
- Supports AF acquisition program offices in gathering topic inputs
 - provide a bridge between the laboratory & product centers & both program offices (JSF & F-22);
 - Product Centers:
 - Space and Missile Systems Center (SMC)
 - Aeronautical Systems Center (ASC)
 - Electronic Systems Center (ESC)
 - Air Armament Center (AAC)
- Coordinates Prime Contractor Input
 - Assist with Specific SBIR Topic Generation
- Helps develop transition strategies, plans & agreements
 - **S**BIR **T**echnology **T**ransition **P**lan (STTP)



SBIR Transition Support Team

-- "Transition Agents"





Tool-Kit (Assistance Instruments)

- SBIR
 - Enhancements
 - Extensions
- Mission funding
 - AFRL
 - PEO
- IR&D funding
- Mentor-Protégé
- Manufacturing Technical Assistance Production Program (MTAPP)
- Etc.



SBIR Workshop Planning Process

- Data Mining
 - Match PEO needs to existing Phase II SBIRs
- Technical POC
 - Make contact with Government Technical POCs to verify SBIR status
- Small Business
 - Collect information from Small Business Principle Investigators
- Primes/Industry
 - Review SBIR Business summary reports
 - Select small business for invitation to workshop
- AF Acts as “Honest Broker” & Workshop Facilitator
- MacB Transition Team
 - Facilitate one-on-one sessions between SBIR & supply chain contractors



SBIR Workshops

- Air Force conducts interchange workshops between industry supply chain & small business contractors
 - JSF & F-22 Industry Workshop Nov 07
 - ESC Industry Workshop Feb 08
 - SMC Industry Workshop Apr 08
 - ASC Industry Workshop Summer 08
- Objectives of Workshops
 - Identify areas of mutual interest
 - Initiate a “Way Forward” for small businesses and supply chain contractors

Small Businesses - By invitation only



Technical Information Document

- SBIR Topic Number/Contract Number/SBIR Project Title
- Company Name
- Government SBIR PM and TPOC
- Description of Work (Phase II Abstract)

**Collected
prior to
TPOC calls**

- Verify Company PI and POC contact information
- Additional Funding (Extension/Enhanced)
- Current status of Technology Development
 - Meeting milestones
 - Expected TRL at completion
- Potential match for PEO need?

**Collected
from TPOC**



Business Information Document

- SBIR Topic Number/Contract Number/SBIR Project Title
- Company Name
- Company PI and POC contact information
- Description of Work (Phase II Abstract)

**Collected
prior to
TPOC calls**

- Do they have:
 - Tech Transition/Commercialization Experience
 - Ability to manufacture the technology
 - Past/current contact with major DOD Primes/Suppliers
 - Industry certifications (ISO 9001, ASE, EN 2000, etc.)
- Do they intend to:
 - Manufacture the technology
 - License the technology

**Collected
from
TPOC**



Business Summary Document

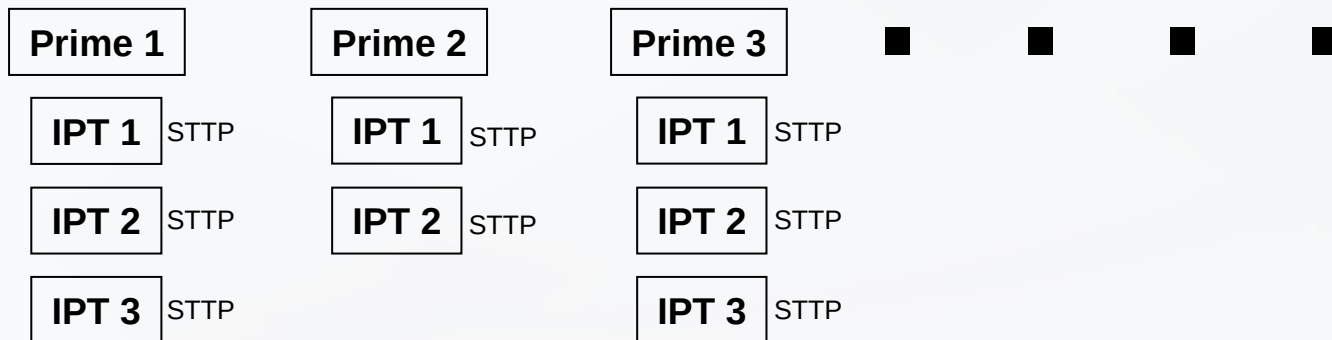
-- Information sent to Primes/Suppliers

- SBIR Topic Number/Contract Number/SBIR Project Title
- Company Name
- Company PI and POC contact information
- Description of Work (Phase II Abstract)
- Status of:
 - Funding (Extension/Enhanced)
 - Technology Development
- Company Qualifications:
 - Tech Transition/Commercialization Experience
 - Ability to manufacture the technology
 - Past/current contact with major DOD Primes/Suppliers
 - Industry certifications (ISO 9001, ASE, EN 2000, etc.)
- Company intend to:
 - Manufacture the technology
 - License the technology



Workshop Follow-Up Process

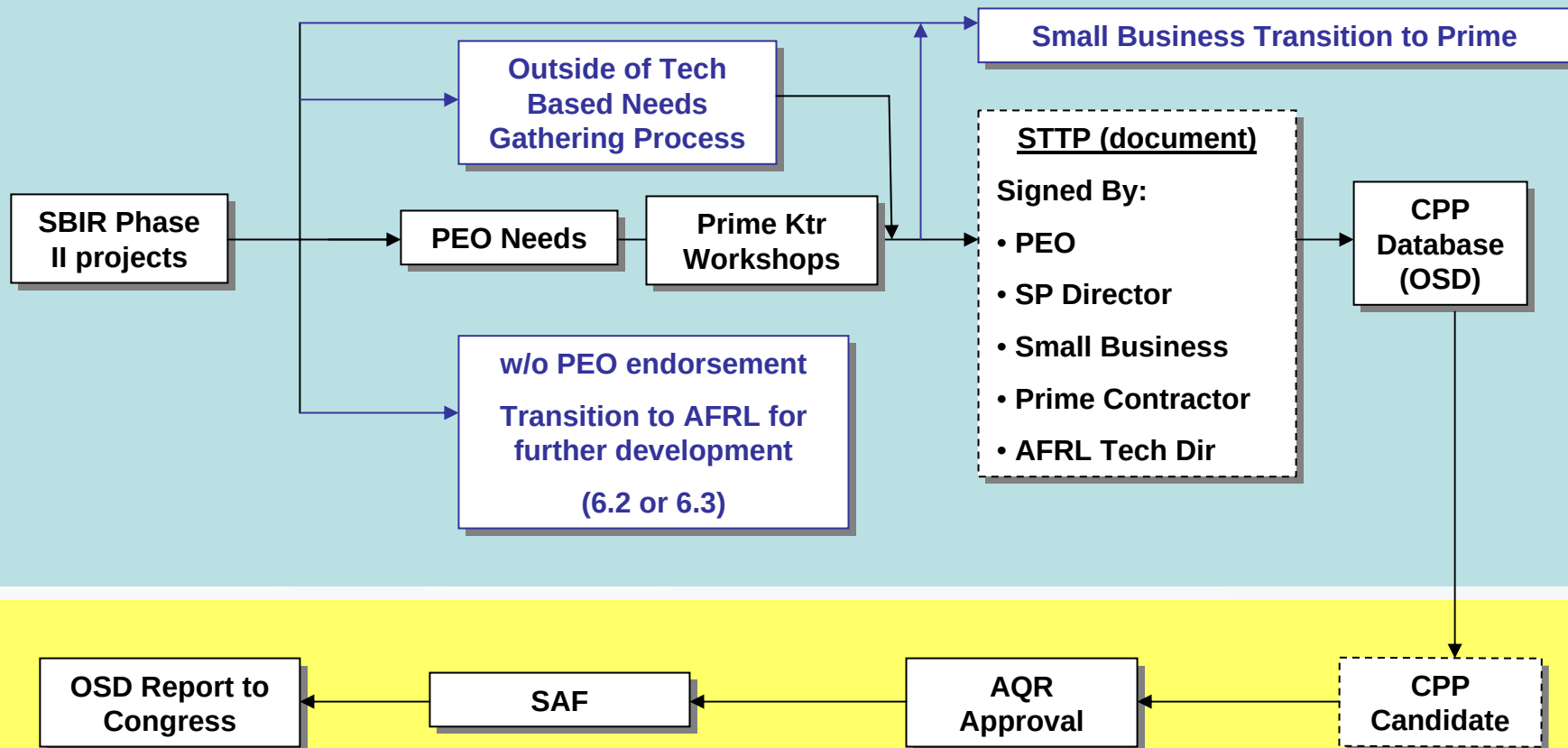
- Facilitators Conduct One-on-One Wrap-Up for each session
- Transition Team conducts follow-up telecons, arrange meetings, etc.
- Transition Team coordinates plans with AF stakeholders
 - Initiates SBIR Technology Transition Plan (STTP) as needed



Primes – Be Proactive!



AF SBIR Transition Support Process



■ AF SBIR CPP Manager

■ MacAulay-Brown Inc.



Summary

-- AF CPP Process

- Provides new SBIR Topic Allocation
 - Increased Focus on Product Center Tech needs/challenges
- Doesn't require a data call
 - Internal AF Process
 - Transition agents facilitating necessary collaborations
- Accelerates technology transition of successfully developed SBIR technologies
- Provides method to rapidly address critical SBIR technologies identified by warfighters

AF SBIR program is CPP



Beyond SBIR Phase II: Bringing Technological Edge to the Warfighter

Captain Shane Gahagan

**Deputy for Operations, Program Executive Officer, Air ASW, Assault
& Special Mission Programs (PEO(A))**

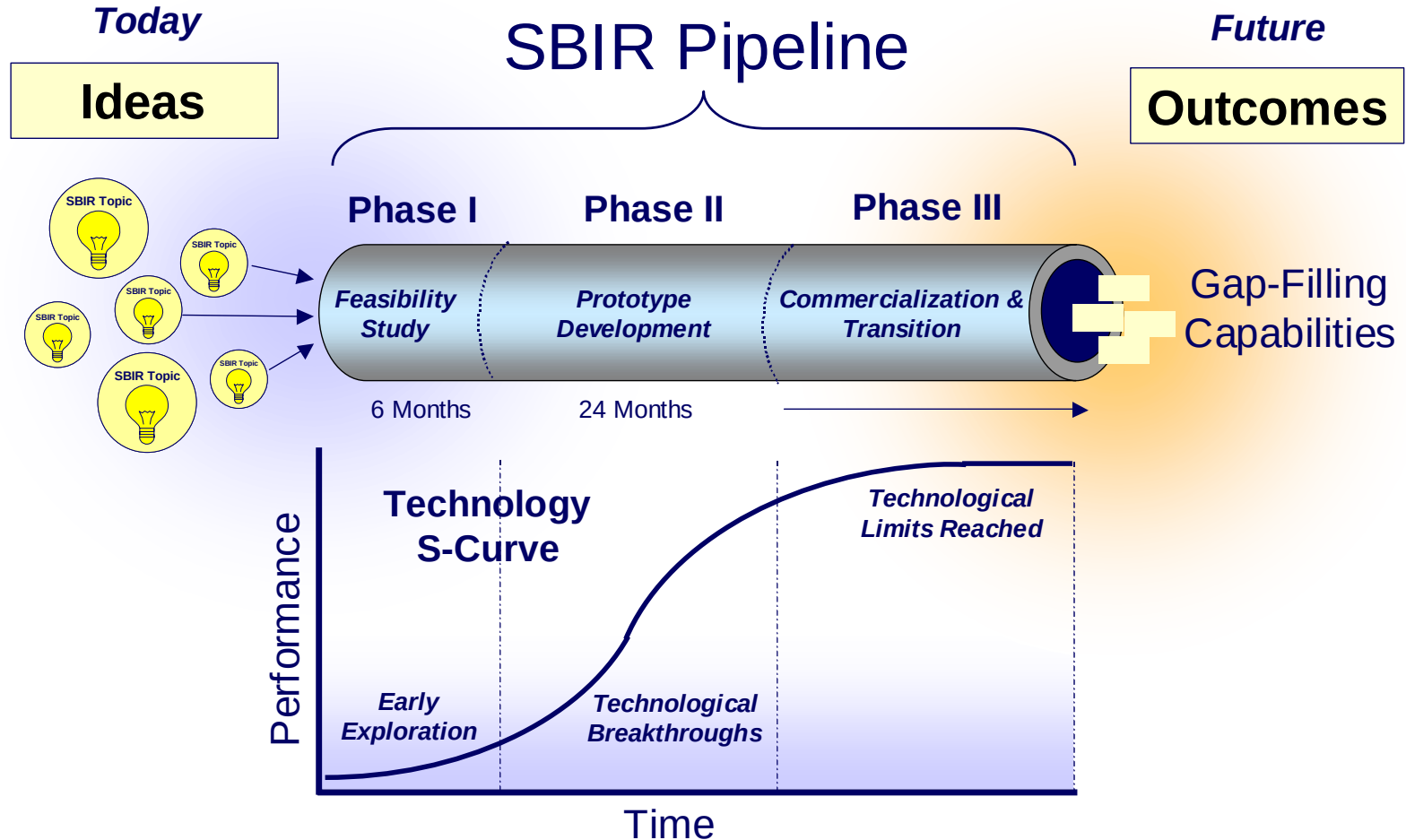
21 August 2007

PEO(A) Organizational Structure

- Program Executive Office, Air ASW, Assault and Special Mission Programs
- Consists of 10 Program Offices
 - PMA 257 – AV-8B
 - PMA 261 – MH-53
 - PMA 264 – ASW/Sonobuoys
 - PMA 271 – E-6B
 - PMA 273 – T-45TS, JPATS T-6, Legacy Trainers
 - PMA 274 – VH-71 A (Presidential Helo), VH-60N/VH-3D
 - PMA 275 – MV-22, CV-22 (Osprey)
 - PMA 276 – AH-1 W/Z, UH-1 N/Y, HH-1N
 - PMA 290 – P-3/S-3, P-8A (MMA), EP-3/ES-3
 - PMA 299 – MH-60R, SH-60B/F, HH-60H

PEO(A) Comprises 40% of the FY07 NAVAIR SBIR Budget, Investing over \$50M in the SBIR Program

SBIR “Pipeline”



Assured Transition from “Innovative Ideas” to “High Impact Outcomes” Requires Early Focus and Alignment towards “Filling Defined Future Capability Gaps”

SBIR Topic Generation

Defining Technology Needs

- **Future Capability Roadmap**
 - Alignment
 - Mission Needs
 - Mission Area Gaps
- **Timeline**
 - 3-5 years
 - Next POM/PR cycle
 - Current POR
- **Topic**
 - Prime/Subs
 - PMA teams
 - Operational & OPNAV

PEO(A) Topics: Capability, Time, & Teams

SBIR Timeline, Innovation, & Risk Reduction

- **Topics**
 - Alignment
 - Time Window
 - Buy-in
- **Innovation**
 - TRL Transition
 - Mature TRL transfer
 - Integrating existing capability
- **Risk Reduction**
 - Risk Management
 - Issue Management
 - Opportunity Management

Innovation & Risk Reduction part of Topic Generation

SBIR “SUCCESS”

- **Success: Meeting Future Capabilities in Timely Manner**
- **Examples of PEO(A) Topics that had money placed on a Phase III contract:**
 - **N04-022, “Airborne and Air-Deployable Multi-Sensor Search Optimization”, Planning Systems, Inc.**
 - **N03-188, “Innovative High Energy Density Capacitors for Navy Applications”, Phoenix Science & Technology**
 - **N02-162, “Innovative Erosion Resistant Coatings Materials/Concepts for Leading Edges on Composite Rotor Blades”, Hontek Corporation**
 - **N01-165, “Corrosion/Erosion Resistant Coatings for Turbine Compression Systems”, America’s Phenix, Inc.**
 - **N01-019, “Advanced Shipboard Landing Aerodynamic Interference Software Modules”, Advanced Rotorcraft Technology, Inc.**
 - **N01-010, “Large Format Resistive Emitter Array (LFRA) for Infrared Scene Projectors (IRSP)”, Indigo Systems Corp.**

PEO(A) focus is on selecting the right topics to improve transition rate



Your SBIR Data Rights and How to Protect Them

**Jere W. Glover
Executive Director
Small Business Technology Counsel**

**Seidman & Associates, P.C.
923 15th Street, NW
Washington, DC 20005
202-662-9700 202-737-2368
jglover@seidmanlaw.com**

DFARS § 252.227-7018

15 U.S.C. § 638

- Congress directs the Administrator to provide in the SBIR policy directive:
 - **(j)(2)(C)** procedures to ensure, to the extent practicable, that an agency which intends to pursue research, development, or production of a technology developed by a small business concern under an SBIR program enters into follow-on, non-SBIR funding agreements with the small business concern for such research, development, or production;
 - **(j)(3)(C)** to require agencies to report to the Administration, not less frequently than annually, all instances in which an agency pursued research, development, or production of a technology developed by a small business concern using an award made under the SBIR program of that agency, and determined that it was not practicable to enter into a follow-on non-SBIR program funding agreement with the small business concern,

(7) For Phase III, Congress intends that agencies or their Government-owned, contractor-operated facilities, Federally-funded research and development centers, or Government prime contractors that pursue R/R&D or production developed under the SBIR Program, give preference, including sole source awards, to the awardee that developed the technology. In fact, the Act requires reporting to SBA of all instances in which an agency pursues research, development, or production of a technology developed by an SBIR awardee, with a concern other than the one that developed the SBIR technology. (See Section 4(c)(7) immediately below for agency notification to SBA prior to award of such a funding agreement and Section 9(a)(12) regarding agency reporting of the issuance of such award.) SBA will report such instances, including those discovered independently by SBA, to Congress.

(8) For Phase III, agencies, their Government-owned, contractor-operated facilities, or Federally-funded research and development centers, that intend to pursue R/R&D, production, services, or any combination thereof of a technology developed by an SBIR awardee of that agency, with an entity other than that SBIR awardee, must notify SBA in writing prior to such an award. This notice requirement also applies to technologies of SBIR awardees with SBIR funding from two or more

agencies where one of the agencies determines to pursue the technology with an entity other than that awardee. This notification must include, at a minimum: (a) The reasons why the follow-on funding agreement with the SBIR awardee is not practicable; (b) the identity of the entity with which the agency intends to make an award to perform research, development, or production; and (c) a description of the type of funding award under which the research, development, or production will be obtained. SBA may appeal the decision to the head of the contracting activity. If SBA decides to appeal the decision, it must file a notice of intent to appeal with the contracting officer no later than 5 business days after receiving the agency's notice of intent to make award. Upon receipt of SBA's notice of intent to appeal, the contracting officer must suspend further action on the acquisition until the head of the contracting activity issues a written decision on the appeal. The contracting officer may proceed with award if he or she determines in writing that the award must be made to protect the public interest. The contracting officer must include a statement of the facts justifying that determination and provide a copy of its determination to SBA. Within 30 days of receiving SBA's appeal, the head of the contracting activity must render a written decision setting forth the basis of his or her determination.

7) For Phase III, **Congress intends that agencies** or their Government-owned, contractor-operated facilities, Federally-funded research and development centers, or Government prime contractors that pursue R/R&D or production developed under the SBIR Program, **give preference, including sole source awards, to the awardee that developed the technology.** In fact, the Act requires reporting to SBA of all instances in which an agency pursues research, development, or production of a technology developed by an SBIR awardee, with a concern other than the one that developed the SBIR technology. (See Section 4(c)(7) immediately below for agency notification to SBA prior to award of such a funding agreement and Section 9(a)(12) regarding agency reporting of the issuance of such award.) SBA will report such instances, including those discovered independently by SBA, to Congress.

(8) For Phase III, agencies, their Government-owned, contractor-operated facilities, or Federally-funded research and development centers, that intend to pursue R/R&D, production, services, or any combination thereof of a technology developed by an SBIR awardee of that agency, with an entity other than that SBIR awardee, must notify SBA in writing prior to such an award. This notice requirement also applies to technologies of SBIR awardees with SBIR funding from two or more

agencies where one of the agencies determines to pursue the technology with an entity other than that awardee. This notification must include, at a minimum: (a) The reasons why the follow-on funding agreement with the SBIR awardee is not practicable; (b) the identity of the entity with which the agency intends to make an award to perform research, development, or production; and (c) a description of the type of funding award under which the research, development, or production will be obtained. SBA may appeal the decision to the head of the contracting activity. If SBA decides to appeal the decision, it must file a notice of intent to appeal with the contracting officer no later than 5 business days after receiving the agency's notice of intent to make award. Upon receipt of SBA's notice of intent to appeal, the contracting officer must suspend further action on the acquisition until the head of the contracting activity issues a written decision on the appeal. The contracting officer may proceed with award if he or she determines in writing that the award must be made to protect the public interest. The contracting officer must include a statement of the facts justifying that determination and provide a copy of its determination to SBA. Within 30 days of receiving SBA's appeal, the head of the contracting activity must render a written decision setting forth the basis of his or her determination.

7) For Phase III, Congress intends that agencies or their Government-owned, contractor-operated facilities, Federally-funded research and development centers, or Government prime contractors that pursue R/R&D or production developed under the SBIR Program, give preference, including sole source awards, to the awardee that developed the technology. In fact, the Act requires reporting to SBA of all instances in which an agency pursues research, development, or production of a technology developed by an SBIR awardee, with a concern other than the one that developed the SBIR technology. (See Section 4(c)(7) immediately below for agency notification to SBA prior to award of such a funding agreement and Section 9(a)(12) regarding agency reporting of the issuance of such award.) SBA will report such instances, including those discovered independently by SBA, to Congress.

(8) For Phase III, agencies, their Government-owned, contractor-operated facilities, or Federally-funded research and development centers, that intend to pursue R/R&D, production, services, or any combination thereof of a technology developed by an SBIR awardee of that agency, with an entity other than that SBIR awardee, **must notify SBA in writing prior to such an award.** This notice requirement also applies to technologies of SBIR awardees with SBIR funding from two or more

agencies where one of the agencies determines to pursue the technology with an entity other than that awardee. This notification must include, at a minimum: (a) The reasons why the follow-on funding agreement with the SBIR awardee is not practicable; (b) the identity of the entity with which the agency intends to make an award to perform research, development, or production; and (c) a description of the type of funding award under which the research, development, or production will be obtained. SBA may appeal the decision to the head of the contracting activity. If SBA decides to appeal the decision, it must file a notice of intent to appeal with the contracting officer no later than 5 business days after receiving the agency's notice of intent to make award. Upon receipt of SBA's notice of intent to appeal, the contracting officer must suspend further action on the acquisition until the head of the contracting activity issues a written decision on the appeal. The contracting officer may proceed with award if he or she determines in writing that the award must be made to protect the public interest. The contracting officer must include a statement of the facts justifying that determination and provide a copy of its determination to SBA. Within 30 days of receiving SBA's appeal, the head of the contracting activity must render a written decision setting forth the basis of his or her determination.

7) For Phase III, Congress intends that agencies or their Government-owned, contractor-operated facilities, Federally-funded research and development centers, or Government prime contractors that pursue R/R&D or production developed under the SBIR Program, give preference, including sole source awards, to the awardee that developed the technology. In fact, the Act requires reporting to SBA of all instances in which an agency pursues research, development, or production of a technology developed by an SBIR awardee, with a concern other than the one that developed the SBIR technology. (See Section 4(c)(7) immediately below for agency notification to SBA prior to award of such a funding agreement and Section 9(a)(12) regarding agency reporting of the issuance of such award.) SBA will report such instances, including those discovered independently by SBA, to Congress.

(8) For Phase III, agencies, their Government-owned, contractor-operated facilities, or Federally-funded research and development centers, that intend to pursue R/R&D, production, services, or any combination thereof of a technology developed by an SBIR awardee of that agency, with an entity other than that SBIR awardee, must notify SBA in writing prior to such an award. This notice requirement also applies to technologies of SBIR awardees with SBIR funding from two or more

agencies where one of the agencies determines to pursue the technology with an entity other than that awardee. **This notification must include, at a minimum: (a) The reasons why the follow-on funding agreement with the SBIR awardee is not practicable; (b) the identity of the entity with which the agency intends to make an award to perform research, development, or production; and (c) a description of the type of funding award under which the research, development, or production will be obtained.** SBA may appeal the decision to the head of the contracting activity. If SBA decides to appeal the decision, it must file a notice of intent to appeal with the contracting officer no later than 5 business days after receiving the agency's notice of intent to make award. Upon receipt of SBA's notice of intent to appeal, the contracting officer must suspend further action on the acquisition until the head of the contracting activity issues a written decision on the appeal. The contracting officer may proceed with award if he or she determines in writing that the award must be made to protect the public interest. The contracting officer must include a statement of the facts justifying that determination and provide a copy of its determination to SBA. Within 30 days of receiving SBA's appeal, the head of the contracting activity must render a written decision setting forth the basis of his or her determination.

7) For Phase III, Congress intends that agencies or their Government-owned, contractor-operated facilities, Federally-funded research and development centers, or Government prime contractors that pursue R/R&D or production developed under the SBIR Program, give preference, including sole source awards, to the awardee that developed the technology. In fact, the Act requires reporting to SBA of all instances in which an agency pursues research, development, or production of a technology developed by an SBIR awardee, with a concern other than the one that developed the SBIR technology. (See Section 4(c)(7) immediately below for agency notification to SBA prior to award of such a funding agreement and Section 9(a)(12) regarding agency reporting of the issuance of such award.) SBA will report such instances, including those discovered independently by SBA, to Congress.

(8) For Phase III, agencies, their Government-owned, contractor-operated facilities, or Federally-funded research and development centers, that intend to pursue R/R&D, production, services, or any combination thereof of a technology developed by an SBIR awardee of that agency, with an entity other than that SBIR awardee, must notify SBA in writing prior to such an award. This notice requirement also applies to technologies of SBIR awardees with SBIR funding from two or more

agencies where one of the agencies determines to pursue the technology with an entity other than that awardee. This notification must include, at a minimum: (a) The reasons why the follow-on funding agreement with the SBIR awardee is not practicable; (b) the identity of the entity with which the agency intends to make an award to perform research, development, or production; and (c) a description of the type of funding award under which the research, development, or production will be obtained. **SBA may appeal the decision to the head of the contracting activity.** If SBA decides to appeal the decision, it must file a notice of intent to appeal with the contracting officer no later than 5 business days after receiving the agency's notice of intent to make award. Upon receipt of SBA's notice of intent to appeal, ~~the~~ **contracting officer must suspend further action on the acquisition until the head of the contracting activity issues a written decision on the appeal. The contracting officer may proceed with award if he or she determines in writing that the award must be made to protect the public interest. The contracting officer must include a statement of the facts justifying that determination and provide a copy of its determination to SBA.** Within 30 days of receiving SBA's appeal, the head of the contracting activity must render a written decision setting forth the basis of his or her determination.

7) For Phase III, Congress intends that agencies or their Government-owned, contractor-operated facilities, Federally-funded research and development centers, or Government prime contractors that pursue R/R&D or production developed under the SBIR Program, give preference, including sole source awards, to the awardee that developed the technology. In fact, the Act requires reporting to SBA of all instances in which an agency pursues research, development, or production of a technology developed by an SBIR awardee, with a concern other than the one that developed the SBIR technology. (See Section 4(c)(7) immediately below for agency notification to SBA prior to award of such a funding agreement and Section 9(a)(12) regarding agency reporting of the issuance of such award.) SBA will report such instances, including those discovered independently by SBA, to Congress.

(8) For Phase III, agencies, their Government-owned, contractor-operated facilities, or Federally-funded research and development centers, that intend to pursue R/R&D, production, services, or any combination thereof of a technology developed by an SBIR awardee of that agency, with an entity other than that SBIR awardee, must notify SBA in writing prior to such an award. This notice requirement also applies to technologies of SBIR awardees with SBIR funding from two or more

agencies where one of the agencies determines to pursue the technology with an entity other than that awardee. This notification must include, at a minimum: (a) The reasons why the follow-on funding agreement with the SBIR awardee is not practicable; (b) the identity of the entity with which the agency intends to make an award to perform research, development, or production; and (c) a description of the type of funding award under which the research, development, or production will be obtained. SBA may appeal the decision to the head of the contracting activity. If SBA decides to appeal the decision, it must file a notice of intent to appeal with the contracting officer no later than 5 business days after receiving the agency's notice of intent to make award. Upon receipt of SBA's notice of intent to appeal, the contracting officer must suspend further action on the acquisition until the head of the contracting activity issues a written decision on the appeal. The contracting officer may proceed with award if he or she determines in writing that the award must be made to protect the public interest. The contracting officer must include a statement of the facts justifying that determination and provide a copy of its determination to SBA. **Within 30 days of receiving SBA's appeal, the head of the contracting activity must render a written decision setting forth the basis of his or her determination.**

IMPORTANT REGULATIONS TO CONSIDER

- Patent Rights — FAR §§ 52.227-11, 12 and 13
- Authorization and Consent — FAR §52.227-1
- Notice & Assistance regarding Patent and Copyright Infringement — FAR § 52.227-2
- Patent Indemnity — FAR § 52.227-3
- Rights in noncommercial technical data and computer software — Small Business Innovation Research (SBIR) Program- **DFARS § 252.227-7018**
- SBA SBIR Policy Directive- 67 FR 60072

POINTERS: PROTECTING INTELLECTUAL PROPERTY RIGHTS

- **TIMELY NOTIFY GOVERNMENT OF INVENTIONS ON REQUIRED FORM**
 - *Campbell Plastics*
- **TAILOR MODE OF PROTECTION TO IP AT ISSUE**
 - *Night Vision*
- **MARK DATA OR SOFTWARE**
 - *Night Vision*
- **OBTAIN FOLLOW ON SBIR CONTRACTS**
- **DEVELOP AT PRIVATE EXPENSE**
- **CHARGE DEVELOPMENT INDIRECT TO EXTENT PERMITTED**
 - See P. Seidman, “What’s Mine is Mine and What’s Yours is Mine’ – The Return of Overpriced DOD Spare Parts”, 36 *Government Contractor* ¶207, p. 8, April 13, 1994
- **MAINTAIN EVIDENCE OF DEVELOPMENT AT PRIVATE EXPENSE**

BASES FOR CHALLENGING BUNDLING

- **COMPETITION IN CONTRACTING ACT**

- FULL AND OPEN COMPETITION REQUIREMENT
- MINIMUM NEEDS RULE

- **CAUSE OF ACTION**

- “BUNDLING” NOT NECESSARY TO MEET MINIMUM NEEDS

- **SMALL BUSINESS ACT/ ANTIBUNDLING REGS**

- IMPOSES JUSTIFICATION REQUIREMENTS

- **CAUSE OF ACTION**

- FAILURE TO MEET REQUIREMENTS

Seidman & Associates, P.C.
ATTORNEYS AT LAW
923 FIFTEENTH STREET. N.W.
WASHINGTON, D.C. 20005

Telephone: 202-737-5734

Website: www.seidmanlaw.com

FIRM RESUME

The firm of Seidman & Associates, P.C. represents businesses competing for and performing Government contracts. The firm has an active practice before GAO, the Federal Courts, and Boards of Contract Appeals. It also represents clients in legislative and rulemaking efforts relating to Government contracts.

Attorneys in the firm are Paul J. Seidman, Jere W. Glover and David J. Seidman.

PAUL J. SEIDMAN pjseidman@seidmanlaw.com

Paul Seidman is a graduate of the Georgetown University Law Center. Prior to entering private practice he served as a law clerk to Judge Philip Nichols, Jr., of the U.S. Court of Appeals for the Federal Circuit, Assistant Counsel for Contract Claims at Naval Sea Systems Command and Assistant Chief Counsel for Procurement in the SBA Office of the Advocacy.

Mr. Seidman has served as counsel in bid protests before GAO and Federal Courts and contract disputes before Boards of Contract Appeals and Federal Courts.

Mr. Seidman is "AV" Rated in the Martindale-Hubbell law directory. The "A" signifies the highest level of legal skill, the "V" signifies "very high" adherence to professional standards of conduct, ethics, reliability, and diligence.

Mr. Seidman has appeared as an expert witness on procurement related issues in Congressional hearings and before the Packard Commission. He has written and lectured widely. He is an NCMA Fellow and served on the Advisory Board of *The Government Contractor*. His biography appears in *Who's Who in America*.

JERE W. GLOVER jglover@seidmanlaw.com

Jere Glover was Chief Counsel for Advocacy at SBA from 1994 to 2001. He also served as Counsel to the House and Senate Small Business Committees. In these positions he played a key role in the development of the Small Business Innovation Research ("SBIR") Act and implementing regulations.

Prior to joining SBA, Jere established his own law firm and was CEO of several technology-related businesses. Mr. Glover served as a trade association executive and on the boards of several national trade associations. Mr. Glover has engaged in private and public venture capital efforts.

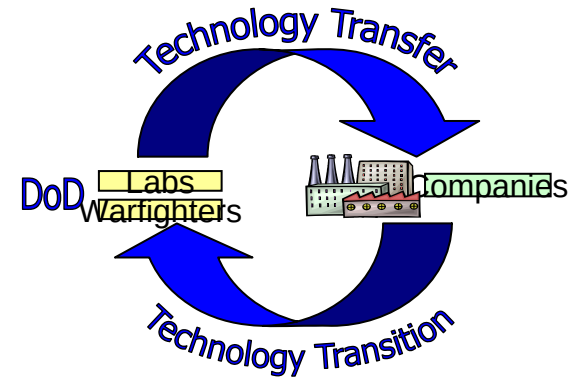
Mr. Glover also served as Director of the Legal Division of the Consumer Product Safety Commission, and as a senior antitrust trial attorney for the Federal Trade Commission. He has testified before Congress over 30 times and appeared in over 200 agency proceedings, numerous Federal Court proceedings, Federal rulemakings, adjudications, enforcement proceedings, and others.

Mr. Glover has appeared in numerous Federal Court and agency proceedings concerning regulatory, size determination and SBIR and other SBA problems.

DAVID J. SEIDMAN davidjseidman@seidmanlaw.com

David J. Seidman is a 2005 graduate of the University of Baltimore Law School where he served on the executive board of the Journal of Environmental Law and won a legal writing competition. He began his legal career as law clerk to Judge Joseph A. Dugan, Jr. of the Montgomery County Circuit Court in Maryland. He is currently enrolled in the prestigious Government Procurement Masters Program at the George Washington University Law School.

Mr. Seidman is admitted only in Maryland. He is supervised by attorneys at Seidman & Associates, P.C., who are admitted to the D.C. Bar.



Department of Defense Technology Transfer, Transition, and Manufacturing

**2007 Beyond SBIR Phase II: Bringing Technological
Edge to the Warfighter**

August 23, 2007

**Cynthia E. Gonsalves, Deputy Director
Office of Technology Transition**

Office of the Deputy Under Secretary (Advanced Systems & Concepts)

cynthia.gonsalves@osd.mil

(703) 607-5326



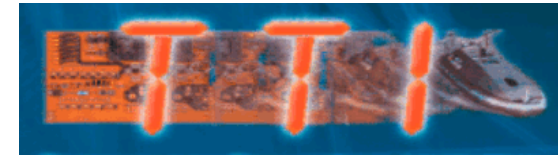
Beyond Phase II: SBIR Goals

- **Stimulate technological innovation**
- **Increase small business participation in federal R&D**
- **Foster & encourage participation by minority & disadvantaged persons in technological innovation**
- **Increase private sector commercialization of innovations derived from federal R&D**





Technology Transition Initiative (TTI)



Congressional Language:

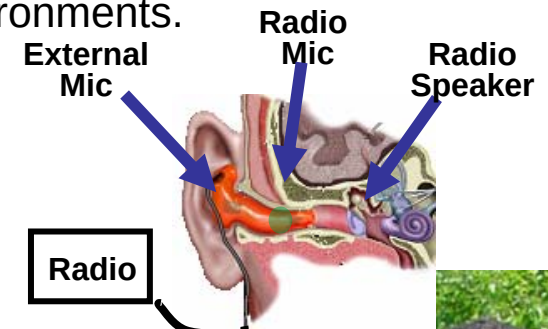
- Facilitate the rapid transition of new technologies from S&T programs of the DoD into acquisition programs of the Department for the production of such technologies.

Objectives:

- Accelerate the introduction of new technologies into operational capabilities for the armed forces.
- Successfully demonstrate new technologies in relevant environments.

Criteria:

- TTI Funding Accelerates Product Transition*
- Project is from DoD S&T Base *
- Cost Sharing to leverage funding*
- Less than 4 years TTI Funding*
- Established exit criteria
- Joint Focus
- Value to the Warfighter
- Technology mature – TRL 6 or 7
- Commitment to Acquisition/Procurement Path



OSD PoC: Dan Altobelli
ODUSD (AS&C)
Dan.Altobelli.ctr@osd.mil 703-607-5312



Authority

- Authorized by Title 10, USC, Sec 2395b

Purpose

- Provides *increased opportunities* for the introduction of *innovative and cost-saving technologies* into DoD acquisition programs
- Provides an “on-ramp” to DoD acquisition system for small and medium vendors
- Funds for the *Test and Evaluation of technologies that have potential* to improve current acquisition programs at component, subsystem, or system level
- Uses an established network of Service and USSOCOM liaison offices

OSD PoC: Bob Mattes, ODUSD (AS&C)
Bob.mattes@osd.mil 703-602-3740



Defense Acquisition Challenge (DAC)

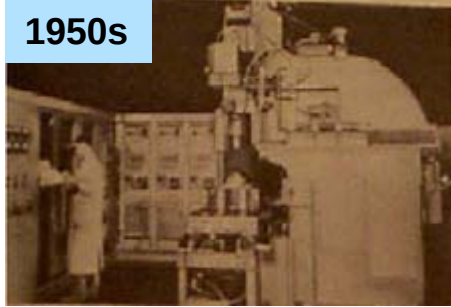
- Started in 2003 – Section 2359b, USC Title X; high HASC interest
- Anyone can propose **innovations** that could **quickly improve**:
 - Affordability, manufacturability, performance, or capabilities ... at a system, subsystem or component level
 - **10:1 program ROI to date!**
- Proposals “**challenge**” existing technology or methods
 - Evaluated for merit & feasibility – must meet **warfighter requirements**
 - **TRL = minimum high 6, ready to field**
 - If testing proves successful, innovations inserted into a **program of record**
 - **Test to procure**
 - Entry into DoD acquisition for non-traditional defense industry
- **Competitive**: Annual Broad Agency Announcement (BAA) in Federal Business Opportunities & unsolicited proposals
- For more details: <https://cto.acqcenter.com/>





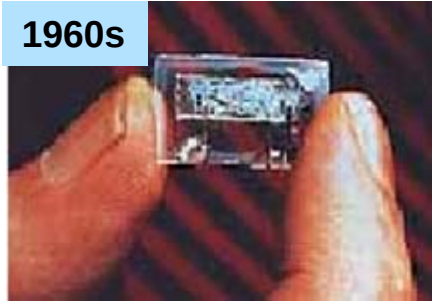
ManTech Legacy: 50 Years of Success Supporting Military Requirements & the Defense Industrial Base

1950s



- Developed the original NC machine tool and associated programming language
- AF investment at MIT

1960s



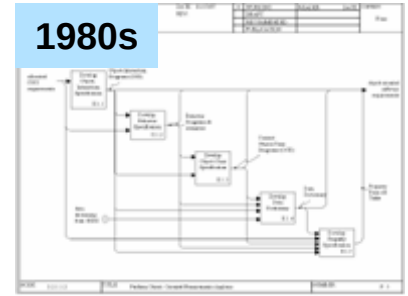
- Components for first integrated circuit calculator
- AF / Army

1970s



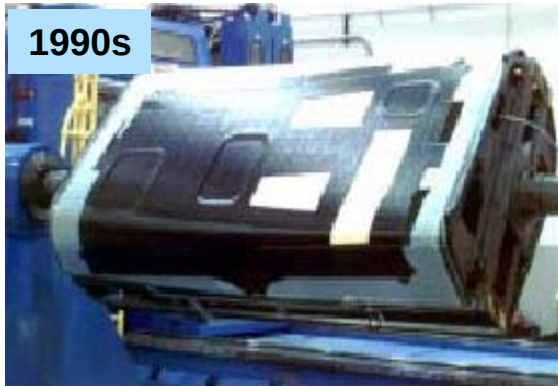
- Paved way for comprehensive night vision development program
- Army investment in image intensifier tubes

1980s



- Standard modeling methodology for mfg.
- AF's Integrated Computer Aided Mfg. (ICAM) program
 - Facilitated industry-wide ICAM Definition Modeling tool (IDEF)

1990s



- Multi-axis NC-machine tool enabled manufacturing of complex composite shapes
- Now an industry-wide standard process
- Navy's Adv. Fiber Placement initiative

2000



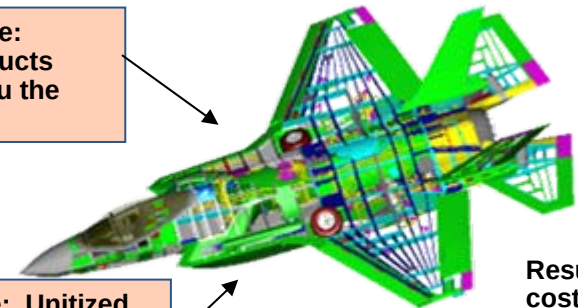
- Enabled fielding of lightweight body armor used in Operation Enduring Freedom
- Army developed affordable mfg. processes

2000 +

Composites Affordability Initiative (A, N, AF Joint Investment)

Center Fuselage:
Unitized Inlet Ducts
saves 8,000 thru the
duct fasteners

Forward Fuselage: Unitized
Side Panels saves 1,000
Fasteners



OSD PoC: Adele Ratcliff
www.dodmantech.com
(703) 607-5319

Result: \$5M
cost savings
To Lockheed
JSF airframe
(baseline to
EMD design)



www.techlinkcenter.org



KEY ACTIVITIES

1. Licensing DoD-developed technologies to companies
2. Establishing cooperative R&D agreements between DoD labs and companies
3. Helping DoD acquire innovative technologies through the DoD SBIR and IR&D programs

STATISTICS

1. Over 300 technology transfer partnerships established between companies and DoD labs
2. Brokered 30% of all DoD patent licenses nationwide FY 2003-2006
3. Providing 4:1 return on investment to DoD from technology transfer activities



Moving Technology from Minds to Markets



Dept. of Commerce/NIST/MEP

Manufacturing Extension Partnership

*Supporting U.S. industry, Federal Laboratories,
and DoD suppliers with technology transfer, transition
and commercialization.*

**Goal: to help manufacturers transition
new technology more quickly, efficiently,
and cost-effectively to the U.S. warfighter.**

**The MEP National System strengthens the global
competitiveness of U.S. manufacturing by providing
business and technical assistance to companies using DoD
technology, or to companies that are developing new
technologies that enhance the value of products and
services supplied to Defense.**

***Dan Pitkin, Business & Technology Advisor
OSD (AS&C) OTT: daniel.pitkin@osd.mil 703-607-5313
DOC (NIST) MEP: dan.pitkin@nist.gov 301-975-4734***





Tech Transition Hurdles

MILTECH



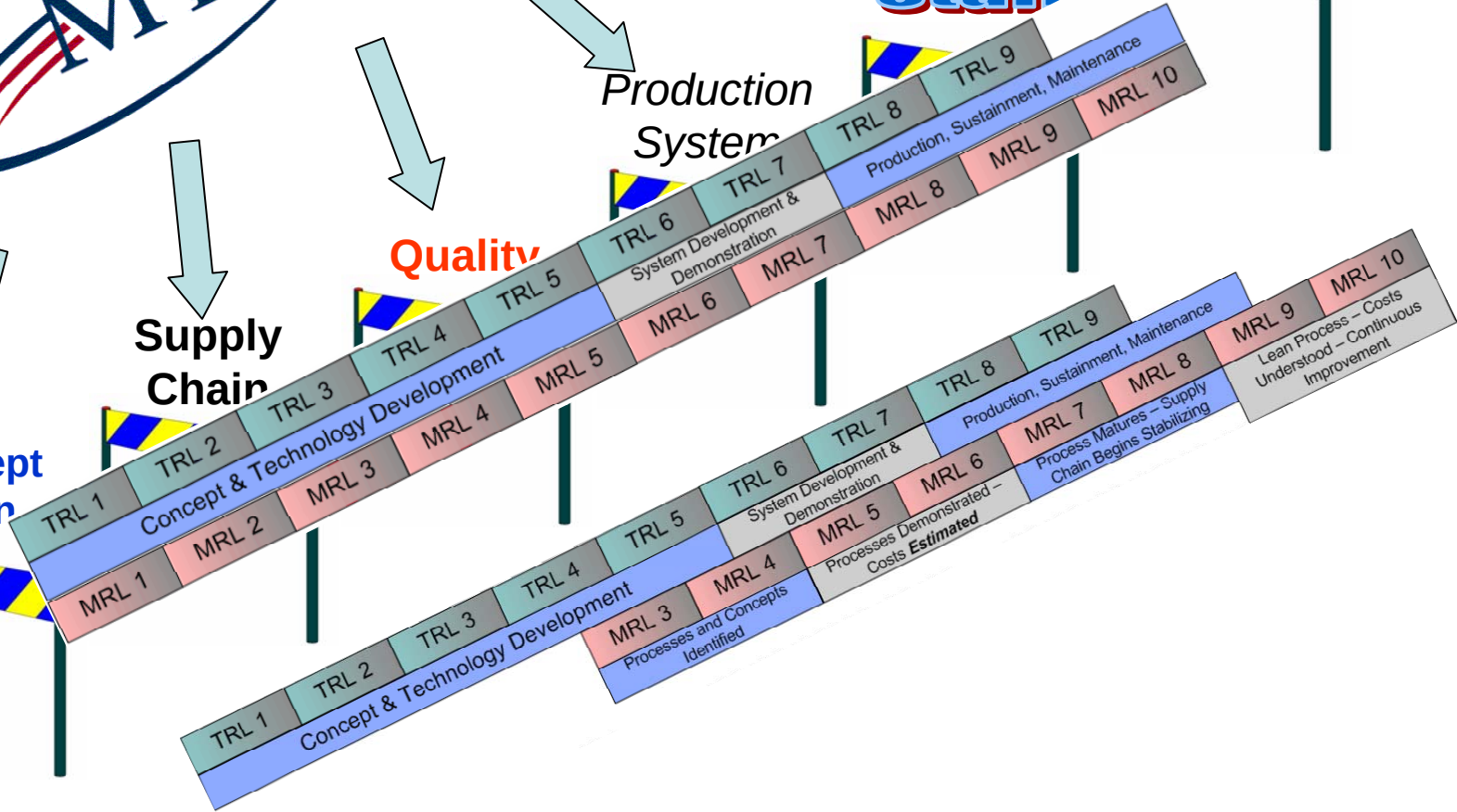
Concept Design

Supply Chain

Quality

Production System

Staff





- A partnership between TechLink and the Montana Manufacturing Center
- Goal: To help manufacturers *transition* new technology more quickly, efficiently, and cost-effectively to the U.S. warfighter
- Currently implementing a pilot program in Montana and Northwest
- This partnership is adding significant value to DoD technology transition

Key Objectives:

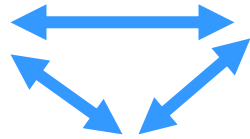
- Accelerating the transition of new technology to the U.S. warfighter
- Lowering the cost and cycle time of technology acquisition
- Enabling DoD to more fully benefit from its R&D funding to US small business

You're Looking at a STORM!



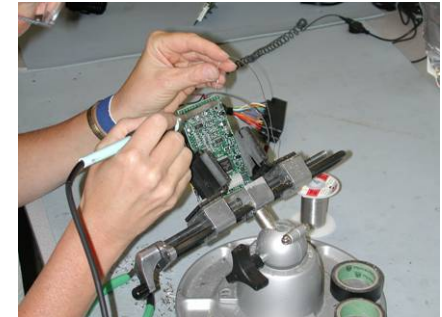
Light-weight laser rangefinder transitioned with MilTech assistance





Targeted companies include:

- TechLink clients that have licensed DoD technology or entered into DoD CRADAs
- TechLink clients that have developed DoD-related technology with SBIR funding
- MEP clients that are undertaking manufacture of new technology for DoD



Key activities include helping companies:

- Contact DoD PMs and determine DoD technical needs and requirements
- Scale-up and manufacture new technology for DoD use (issues of equipment, tooling, materials, costs, etc.)
- Get new technology into DoD operational use – *faster, better, and cheaper!*





Improved Laser Rangefinder

Objective: Transfer, commercialize, and rapidly transition the Army monoblock laser technology for use in weapon systems

Challenge: “Ruggedize” the monoblock laser for field deployment and overcome manufacturing scale-up hurdles to meet accelerated DoD demand

Technology: A novel, solid-state “monoblock” laser resonator developed by the Army CECOM RDEC Night Vision Lab that reduces the number of components and improves alignment, reducing the size, cost, and power requirements of laser rangefinders

Status: Licensed from the Army by Scientific Materials Corp., Bozeman, MT, with **TechLink** assistance. **MilTech** helped the company ruggedize the laser and overcome manufacturing challenges. Now integrated into the Army’s STORM (Small Tactical Optical Rifle Mounted) laser rangefinder/ target designators. Also being integrated into weapon systems on Stryker vehicles and attack helicopters. Being procured by the Army and deployed in Iraq and Afghanistan.





HemCon Bandage

Objective: Commercialize and rapidly transition the HemCon bandage to warfighter use in Iraq and Afghanistan

Challenge: Overcome manufacturing problems to improve product design, increase production, reduce cost, and ensure timely delivery to meet high DoD demand

Status: Developed by HemCon, Inc. with funding from the US Army Combat Casualty Care Research Program. **MilTech** helped HemCon to overcome manufacturing challenges to meet high DoD demand. By DoD directive on 9/20/05, every US soldier deployed to Iraq and Afghanistan is required to carry at least one HemCon bandage. Approximately 100,000 HemCon bandages have been delivered to DoD following **MilTech** assistance.

Technology: A novel wound dressing that rapidly stops severe bleeding, bonds firmly, sterilizes wounds, and releases readily when desired. Recognized as one of the Army's "Top 10 Greatest Inventions of 2004"





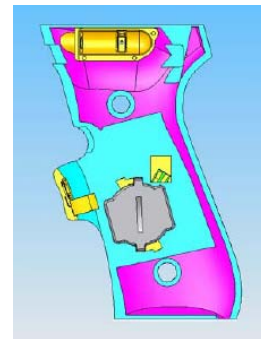
Grip-Activated Laser Aiming System

Objective: Ruggedize and waterproof the internal laser circuitry to improve reliability for DoD use in wet environments

Challenge: The manufacturer, Crimson Trace, lacked the internal R&D staff to develop a ruggedized, waterproofed version of the Lasergrips to meet DoD needs

Technology: Compact, grip-activated laser aiming system. “Lasergrips” replace standard grips on a wide range of military pistols. Gentle pressure on the grip activates a laser that projects a red laser beam where the pistol will shoot. “Lasergrips” improve pistol marksmanship training and warfighter lethality.

Status: MilTech successfully bridged the gap between company capabilities and DoD needs by developing a ruggedized, waterproof design of the “Lasergrips” that can be easily manufactured. This improved version is now being procured by SOCOM.





Contact Us

DoD TechMatch: Home - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites

Address <http://www.dodtechmatch.com/DOD/index.aspx> Go Links

DoD TECHMATCH NAVY ARMY AIR FORCE

Site Search: Go

Home
Opportunities
Licensable Patents
Labs
Calendar
Success Stories
Hot Technologies
Related Links
Resources
Contact Us
2005 DoD TTPT
Login
(Register Here)

Welcome to TechMatch. This site is designed to provide valuable information that will help you work more effectively with the DoD community. On this site, you will find Technology Needs, R&D Opportunities, Events, Laboratory Information, and Success Stories. Registered Users will **benefit** from receiving timely information in their selected technology areas.
Register Now

Opportunities

- Browse TechNeeds
- Search TechNeeds
- Browse SBIR Opportunities
- Browse FedGrant Opportunities
- Browse FedBiz Opportunities
- Search SBIR Opportunities
- Search FedGrant Opportunities
- Search FedBiz Opportunities

Patents

- Browse Patents
- Search Patents

Labs

- Browse Laboratories
- Browse RDT&E Facilities
- Search RDT&E Facilities

Calendar

- View Calendar Events
- Browse Calendar Events
- Search Calendar Events

Success Stories

- Browse Success Stories
- Search Success Stories

Related Links

- Browse Related Links

Sponsored Under Grant
N00014-01-1-0927

© 2002, 2004 by West Virginia High Technology Consortium Foundation.
All rights reserved. Disclaimer.

Internet

<http://www.dodtechmatch.com>

Joint Science and Technology Office

Chemical and Biological Defense Program

Beyond SBIR Phase II: Bringing Technological Edge to the Warfighter

COL Benjamin Hagar

*Joint Science & Technology Office
Defense Threat Reduction Agency
Chemical/Biological Technologies Directorate*

21 August 2007





Agenda

- Who are we – CBDBP Program Overview
- CBD SBIR Program
- Phase III & Beyond – Maximizing Your Opportunities



We are the S&T arm of the CBDP

JOINT REQUIREMENTS OFFICE

OFFICE OF THE SECRETARY OF DEFENSE

*JOINT PROGRAM
EXECUTIVE OFFICE*

*JOINT SCIENCE AND
TECHNOLOGY OFFICE*

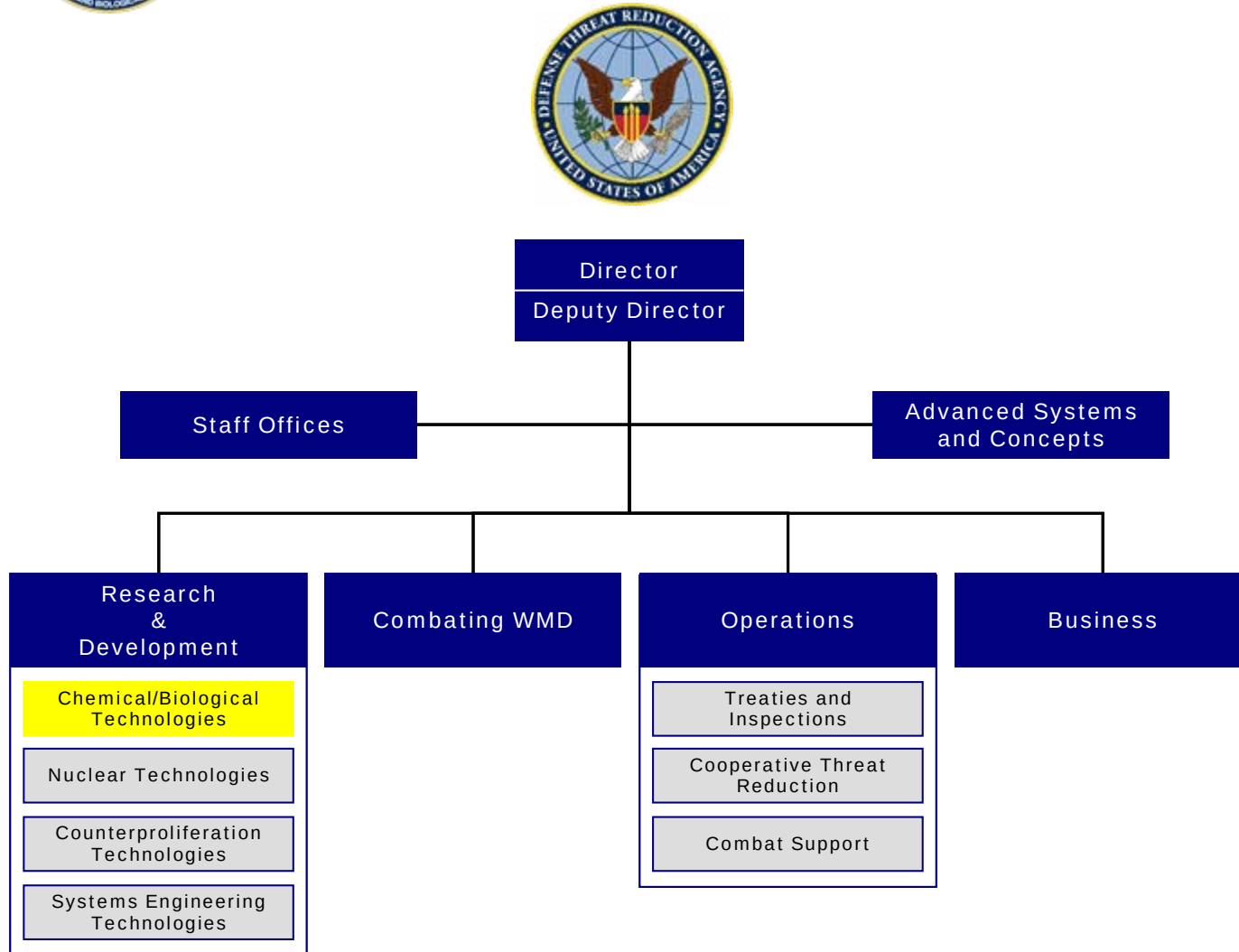
*JOINT TEST AND
EVALUATION EXECUTIVE*

*JOINT COMBAT
DEVELOPER*

Delivering Joint Warfighting Capabilities



We live in two worlds...as a part of DTRA





...and as a part of the Chemical and Biological Defense Program team

- Combatant Commanders
- Services



OSD provides oversight

Joint Requirements Office (JRO)

Required Capabilities

JFOCS

Test & Evaluation

Prioritized Needs

S&T Gaps

Joint Science & Technology Office
DTRA/CB

Mature Technologies

Joint Program Executive Office (JPEO)

Solutions



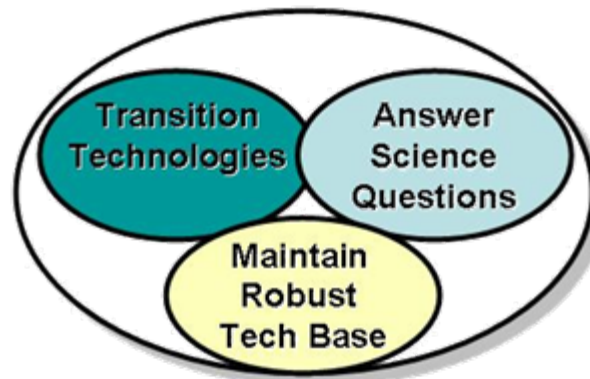
6.1-6.4

6.4-6.5, Procurement



Our S&T mission

DTRA Chem Bio Technologies Directorate **manages and integrates** the development, demonstration, and transition of timely and effective **chemical and biological defense solutions** for the Department of Defense, while serving as the **focal point for science and technology expertise**. The DTRA Chem Bio Technologies Directorate provides the most **innovative capabilities** by collaborating with mission partners, other government agencies, industry and academia.





Joint Chemical and Biological Defense Program Taxonomy

TECHNOLOGY CAPABILITY AREAS

**Physical Science
and Technology**

**Medical Science
and Technology**

Detection

Protection & Hazard Mitigation

Information Systems Technology

Threat Agent Science

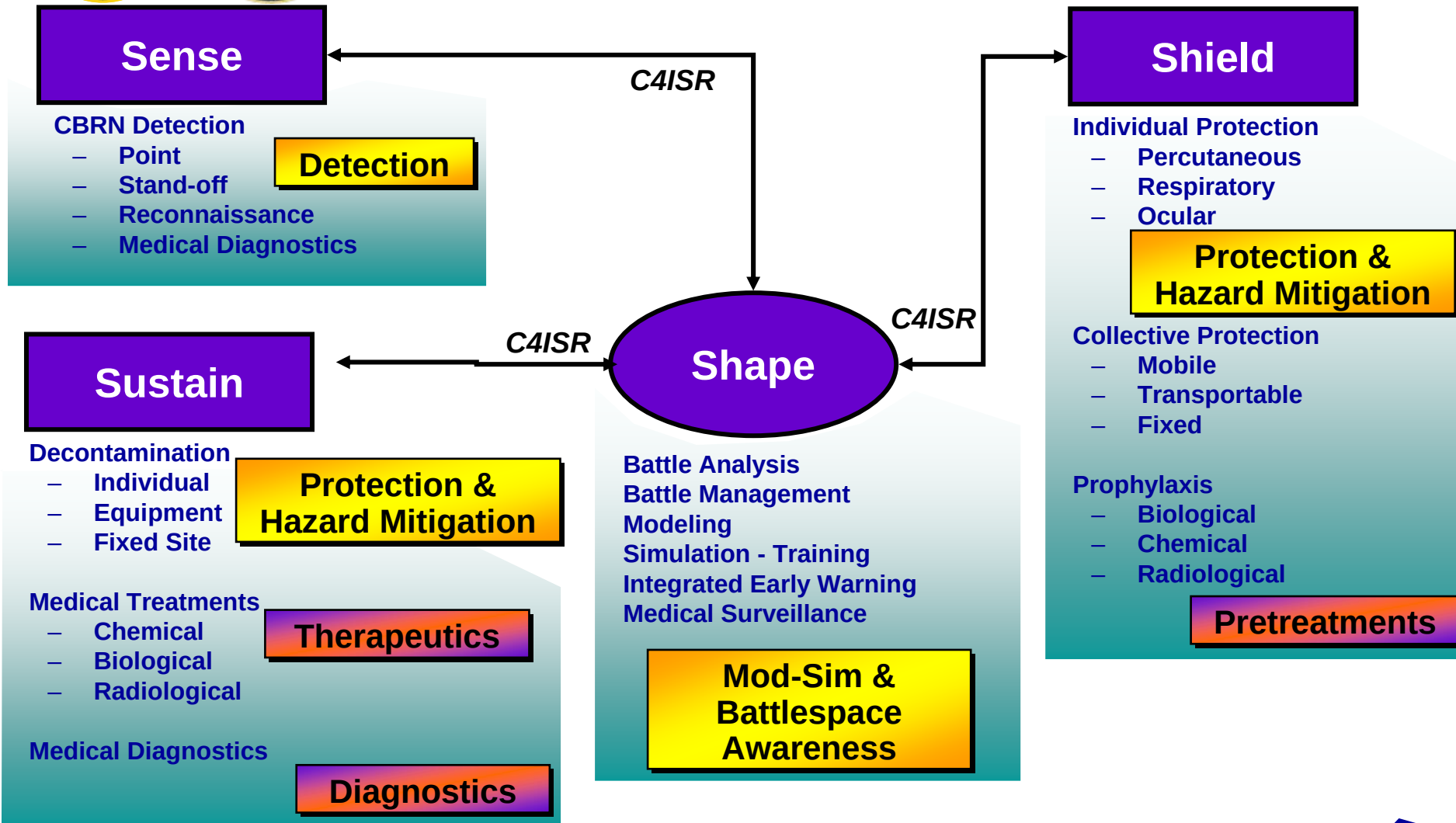
Diagnostics

Pre-Treatments

Therapeutics

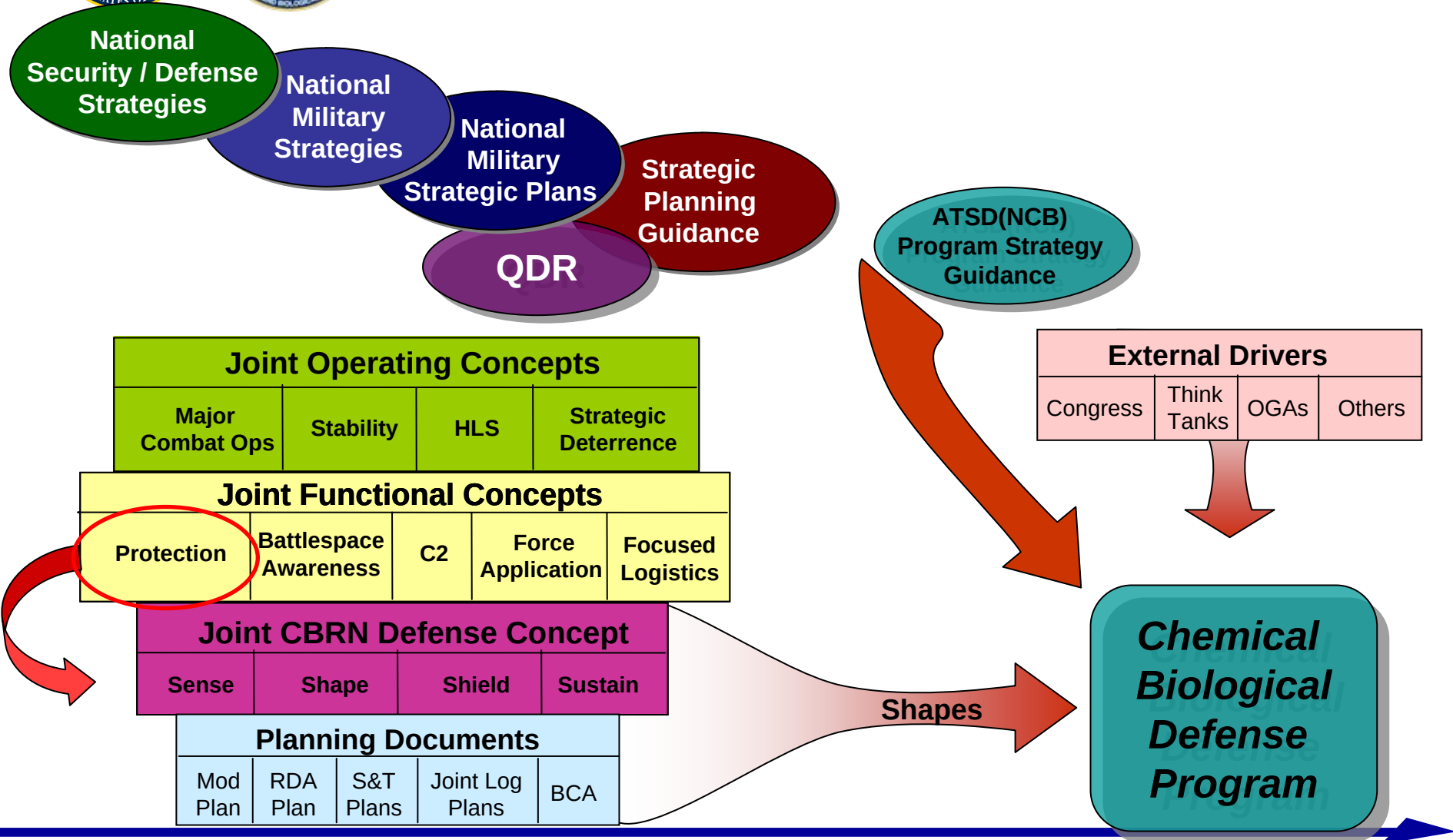


Our S&T capability areas support the major CB operational concepts





Program Alignment to Guidance





Capability, Acquisition & Test Process

DAB Capability Area Reviews (CARs)

- Strategic Planning Guidance
- Defense Planning Scenarios
- Family of Concepts
- Transformation

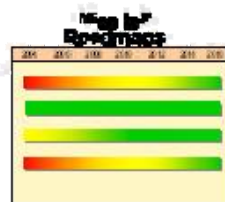
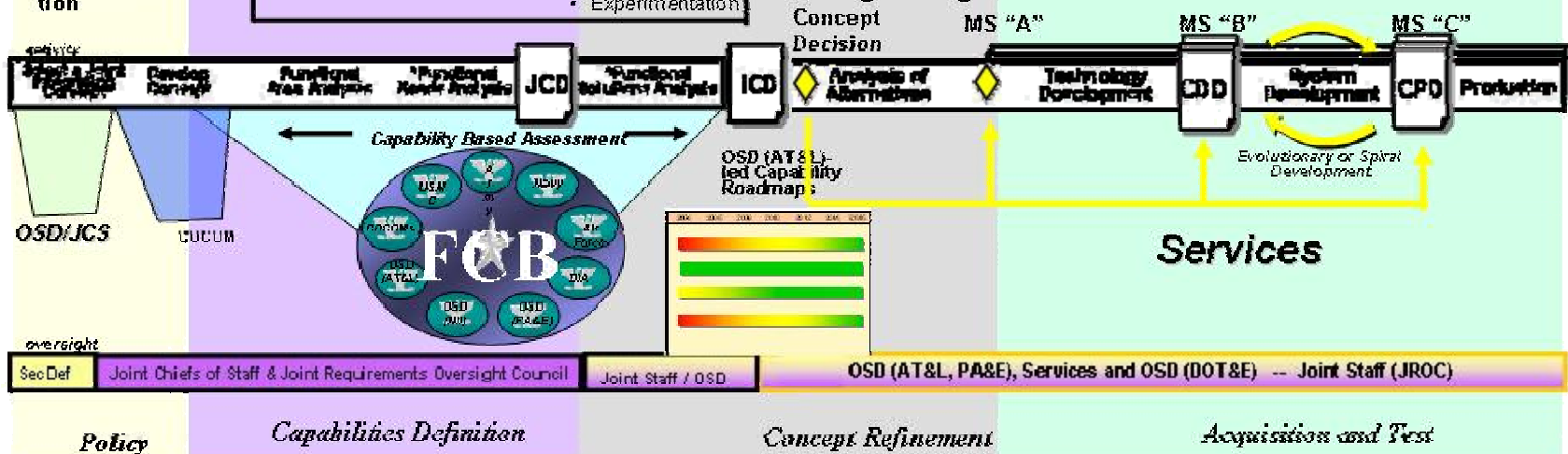
Capabilities Based Assessment

- Capabilities
- Tasks
- Attributes
- Metrics
- Gaps
- Shortfalls
- Redundancies
- Risk areas
- Non-materiel solutions
- Materiel solutions
- S+T initiatives
- Experimentation

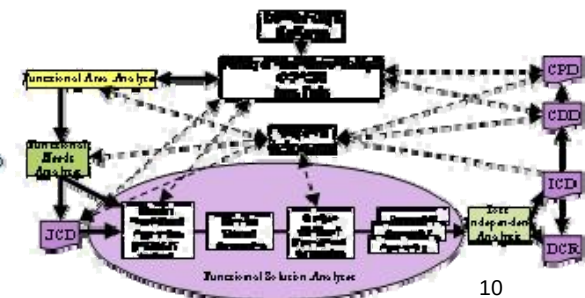
- Refined concept
- Analysis of Alternatives
- Technology Development Strategy
- SoS System Engineering

- Affordable military-useful increment
- Technology demonstrated
- Initial KPPs
- SEP

- Revise KPPs LRIP
- Detailed design
- System integration
- DT&E



JCIDS Process Map from 3170





Our CBDP projects target the Joint Priority List

Capability	No. Efforts	(\$K)
(1) Respiratory and Ocular Protection	7	3,090
(2) Integrated Early Warning	8	4,431
(3) NBC Reconnaissance		
(4) Biological Standoff Detection	4	9,848
(5) Percutaneous Protection	7	4,398
(6) Chemical Standoff Detection	3	1,508
(7) Biological Prophylaxis	48	32,298
(8) Biological Point Detection	12	14,233
(9) Individual Decontamination	0	0
(10) Chemical Point Detection	5	3,627
(11) Chemical Prophylaxis	20	17,630
(12) Medical Surveillance (M&S)	4	1,848
(13) Radiological Standoff Detection		
(14) Battle Mgmt Systems	19	11,494

Capability	No. Effort	(\$K)
(15) Transportable Collective Protect.	11	2,450
(16) Medical Diagnosis	41	23,012
(17) Equipment Decontamination	9	4,393
(18) Radiological Point Detection		
(19) Battle Analysis	24	9,898
(20) Medical Therapeutics Biological	70	34,704
(21) Medical Therapeutics Chemical	78	40,303
(22) Human Factors and Interfaces		
(23) Mobile Collective Protection	9	1,975
(24) Medical Therapeutics Radiological	6	3,737
(25) Sensitive Equipment Decon	5	3,372
(26) Radiological Prophylaxis	0	0
(27) Fixed Site Collective Protection	13	3,111
(28) Modeling and Simulation Support		
(29) Fixed Site Decontamination	2	800

NOTE: (#) equates to the Joint Priority List rankings



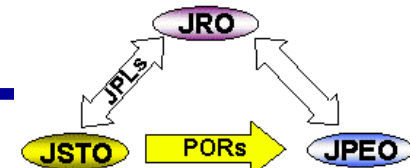
Physical S&T Area



Medical S&T Area



Adv Develop Area



New S&T is solicited from many sources



Other Gov't Agencies



Military Service Labs



National Labs



Academia



International

Pacific Northwest National Laboratory
U.S. Department of Energy



FFRDCs



...to include the small business community

- Total CB SBIR funds invested with small businesses during FY05-FY07 exceeds \$25M.
- 58 Phase I and 32 Phase II contract awards have been made to 54 small businesses during the past three years.
- Small businesses in 26 states have received awards from JSTO-CBD to conduct research and development projects.
- Conduct one Phase I solicitation, annually; invite Phase II proposals annually based on Phase I outcome.



CBD SBIR Process

Phase I



Feasibility Study

\$70K, 6 months
*(+ \$30K option upon
 Phase II selection)*

Phase I + Phase II = \$850K Total SBIR
All projects are funded via contract

Phase II



Prototype Development

\$750K, 2 years

***Problem Transition Area:
 The Valley of Death***

Phase III



Commercialization
no SBIR Funds



Overcoming the Phase II transition hurdle – help us help you

- Know your customer – they are your best proponent
- Know the organization's mission needs & technical requirements
- Know the end-user(s) & the ConOps
 - As early as Phase I, the deployment and use scenarios of the technology must be considered
- Substantiate performance with test & evaluation – data speaks volumes!
 - Provides credibility to your Science & Technology



Technology Transition: Phase II vs. Phase III

- Phase II
 - Technology Readiness Level is one element used to identify prototype utility at conclusion of Phase II
 - Accelerate development cycle: complete Phase II in less than 24-months
- Phase III
 - No SBIR Funds
 - Must fund from either: CBDP 'core' funds through JSTO or JPEO budget activities; other U.S. Government sources; or non-Government sources

Conclusions

“New ideas pass through three periods:

- ✓ *It can't be done.*
- ✓ *It probably can be done, but it's not worth doing.*
- ✓ *I knew it was a good idea all along !”*

— Arthur C. Clarke



Sourcing Innovation in a Consolidated Industry:

Sustaining Competitive Edge

UNCLASSIFIED



SBIR Beyond Phase II: Bridging Technological Edge to the Warfighter

*Kathleen L. Harger
Assistant Deputy Under Secretary of Defense
Innovation and Technology Transition
21 August 2007*



Setting the Stage:

Some Realities

Advanced Systems and Concepts



- Rapidly evolving threats require rapid response
 - Traditional lengthy development cycles must be reduced and/or technology sources must be expanded
 - Procurement mechanisms are lacking that enable both approaches
- Cost and schedule overruns are commonplace so affordability becomes paramount
- Transition programs/initiatives are not currently viewed from an Enterprise perspective as collective opportunities to address continuity of funding for moving technology to the warfighter (SBIR, IRAD, Technology Transition Initiative, Defense Acquisition Challenge, Foreign Comparative Testing, Technology Transfer, etc.)

Setting the Stage:

Beyond Innovation

Advanced Systems and Concepts



- DoD desperately needs innovative solutions, many of which come from small business
- But innovation alone isn't enough
- Moving that innovation into use by our troops is the end game
- Understanding how to reach that end game is the specialty of the primes
- Primes are engaged by DoD to solve problems that often cry for innovative solutions
- and back to top bullet.....

Some Questions for Our Primes



Advanced Systems and Concepts

- How do you view and leverage the SBIR program as a source of technological innovation?
- How do you measure return on investment?
- How do you qualify a small business for partnering with you?
- What is an example of “best value” model where you, the small business, and the customer were all successful? What mechanisms were used? (mentor-protégé, subcontract relationship, buyout, etc.)
- What are the roadblocks/weaknesses in the process that preclude ‘best value’ for all parties?



Swarm Intelligent Mobile Ad Hoc Networks

A New Mobile Communications Paradigm

Beyond Phase II Conference

Panel Briefing

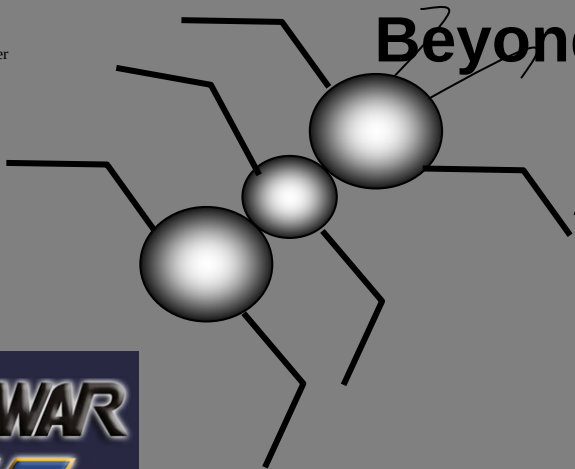
August 23, 2007

BlueIronix, Inc.

SPAWAR

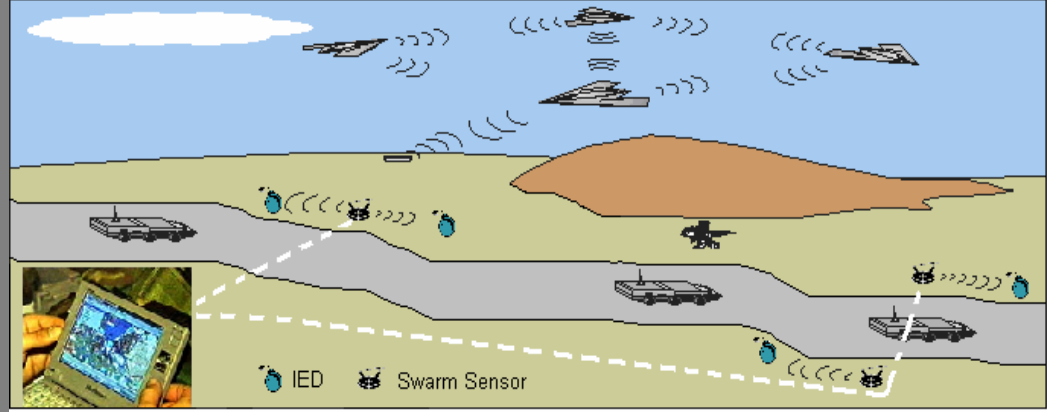


Systems Center
Charleston



Military Needs:

A New Mobile Communications Paradigm



- Dynamically connect, route, and adapt
- “Fuse and integrate” network layers
- No network infrastructure
- Self-forming, self-organizing networks
- “Intelligent” routing, not just shortest path
- Look beyond Internet to non-IP solutions
- Coexist and share with existing networks



SWARM Intelligence

• THE NEXT GENERATION OF TECHNOLOGY IS MODELED ON INSECTS

by ERIKA D. SMITH
Phoenix Journal staff writer

WHAT IF computers could make decisions for themselves?

What if you dropped a bunch of computer parts onto a deserted island and they built a virtual communications network all by themselves?

What if your doctor injected a swarm of microchips to attack a hard-to-reach tumor?

A few years ago, those were very big ifs. But a Chaprin Falls startup named Bluetronics Inc. says it is closing in on the technology that could make all of that possible.

Sounds crazy?

Well, there's no need for a gun-toting Con Schwenkenger just yet. "We're not talking artificial intelligence - just swarm intelligence."

"We're taking our inspiration from social insects," said Douglas R. Smith, an Alamo resident who co-founded Bluetronics.

At the same time, swarm intelligence is a scientific theory

based on the actions of ants, bees and other insects. It asserts complex behavior can emerge from a group of individuals - whether they're bugs or computer nodes - that follow simple rules.

Swarm intelligence isn't exactly new, but it's largely uncharted territory.

Virtually no one has developed a product that applies its principles. But the founders of Bluetronics Inc. say they will do it by 2006.

The Chaprin Falls company is writing the mathematical formulas for an all-new, super-efficient wireless network for the military. From there, health and computer President Mark Heisterling hopes to parlay their work into other industries, such as manufacturing and supply-chain management.

They say the possibilities for swarm intelligence products are endless.

"The military has the funding, sense of urgency and need. It's a good place to start," Heisterling said. "Later, we can bridge that over to the commercial world."

Biologists long ago noticed the amazing feat social insects are capable of, but swarms

Phoenix and Swarms, 24

blueironix
INC.

David R. Smith
Founder/Chief Executive Officer

Technology

- Swarming Routing Algorithms—various versions
- Swarm Location Service Algorithm
- Swarm Multicasting
- Hardware code 802.15.4
- Sensor Module Design for product
- **Patents filed:**
- Swarm Autonomous Routing Algorithm for Mobile Ad Hoc Network Communications
- Swarm Location Service for Mobile Ad Hoc Network Communications
- **Forthcoming Patents**
- Swarm Autonomous Multicasting in Mobile Ad Hoc Network Communications (SAM) 2008

Swarm Autonomous Routing Algorithm

Features, Advantages, and Benefits

Feature	Advantage	Benefit
Simple, elegant algorithm	Small code footprint	Runs fast on inexpensive hardware
No routing tables	Low memory requirements	Runs on low-end hardware
Mobility Capability	Connecting nodes on the moves	Dynamic Settings
Totally distributed approach	No central point of control	Reliable with no single point of failure
Reactive routing approach	Nodes only work when necessary	Lower cost, longer lasting power source
Very scalable	Networks may grow in size	Arbitrarily large networks

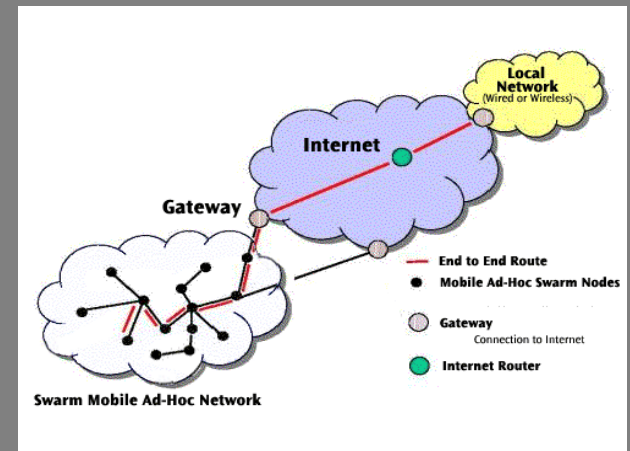
Transition-DoD

- SPAWAR—Transition Agent
- Dr. Stephen M. Jarrett
- SPAWAR--- CRADA Oct 2007
- SPAWAR--- JTRS
- NAVY---Sonbuoys ASW
- AF—Sensor Networks
- Homeland—Emergency Radios, Sensors
- SOCOM---Sensor Networks



Transition-Commercial

- Sensor Networks—Industrial Markets
- Cellular Markets--Relay/Points-Cell Phones
- Data Acquisition—Industrial, Non-Industrial
- Transportation-VANETs
- Logistics-Asset Tracking
- Emergency Back-up



Upcoming Products



- Sensor Module for OEMs
- 8-bit and 32 Micros
- IP Gateway
- GUI-3D
- Stand-alone swarm sensor module
- Software Defined Radios (SDRs)
Emergency-JTRS



Bridging the Transition Gap

***Building a Symbiotic Relationship between
SBIR Firms and Technology Seekers***

**Beyond SBIR Phase II
August 21, 2007**

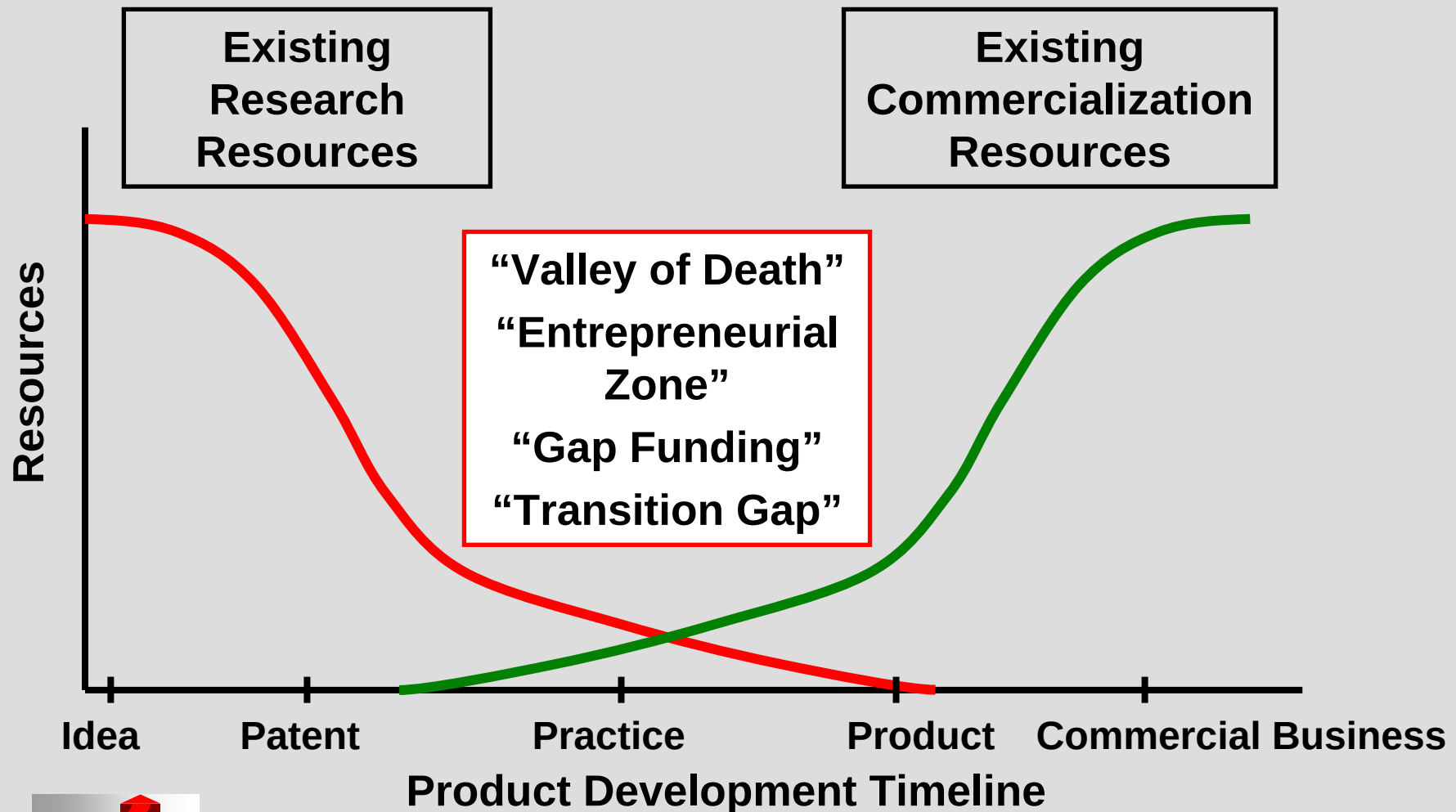
**Joanne Hyland
Founding Partner – Radical Innovation Group
Former VP, New Venture Development – Nortel Networks**



RADICAL INNOVATION GROUP

© 2001-2007
All Rights Reserved

Gap Between Research & Commercial Application



SBIR Business Realities

SBIR Firm Challenges

- ◆ Crossing reservoir from technology development to commercial viability without business development experience.
- ◆ Often lacking technology reliability and scalability to grow into stand-alone businesses.

Technology Seeker Challenges

- ◆ Protecting and growing existing market and customer base.
- ◆ Emerging technologies often disrupt what already exists and lack robustness.



The Generational Dilemma

- ◆ Chasm exists between entrepreneurial model for startup and efficient systems in place to support status quo in larger company.
- ◆ Adoption of an open innovation model and development of a symbiotic relationship are critical for the survival of both sides of new business development equation.

Symbiotic = “A cooperative relationship (as between two persons or groups).”



Critical Business Questions

1. How to overcome the generational dilemma?
2. SBIR Firms: How to attract the attention of a potential investor with a compelling company/technology value proposition?
3. Technology Seekers: How to embrace an open innovation model that challenges the status quo?
4. The Symbiotic Relationship: How do two dissimilar companies work effectively together?



The Generational Dilemma

What are the cultural differences that need to be understood?

What are the conflicting objectives and expectations regarding timing, risk orientation and performance?



Technology Seekers Cultural Divide

Operating Groups		New Business Development Groups	
Strategy and Type of Innovation	Current Strategy; Incremental Innovation to Extend Existing Business	[-----]	Strategic Intent and Opportunity; Platform and Radical Innovation for Growth and Renewal
Culture	Operational Excellence, Customer Intimacy and Execution Skills	[-----]	Cultivation, Employee Intimacy and New Business Creation Skills
Risk Profile	Risk Averse with Focus on System Efficiency	[-----]	<u>Risk Mitigation through Staged Learning</u>
Investment Timing and Revenue Focus	New Products in 6-18 Months; Profit and Loss Focus with In-year Revenue Streams	[-----]	New Businesses in 3-5+ Years; ROI over Long Term with Portfolio Management to Hedge Bets



Cultural Perceptions and Realities

Technology Seeker View of SBIR Firm

- ◆ Unfocused
- ◆ Inexperienced
- ◆ Immature Technology
- ◆ Demanding
- ◆ Unrealistic Expectations

Yet...

- ★ Incredible Opportunity to Fill Competency Gaps and Source Emerging Technologies

SBIR Firm View of Technology Seeker

- ◆ Bureaucratic
- ◆ Risk Averse
- ◆ Analysis Paralysis
- ◆ Resource Drain
- ◆ Opportunistic

Yet...

- ★ Incredible Assets (Brand, Channels, People, etc.), Global Reach and Economies of Scale



Conflicting Objectives and Expectations

◆ Timing

- Operating Groups: New products in 6 to 18 months.
- NBD Groups: New businesses in 3-5+ years.
- **Small Companies: First customer priority (get to alpha trial fast).**

◆ Risk Orientation

- Operating Groups: Risk averse and focused on execution and operations.
- NBD Groups: Risk mitigation through staged learning approach and strategic partnerships to share the risk.
- **Small Companies: It is all about risk.**

◆ Performance

- Operating Groups: Profit and Loss management and in-year revenue streams.
- NBD Groups: Return on investment (ROI) as a long term proposition with portfolio management to hedge bets.
- **Small Companies: One bet that must work.**



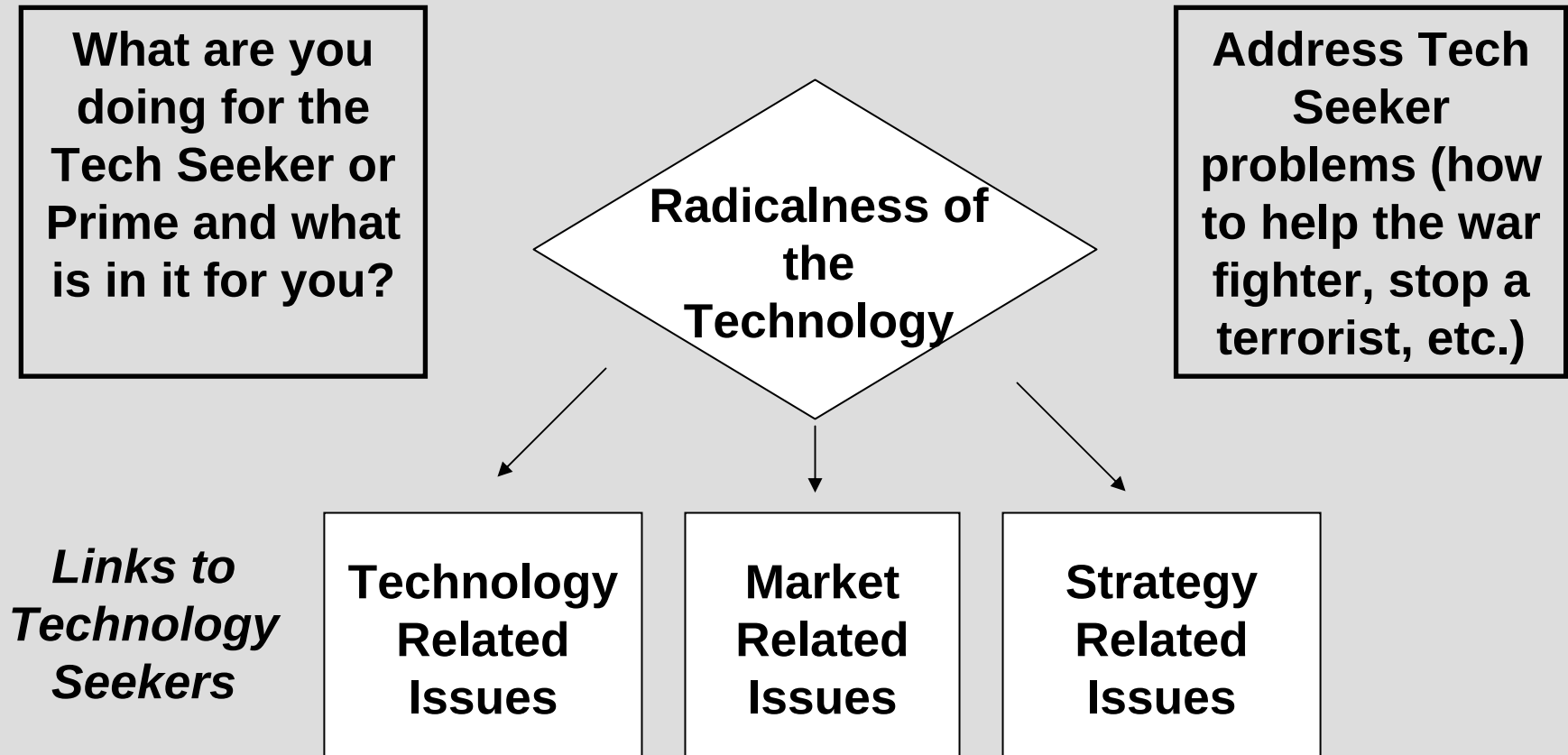
SBIR Firm: Company and Technology Value Proposition

How does a SBIR Firm:

Effectively communicate the value of its company to attract the attention of Technology Seekers?



Communicating SBIR Awardees Value



Business Considerations

Technology:

- ◆ What is the value of the technology and your technical expertise for the Technology Seeker, e.g., feasibility, reliability, scalability, technical capabilities, prototype, etc.?

Market:

- ◆ What is the potential impact of this technology on the market, e.g., game changing, application possibilities, technology disruption, value proposition, etc.?



Business Considerations

Strategic:

- ◆ What business opportunity does your technology offer the Technology Seeker, e.g., order of magnitude potential market size, strategic alignment, ***cost savings, innovation potential***, etc.?
- ◆ What do you need to think about for organizational positioning, e.g., technology potential to cannibalize existing business, culture conducive to partnering, champion in place, resources to negotiate and manage partnership, career risk for Tech Seeker decision maker, etc.?



Technology Seeker: Embracing an Open Innovation Model

Why do Technology Seekers need different management practices for an open innovation model?

What are the right questions Technology Seekers should be asking to determine business potential?



Open Innovation = What is Known and Unknown

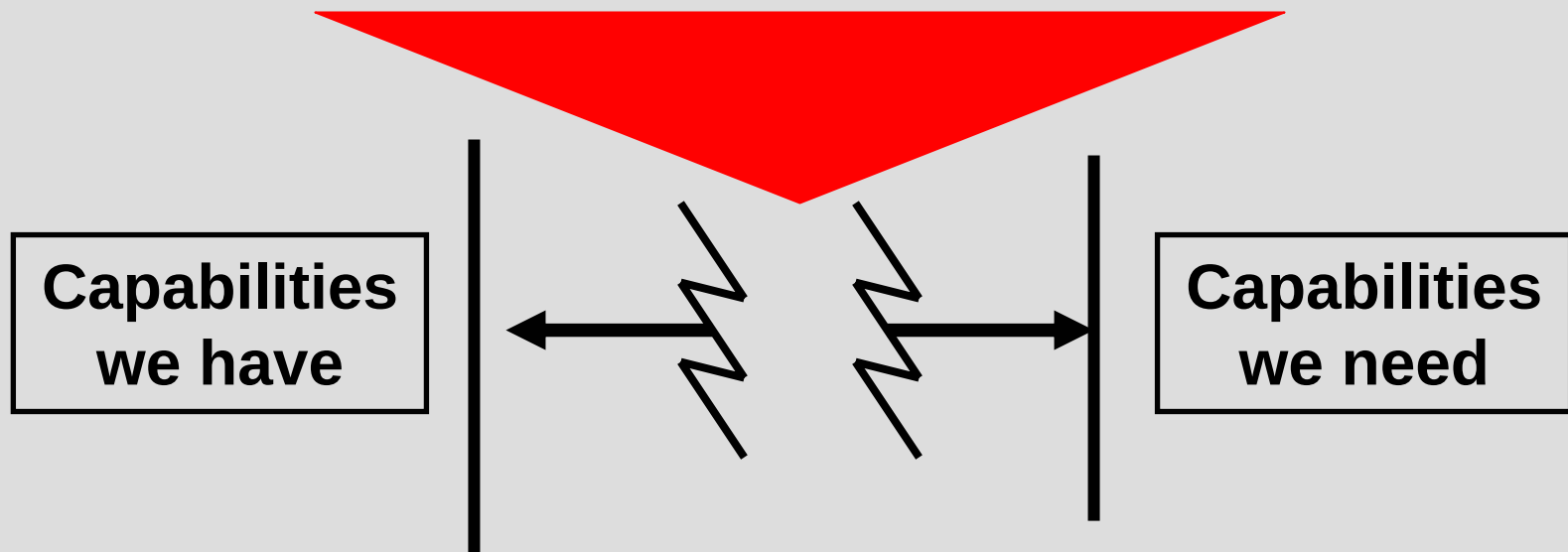
- ◆ ***Invention*** is creation of something that was previously unknown.
- ◆ ***Discovery*** is becoming aware of something that may be known in other venues but was not known to the New Business Development Group or the company.
- ◆ ***Open Innovation Model*** = Invention activities from internally focused research + discovery activities within and outside the company.

Open Innovation shortens time to understand technology's value to the market and accelerates commercialization.



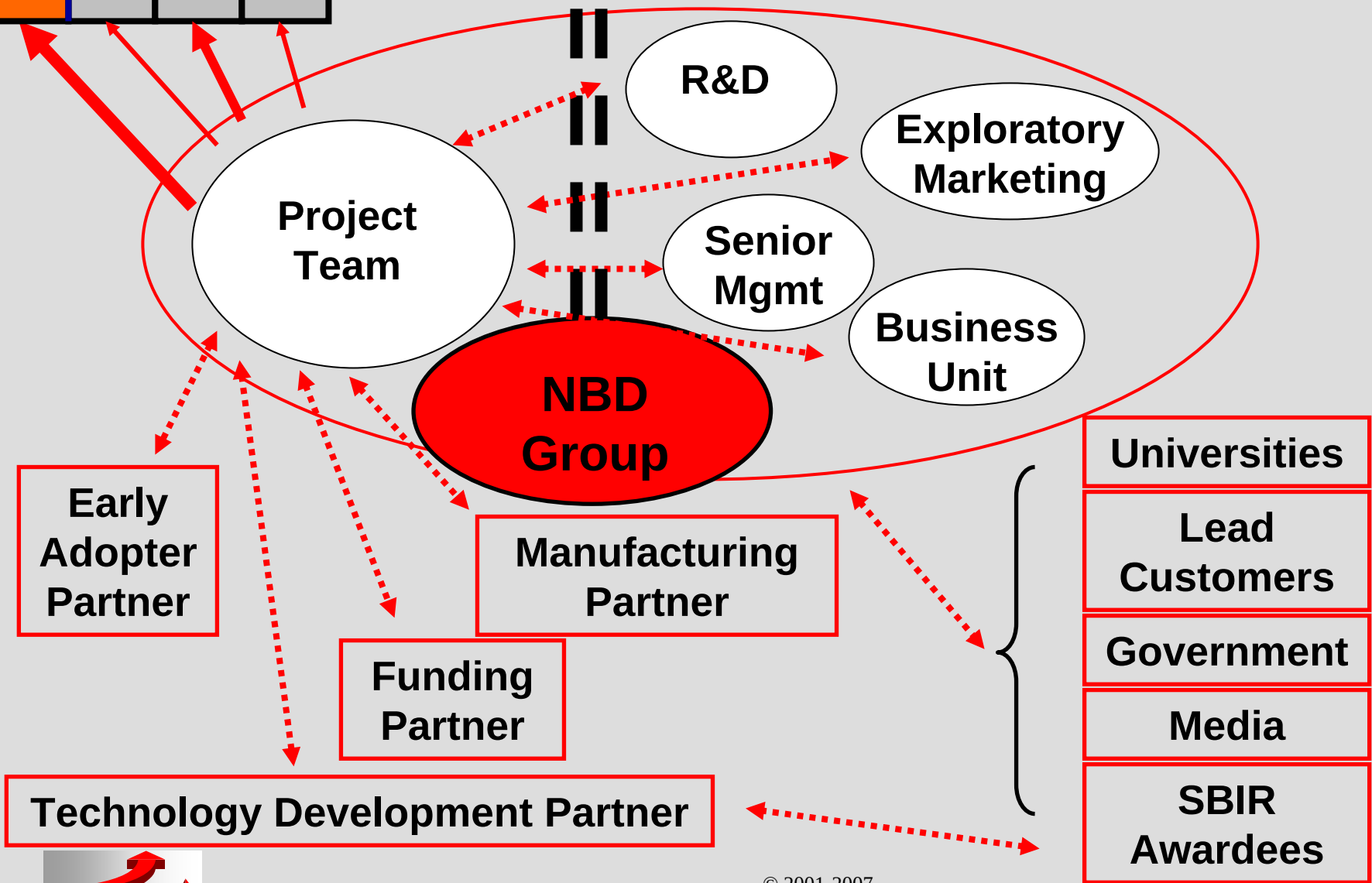
New Capabilities Required for Growth

- ◆ Traditional approaches such as internal development or acquisition of outside firm are insufficient.
- ◆ Open innovation model is emerging to fill technology and other competency gaps through partnering (Co-development vs. supplier relationships).





Relationship Complexity



Different Questions Asked: Quantifiable versus Potential Value

New Products

- ✓ How should we position the product?
- ✓ How can we segment the market?
- ✓ How much market share can we capture?
- ✓ How fast will the market grow?

New Businesses

- ✓ What applications will the technology enable?
- ✓ What markets could the technology create or disrupt?
- ✓ What is the order of magnitude market potential and/or cost savings?
- ✓ How can we prototype or scale the technology?



Different Questions Asked: Business Model and Market Entry Strategy

- ◆ How will the business model unfold?
 - Which is the best path to the market and what parts of the value chain will the company retain versus outsource based on profit potential and competency gaps?
 - Which partnerships are required initially and how will this change over time?
 - How should additional partners be encouraged to participate?
- ◆ What will be the market entry strategy?
 - What are the smaller applications that will lead to a killer business? (Potential for conflict with Tech Seeker “Big M” focus)
 - What are the appropriate selection criteria and interim performance metrics?
- ◆ How do we acquire the right resources to proceed?



The Symbiotic Relationship

How do two dissimilar organizations learn to communicate and work effectively together?



Building an Effective Partnership

Starts with...

- ◆ Understanding different worlds and the risks.
- ◆ Respecting each other and the value each brings.
- ◆ Defining mutual objectives, scope and what constitutes success.
- ◆ Identifying roles, responsibilities and expectations of each party.
- ◆ Ensuring competent people negotiate an equitable partnership and remain committed throughout.
- ◆ Accepting that ***partnering requirements change over time*** through different phases of business maturity.
- ◆ Learning to live with chaos and embrace change!



SBIR Firms: Keys to Finding a Match

1. Prepare your ***value proposition*** being realistic about what you can do (having a lead customer helps all!).
 - a. Understand the breadth and depth of your potential market applications.
 - b. Protect your core patent and most promising applications or fields of use.
 - c. Develop a succinct elevator speech.
2. Learn about the ***strategic drivers*** of the targeted Tech Seeker to position the value of your company and technology (address the questions in your proposals).
3. Find the ***right group*** in the Tech Seeker, most often a New Business Development versus Operating Group!



Tech Seekers: Keys to Finding a Match

1. Focus on understanding an ***inventor's motivations*** to uncover inherent value.
2. Create and facilitate an ***open innovation environment*** that recognizes the tension among your ***internal dynamics*** of entrepreneurial orientation versus operational excellence, the needs of a small business and customer requirements.
3. Identify ***value chain and business model gaps*** as well as your ***likely market entry strategy*** to be clear about technologies you are seeking to close the gaps.
4. Develop reputation for being ***reasonable on IP licensing fee*** given uncertainty this creates for SBIR firm!



SBIR Program Considerations

1. Introduce new business development and commercial transition management practices to address structural issues in moving from Phase II to III.
 - a. Provide funding through the transition.
 - b. Clarify roles and responsibilities based on governance not management model.
 - c. Offer investment and partnering incentives during the transition period.
2. Encourage cross agency collaboration to obtain greater leverage in important technology, market and industry sectors beyond aerospace and defense.
3. Adopt an open innovation mindset to bring down silos in government, companies and the world!



Thank You! Questions?
Please come to our workshop from 7-9pm
tonight to learn more.

Joanne Hyland
+1-207-251-9757

Radical Innovation Group
joanne@radicalinnovation.com
www.radicalinnovation.com



Learning Plan™

Project Management for High Uncertainty Projects

August 21, 2007



RADICAL INNOVATION GROUP

© 2001-2007
All Rights Reserved

Overview

1. Definition of Innovation and Research Insights.
2. Challenge 2: Living with Chaos.
3. Learning Plan Development Guidelines and the DIA Model.
4. Value of Learning-Based Project Management for Company and Project Teams.



Original Definition of Radical Innovation

(Established with Industrial Research Institute Companies in 1995)

Project that promised at least one of following:

1. New to the world performance features,
2. Significant (5-10x) improvement in known features, and/or
3. Significant (30-50%) reduction in cost.



Current Definition Based on RPI Research Findings

	Lower Uncertainty		Higher Uncertainty
Type of Innovation	Incremental	[-----]	Platform and Breakthrough/Radical
Strategic Drivers	New Products to Extend Existing Business	[-----]	New Business Models, Emerging Technologies for Growth and Renewal
Opportunity Selection	Customer Driven and Market Research	[-----]	Market Driven and Opportunity Recognition
Market Focus	Existing Base	[-----]	New Customers, Applications and Unknown Business Areas
Process	Stage Gate and Concurrent Engineering	[-----]	Discovery Driven Processes and Learning Models
Transition Readiness	Fast Track to Division or Business Unit	[-----]	Incubation, Acceleration, Interface Management



Key RPI Research Study Findings

1. There are four categories of uncertainty, not two. Resource and organization uncertainties must be managed in addition to technical and market.
2. There are seven management challenges to overcome from how to: (a) recognize opportunities, (b) live with chaos, (c) engage in market learning, (d) develop new business models, (e) acquire resources, (f) transition projects, and (g) value individual initiative.
3. An innovation focal point(s) is required to ensure the right culture is in place and to manage an open innovation model with multiple interfaces.
4. Discovery/Validation, Incubation and Acceleration (D/VIA Model) are three distinct competencies to be developed.
5. Building an innovation capability requires a holistic, systems approach as with any management discipline.



Innovation Roadmap™ to Architect for Success

Strategic Innovation Agenda

Strategic Intent
Entrepreneurial and Operations Cultures
Education and Expectations Management

Portfolio Innovation System and Talent Management

Right Type of Talent
Portfolio Management
Appropriate Evaluation Criteria and Metrics
Interface Management

Project Team Learning and Uncertainty Management

Uncertainty Reduction
Staged Learning
Rewards and Recognition



The Learning Plan Project Management Tool

**Technical
Uncertainty**

**Market
Uncertainty**

**Resource
Uncertainty**

**Organization
Uncertainty**

**Challenge 1:
Capturing
Major
Innovation**

**Challenge 2:
Living with
Chaos**

**Challenge 3:
Market
Learning**

**Challenge 4:
Business
Model**

**Challenge 5:
Resource
Acquisition**

**Challenge 6:
Transition
Mgmt**

**Challenge 7:
Individual
Initiative**

Strategy

**Business
Infrastructure**



RADICAL INNOVATION GROUP

© 2001-2007
All Rights Reserved

Challenge 2: Living with Chaos

Now that a project is initiated...What is next?

Why is there a need for different market learning practices for major and incremental innovation projects?

How do you build a process and learning capability to effectively manage higher uncertainty innovation projects?



RADICAL

OF

© 2001-2007
All Rights Reserved



Learning Plan™ Methodology and DIA Model

- ◆ Origins from RPI Research.
- ◆ Adapted for company training.
- ◆ Learning-Based Project Management Toolkit for managing higher uncertainty innovation projects.
 - Dimensions of Uncertainty.
 - Learning Plan Template.
 - Uncertainty Management Checklist.
 - Discovery, Incubation and Acceleration (DIA) Model Questions.
 - Business Concept and Business Proposal Templates.



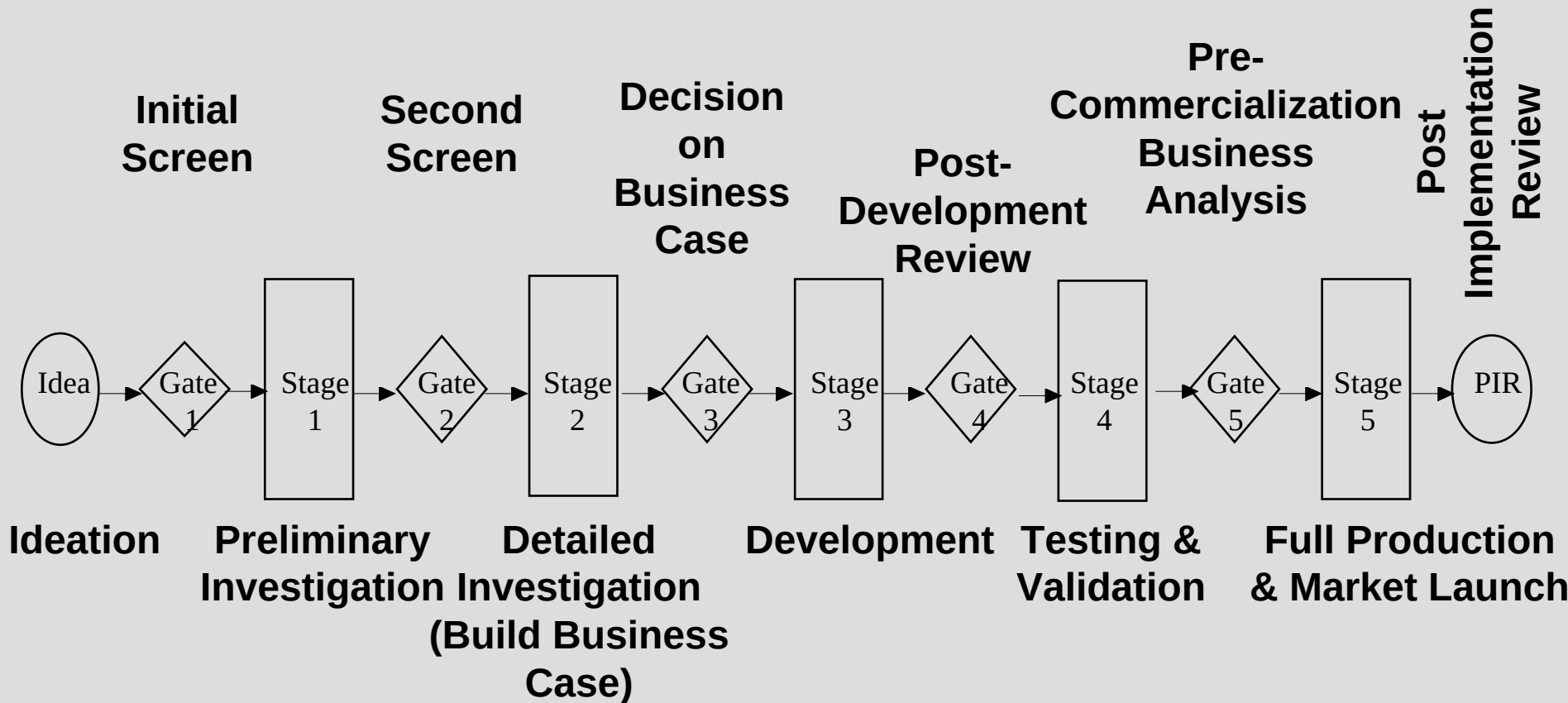
Purpose of Learning Plan and Uncertainty Management Checklist

- ◆ Guide project teams through phases of project learning and maturation based on iterative project learning.
 - Potential supported through assumptions rather than facts.
- ◆ Remove uncertainties across multiple categories to mature projects.
 - Timely and cost effective uncertainty reduction increasing potential for business unit adoption.
- ◆ Document project progress without formal business plan.
 - Too many unknowns to answer requirements of a business plan.



Stage-Gate™

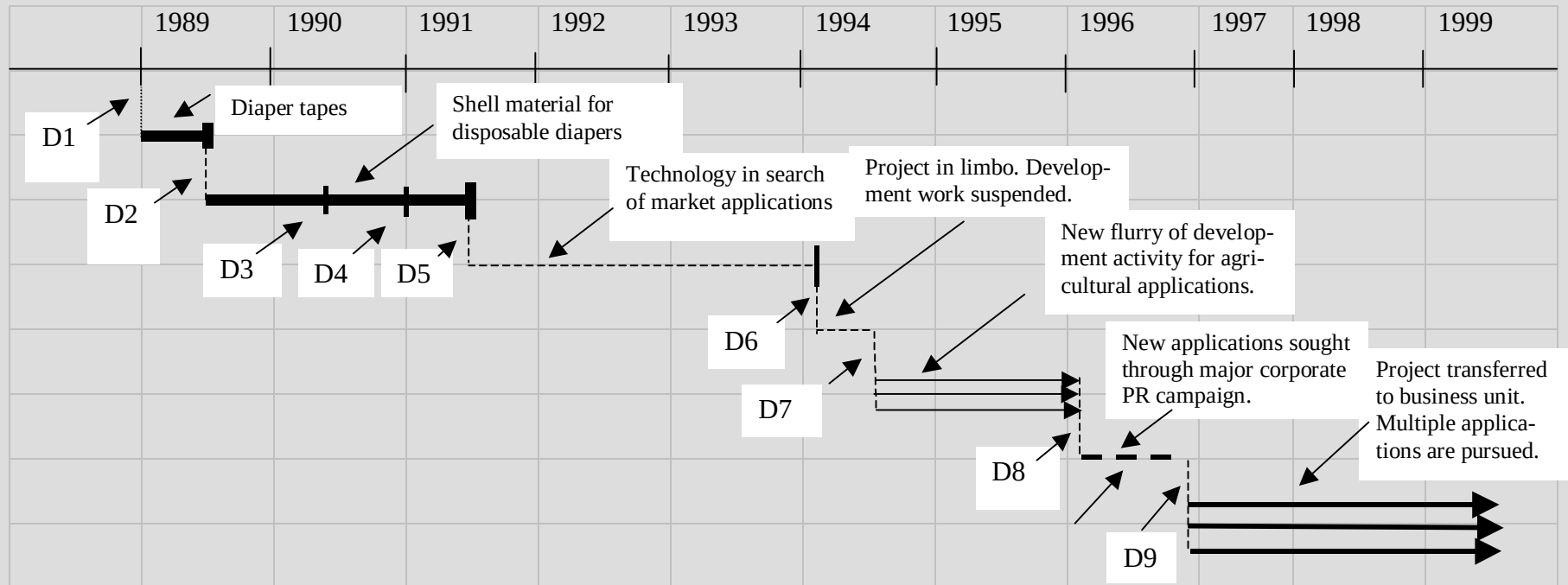
New Product Development Process



Source: Robert G. Cooper, Winning at New Products, Addison-Wesley 1993



Major Innovation Lifecycle-Dupont's Biomax



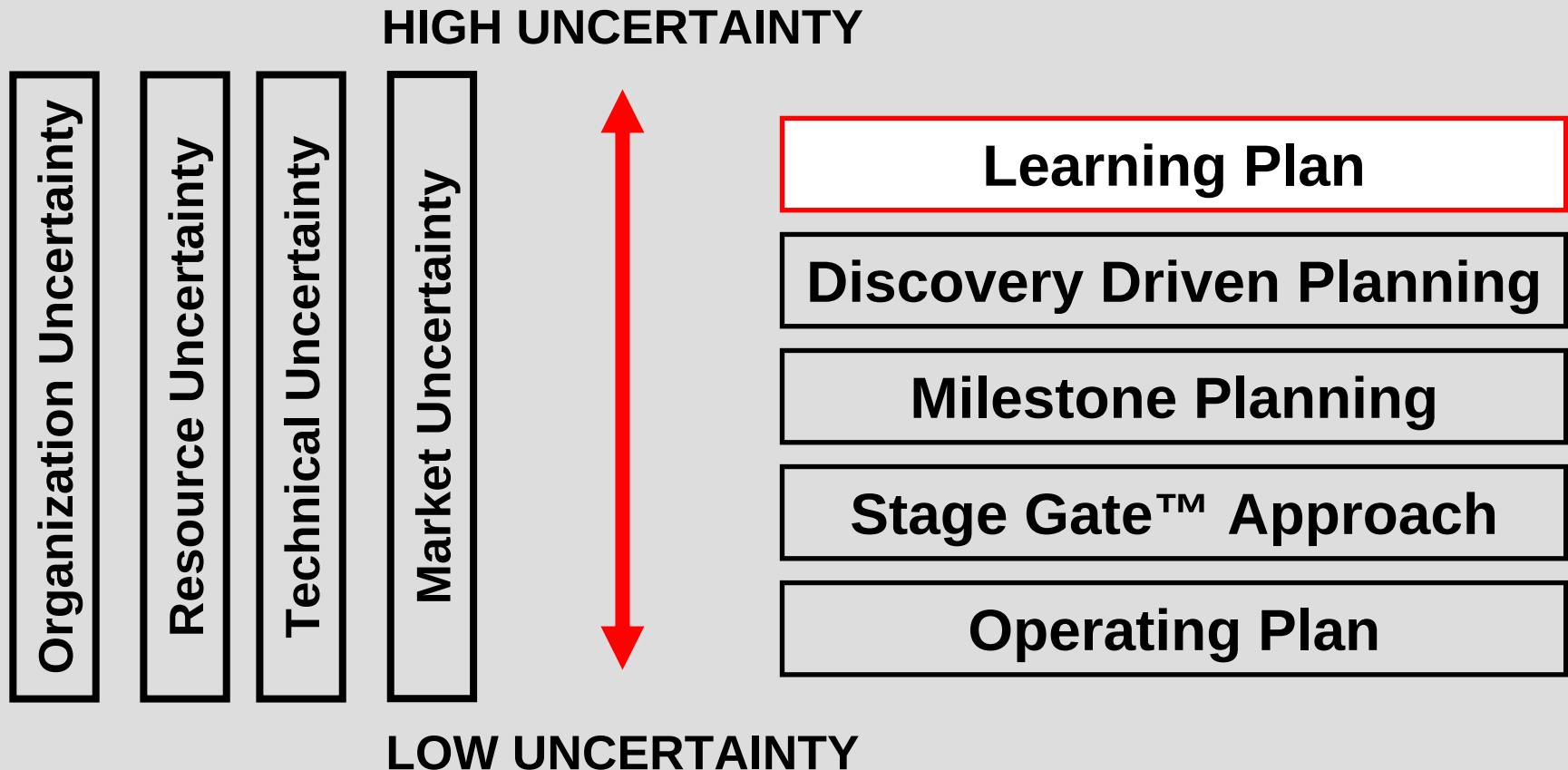
Major Innovation Project Lifecycle

- ◆ Long term and highly uncertain, unpredictable.
- ◆ Sporadic and non-linear.
 - Stops and starts, deaths and revivals, application generation throughout.
- ◆ Random and context dependent.
 - Key players come and go, priorities change and exogenous events critical.
 - History, experience, corporate culture, personalities, and informal relations all matter.

Tried and True Management Practices for Incremental Innovation Inadequate for Major Innovation Projects



Learning Plan Utilized to Reduce Uncertainty Prior to New Product Development



Learning Plan Template

Learning Approach:	M	T	R	O
As of Date				
Status: What is Known?				
Uncertainties: What is Unknown?				
Assumptions Being Made.				
Detail Several Approaches to Test Assumptions , and associated cost and people required of each approach. Select the most effective test, where effectiveness is a function of learning per dollar spent and unit of time invested.				
To Do List: Delegate tasks and timetables for conducting test.				
Objectives/Evaluative Criteria for the Test. How do you know if the test was successful or not?				
Learning Outcomes:				
What have we learned? Have we converted assumptions into knowledge ?				
How does this learning impact the other categories (M, T, R, O)?				
How does this learning impact overall project progress/risks ?				
How does this learning influence next steps ?				



Three Dimensions of Project Uncertainty

Dimension 1

Categories of
Uncertainty

Organization
Resource
Technical

Market

Latency

Anticipated Unanticipated

Dimension 2

Routine Showstopper

Criticality

Dimension 3



Categories of Uncertainty

Category	Definition
Market Uncertainty	Learning about market drivers, value creation and business viability.
Technical Uncertainty	Understanding technology drivers, value and economic feasibility.
Resource Uncertainty	Accessing money, people and organizational competencies.
Organization Uncertainty	Gaining and maintaining organizational legitimacy.



Latency and Criticality Dimensions of Uncertainty

		Criticality	
		Low	High
Latency	High	Cell 2: Unanticipated but Routine	Cell 4: Unanticipated Showstopper
	Low	Cell 1: Anticipated and Routine	Cell 3: Anticipated Showstopper



Uncertainty Management Checklist –Areas to Consider

Categories	Market Uncertainty	Technical Uncertainty	Resource Uncertainty	Organization Uncertainty
Uncertainty Focus	Learning about market drivers, value creation and business viability	Understanding technology drivers, value and economic feasibility	Accessing money, people and organizational competencies	Gaining and maintaining organizational legitimacy
Areas to Consider	-Clarity of Value Proposition -Size of Business Potential -Initial Market Entry Application and Follow-on Applications -Initial Customer Partners -Other Required Value Chain Agents -Existence of Other Technical/Potential Competitive Solutions -Business Model Appropriateness -Achievability of Sales Forecast	-Completeness and Correctness of Underlying Scientific Knowledge -Articulation of New Benefits that are Enabled -Potential for Multiple Market Applications -Potential Cost Saving Advantages -Approaches to Solving Identified Technical Problems -Manufacturing and Software Development Requirements -Scalability at Acceptable Economics	-Availability of Internal and External Funding -Project Requirements For Money, Team and Partnerships -Project Lead Choice -Team Competencies Aligned with Project Requirements -Talent Attraction and Development -Competency Acquisition In-House or External Partnerships -Partnership Identification, Formation and Management -Ongoing Assessment of Current Partnerships as Project Matures	-Strategic Context for Innovation -Commitment of Senior Management -Nature of Project Guidance Process -Relationships with Internal Stakeholders -Potential Organizational Resisters -Influence with Corporate Strategy/ Management -Expectations of Senior Management and Transitioning Units -Organizational Design -Project Home and Reporting Structure



Uncertainty Management Checklist – Potential Flaws

Categories	Market Uncertainty	Technical Uncertainty	Resource Uncertainty	Organization Uncertainty
Uncertainty Focus	Learning about market drivers, value creation and business viability	Understanding technology drivers, value and economic feasibility	Accessing money, people and organizational competencies	Gaining and maintaining organizational legitimacy
Potential Flaws and Fatal Flaws or Showstoppers	-Market Attractiveness Turns Out to be False -Market Test of Prototype Fails or Disappointing -Inability to Secure Appropriate Customer Partner -Lack of Robustness, Depth, Scope and/or Number of New Capabilities Offered Resulting in Limited or Constrained Market Applications -Inappropriate Time Horizon for New Market Creation	-Technology Proof of Concept Setback -Prototype Limitations -Cost Disadvantages -Technology and/or Application Development Issues -Development Process Major Issues	-Major Funding Loss due to Reversal of Overall Corporate Performance -Project Team Limitations -Inability to Attract Required Talent -Lack of Partnership Strategy -Failure of Alliance Deal or Technical Partner -Undefined Partnership Exit Conditions	-Loss of Champion -Change in Senior Management and/or Strategic Intent -Change in Senior Champion/Sponsor -Transfer of Responsibilities at Project Transition -Lack of Strategic Marketing Communications -Inappropriate Portfolio and Project Metrics -Insufficient Runway to Demonstrate Business Results



Learning Plan Development Guidelines



Learning Plan Evaluation Criteria

- ◆ The opportunity is clearly described up front.
- ◆ Several application or market domains are explored.
- ◆ Each of the four uncertainty domains (M, T, R, O) are addressed, or, if not, a rationale is given as to why not.
- ◆ The tests that were identified and selected are underway or completed.
- ◆ New learning has emerged.
- ◆ New assumptions have been identified or a new business creation strategy is coming to light.



Timing of a Learning Plan Session

- ◆ The Project Leader decides the timing of a Learning Plan Session with the Strategic Coach.
 - A Session involves all members of the project team.
- ◆ Triggers for a Session are as follows:
 - Attainment of milestones per an action or Learning Plan.
 - Lack of project progress in reducing uncertainties.
 - Preparation for a significant investment or transition.
- ◆ The first Learning Plan Session establishes a Learning Plan baseline or the initial learning loop.
 - Initial session requires 2-3 hours of project coaching time.
 - For subsequent sessions, time will vary depending on issues and will focus on Learning Outcomes and next learning steps.
 - A project typically goes through 3 to 5 learning loops during Discovery and Incubation.



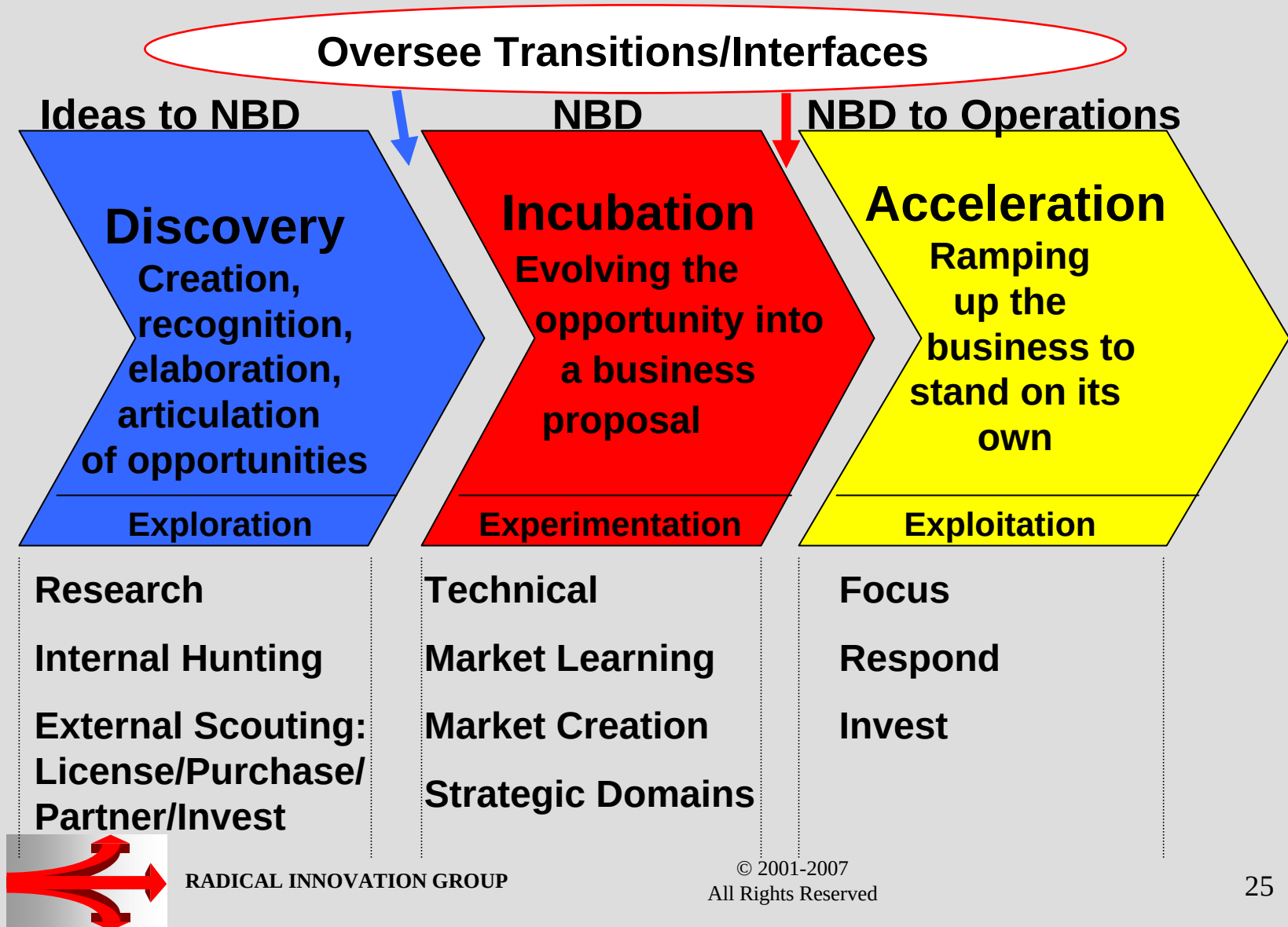
Introduction to

The DIA Model for Decision Making

***Asking the Right Questions and Seeking Appropriate
Answers during Discovery, Incubation and
Acceleration***

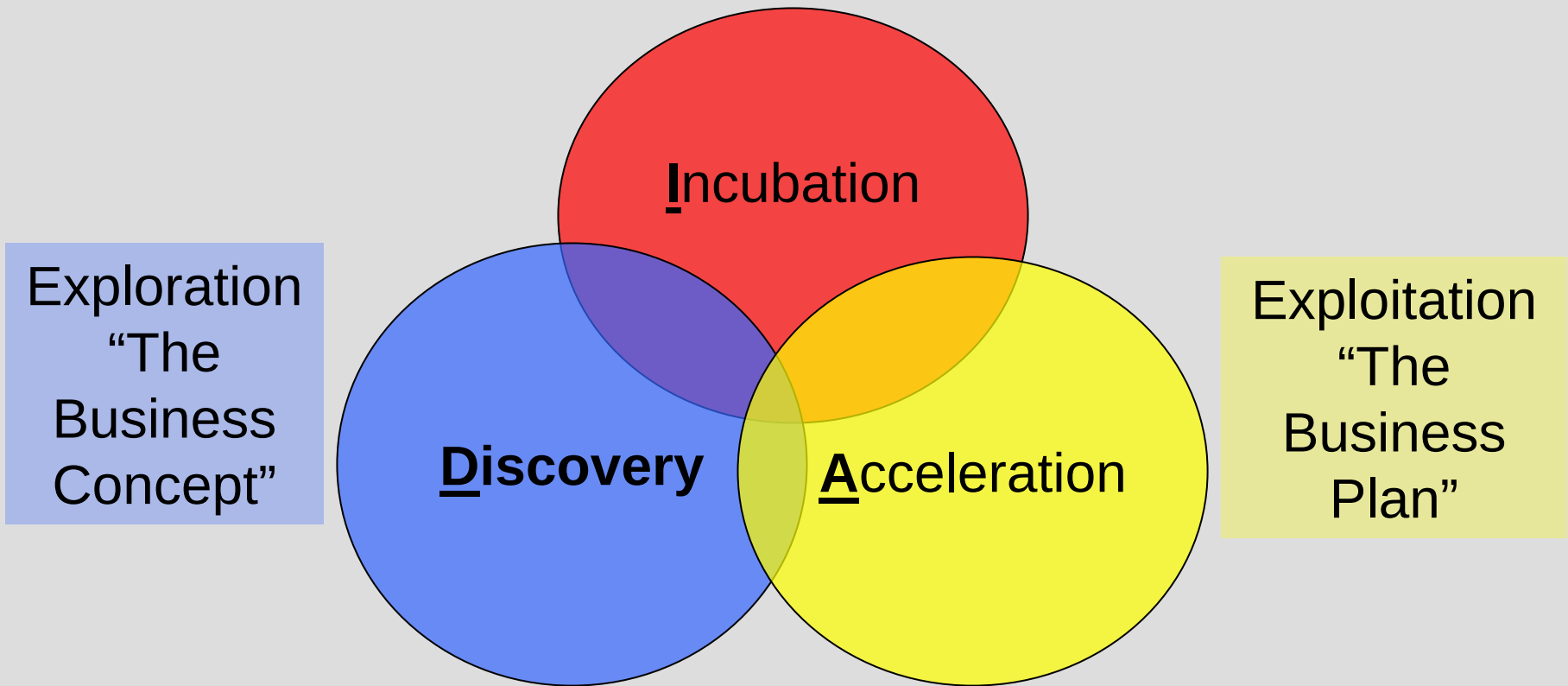


Three Distinct Innovation Competency Areas



Different Approaches for Investment Selection

Experimentation “The Business Proposal”



New Business Development Project Evolution

Phases Categories	Discovery Exploration Output = Business Concept	Incubation Experimentation Output = Business Proposal	Acceleration Exploitation Output = Business Plan
Market Uncertainty Learning about market drivers, value creation and business viability	Application Possibilities and Value Proposition	Market Learning, Business Model and Market Entry Strategy	Marketing Plan
Technical Uncertainty Understanding technology drivers, value and economic feasibility	Technical Feasibility and Capabilities	Prototype and IP Strategy	New Product Development Plan
Resource Uncertainty Accessing money, people and organizational competencies	Availability of Funding and Right People	New Business Creation Talent and Partnerships (Internal and External)	Business Team Composition and Partnerships Aligned for Business Maturity
Organization Uncertainty Gaining and maintaining organizational legitimacy	Strategic Context for Innovation and Senior Level Commitment	Structure and System to Support New Business Development Projects	Organizational Placement and Transition Management

Learning Plan Map

Project Activities



Project Management

Portfolio Activities



Decision Making

Learning Plan



Uncertainty
Mgmt Checklist



DIA Model
Questions



D = Business Concept

I = Business Proposal

A = Business Plan

Investment Decision



Purpose	Tools	Target
Strategic Positioning	Elevator Speech	Senior Mgmt Stakeholders
Portfolio Decision Making	Elevator Speech Business Concept, Proposal and Plan	Internal/External Interfaces Investment Committees (developed with Boards)
Project Learning	Elevator Speech Learning Plan/UMC DIA Model Questions	Project Work Coaching Venture/Advisory Boards

Value of Learning-Based Project Management for Company and Project Teams



Company Benefits

- ◆ Teams develop a comprehensive view of project challenges and a more strategic perspective.
- ◆ Learning orientation is enabled and legitimized in the company.
- ◆ Project teams are aided with their prioritization and decision making requirements.
- ◆ Team leaders and coaches develop new skills for managing new business development project teams.
- ◆ Project teams are encouraged to make connections to outside entities that can help resolve uncertainties.

Accelerated Learning to Achieve Faster Results



Project Team Value (1 of 3)

- ◆ Helps team to clearly articulate what it knows and does not know.
 - What we think we know is often based on assumptions.
- ◆ Facilitates divergent/convergent thinking and expedites decision making process.
 - Provides path for likely evolution of project requirements.
 - More you learn across all uncertainties the better the team is prepared for the unexpected.
- ◆ Differentiates learning from execution phase.
 - Highlights stages of learning and purpose of incubation.
 - Identifies appropriate questions to ask and tests to conduct/learning to undertake given stage of project maturity.



Project Team Value (2 of 3)

- ◆ Learn when and how to move forward/marshal resources due to focus on resource and organization uncertainties.
 - Identify commercialization requirements sooner.
 - Organization/resource uncertainties become tangibles translatable into action plans.
- ◆ Raises importance of elevator speech to communicate organizational value, link to strategy and manage organizational expectations.
- ◆ Is relatively simple to use and principles can even be applied to incremental innovation.



Project Team Value (3 of 3)

- ◆ Emphasizes need for technical advantages to be significant to support business potential when market understanding is limited.
 - If advantages are significant, next step is to address resource and organization issues to assign/acquire resources and clarify strategic objectives.
 - If advantages are minimal, need to address market uncertainties first, especially understanding of value chain to determine if value proposition exists to support business potential.
- ◆ Offers approach for speaking with senior leaders in a less challenging way about resource and organization issues.
- ◆ Helps projects teams identify what it needs for guidance from senior leaders.



Words of Caution from Team Experiences (1 of 2)

- ◆ Intuitive for some but not for others.
 - Difficult to move from what we know mindset to what we need to learn.
 - Coaching others requires training and time to learn new technique.
- ◆ Designed for a high uncertainty innovation project setting.
 - Overkill for incremental innovation with many “knowns”.
 - Not appropriate for use until a project has been defined.



Words of Caution from Team Experiences (2 of 2)

- ◆ Difficult to achieve organizational buy-in without significant education.
 - Requires greater organizational context than a training program alone can provide.
- ◆ For some, template is too complex to follow when combined with four uncertainties and multiple steps in a learning loop.
 - Explanation required on how to address the uncertainties, e.g., all simultaneously, 1 only or some combination.
 - Need greater clarity on how to work through the steps.

Important to Follow Consistent and Timely Coaching

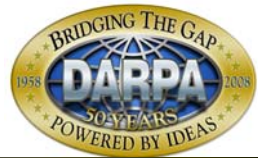




Defense Advanced Research Projects Agency

Connie Jacobs
DARPA SBIR/STTR Program Manager

DARPA Organization



Director, Tony Tether
Deputy Director, Bob Leheny

Tactical Technology

Steve Welby
Steve Walker

Air/Space/Land/Sea Platforms
Unmanned Systems
Space Operations
Laser Systems
Precision Strike

Information Exploitation

Bob Tenney
Mark Davis

Sensors
Exploitation Systems
Command & Control

Strategic Technology

Dave Honey
Larry Stotts/Brian Pierce

Space Sensors/Structures
Strategic & Tactical Networks
Information Assurance
Underground Facility Detection
& Characterization
Chem/Bio Defense
Maritime Operations

Defense Sciences

Brett Giroir
Barbara McQuiston

Physical Sciences
Materials
Biology
Mathematics
Human Effectiveness
Bio Warfare Defense

Information Processing Technology

Charlie Holland
Chuck Morefield

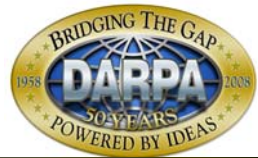
Cognitive Systems
High Productivity Computing
Systems
Language Translation

Microsystems Technology

John Zolper
Dean Collins

Electronics
Photonics
MEMS
Algorithms
Integrated Microsystems

DARPA Transition Pilot



Foundation for Enterprise Development (FED)

Initial mentoring Jan 2007, extended
mentoring Jun 2007 (Pre- CPP)

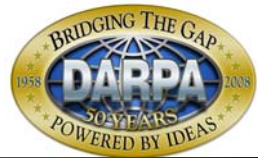
Several selection criteria used to choose
participants:

Multiple Phase II's with DARPA

Phase II's \$1.5M and up

Multiple end-user funding on SBIR contract

DARPA Transition Pilot



Foundation for Enterprise Development (FED)

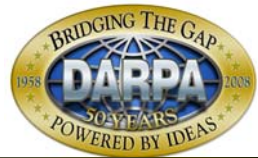
3 Companies chosen to participate:

Bluetronix – Autonomous Routing Algorithms

EDAptive – Development, Verification &
Security of Complex Systems

VoxTec – Handheld Voice Translation Device

DARPA Transition Pilot



Foundation for Enterprise Development (FED)

Transition Assistance Provided

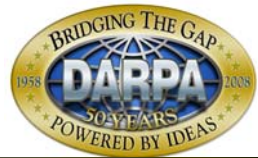
Marketing and business development

General and Procurement specific

Market niche and requirements analysis

Transition roadmaps

DARPA Transition Pilot



Foundation for Enterprise Development (FED)

Transition Assistance Provided

Introductions to possible end-users

Management and resources assistance

Preparation for key meetings and conferences



Leveraging SBIR to Address Technology Needs

Mr. Paul Koskey

Innovation Team Lead
MDA Advanced Technology

How Does MDA SBIR Define Technology Needs?

- **Topics are grouped under Research Areas, defined by MDA System Engineering and the National Team Identified System Needs (GAPs)..**
 - MDA has 10 Research Areas and 54 Topics for the 7.3 solicitation
- Research Area “Leads” work with the MDA program elements and offices, which co-author topics.
 - Process solicits proposals addressing GAPs (These are MDA Tech needs.)
 - Individual topics are usually co-sponsored and co-authored by several program elements.
 - Each co-sponsor provides evaluators to the process when proposals are received.
 - Sponsors work together as one team to enhance the capabilities of the Ballistic Missile Defense System (BMDS) ---which is one System
- **A Relatively New Process (3 Years Old)**
 - Established by MDA Director to increase transition of technology into the BMDS.

What Impact Does The SBIR Timeline Have On Use Of Program Innovation?

- 4 years (at least) From Topic generation to project end,
 - More often Longer (Added time for Ph2 Enhancements, no-cost ext., Phase III projects, etc.).
 - SBIR contracts linked to Mainline programs which can be reduced or cut
 - Evolving needs change based on threat or unforeseen developments
 - Re-engineering and BRAC can affect “champions” for technology
- MDA’s “co-sponsorship” approach
 - If a need changes in one program element or office, the technology may still serve another that is actively tracking the success of this work
- The new “evolving” process has yet to be proven
 - No Projects awarded under the first solicitation have been completed.
- Success is not readily apparent.
 - Long SBIR Timeline makes it difficult to expeditiously track the effectiveness of new processes.
 - Value may not be assessed for several or even many years.

Do You Use SBIR as Risk Reduction ?

Yes and No

- MDA has also aligned multiple Phase II SBIR projects with the prime contractor on both competing and synergistic efforts, developing technologies or components for large programs. (HAA is an example)
- Encouraging relationships between the small businesses and the Prime contractor base has provided alternative approaches/ technologies to resolve technical issues.
- Conversely, MDA SBIR is experimenting with use in higher-risk-high payoff projects that could be revolutionary solutions for the BMDS.

How Do You Handle "Success" ?

- The key is in defining and identifying success.
 - Success can be:
 - Transition to a program element
 - Transition through an Advanced Technology mainline program.
 - Series of Successes can also lead to overall failure
 - Failure can teach very valuable lessons
 - Success can be through the Prime contractors, who can restrict volume of information due to the proprietary nature of the work. (How much Learned?)
 - Sometimes not succeeding is success. Success can be learning that a class of options does NOT work.
 - BMDS knows to redirect effort to alternative path.

How do You Identify Success

- MDA recently began a rigorous tracking survey for recently completed SBIRs begun in 2002
 - Projects just completed were based on topics written several years ago. (6 or 7 years ago)
 - MDA experience is that success is often only visible in long hind sight

How to publicize success

- Outreach



Defense Advanced Research Projects Agency

**Beyond SBIR Phase II Conference:
Bringing Technological Edge to the Warfighter**

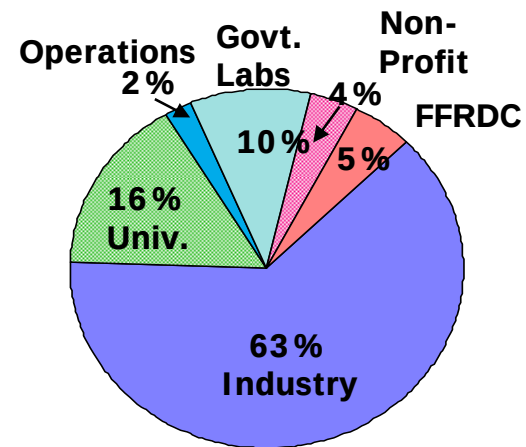
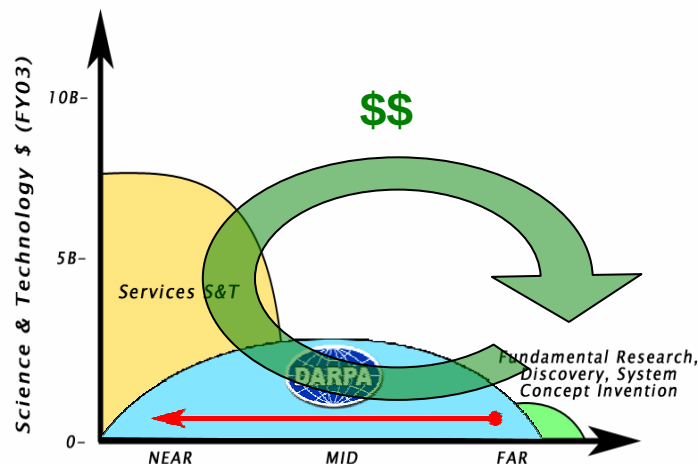
Dr. Robert F. Leheny
DARPA Deputy Director

21 August 2007

DARPA



- **Projects (Programs) agency:**
- **Typical projects are 3-5 years with multiple contracts-**
 - **Projects are phased, with well-defined milestones (Go-NoGo) for progression between phases.**
 - Timing of Go/No-Go decisions are dependent upon effort and not pre-determined
 - **Projects with fieldable prototype deliverables typically require MOUs with operators (end users) to go forward to final phase.**
 - **Funding in any technology area beyond end of project contract dependent on ideas**



DARPA's Strategic Thrusts



Investments Today for Future Capabilities

- Robust, Secure, Self-Forming Networks
- Detection, Precision ID, Tracking, & Destruction of Elusive Targets
- Urban Area Operations
- Advanced Manned & Unmanned Systems
- Detection, Characterization, & Assessment of Underground Structures
- Space
- Increasing the Tooth to Tail Ratio (Cognitive Computing)
- Bio-Revolution
- Core Technologies (Materials/Electronics/Information Technology)

Rapid Reaction Support to Warfighters



Bar Armor - Counter RPG



Boomerang



WASP



Ambush Language/Culture Training



Command Post of the Future



Hand-Held Translator



Broadcast Translation



Cooling Glove



Sniper Rifle



Water Disinfection Pen

DARPA Success Story-Rapid Reaction



AeroVironment
WASP; the
Marines' "Guardian
Angel" – ~100 units
deployed in field.



DARPA Success Story-Rapid Reaction



VCOM 3D's
Ambush Language /
Culture Training –
now available
online.



DARPA Success Story-Rapid Reaction



Voxtec's handheld
**phrase translation
system (PTS)**, 42
languages, 250,000
phrases, 5000
prototypes in field.





DARPA SBIR POC

M. Connie Jacobs

Program Manager

Small Business Innovation Research (SBIR) Program

Small Business Technology Transfer (STTR) Program

& Small Business Advocate

DARPA/CMO

3701 North Fairfax Drive

Arlington, VA 22203-1714

Office: (703) 526-4162

Fax: (571) 218-4670

E-Mail: Connie.Jacobs@darpa.mil

DARPA Home Page: <http://www.darpa.mil>



Unmanned Systems Initiative

August 22, 2007
Beyond SBIR Phase II
Arlington, VA

Chris Mailey
Engineer, Unmanned Systems
DoD Mentor-Protégé Program



BACKGROUND

- FY 05 Program Initiation
 - Partnership between OSD Small Business Programs Office and the OSD Joint Robotics Program
 - Technology focused Mentor Protégé strategy
 - Provides infrastructure and technology transition support to small business firms
- First Contracts Awarded August 2005
 - Lockheed Martin and Epsilon Systems Solutions (hardened displays)
 - Lockheed Martin and Geodetics, Inc. (precision GPS)
 - Ten awards to date with six new agreements in process



PROCESS OVERVIEW

- 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 Team Formulation
 - Protégé/Mentor(s) needs assessment
 - MP Agreement w/infrastructure and technology transition objectives



FAMILY OF INTEGRATED RAPID RESPONSE EQUIPMENT



FIRRE UGV



JBC2S



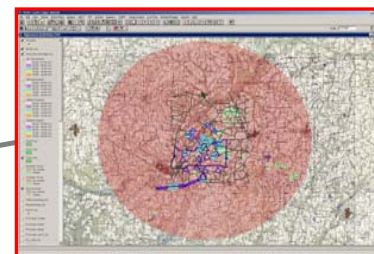
C2 Vehicle



SWORDS Talon



LRAD



Mission Planning and Rehearsal Tool

Remote Sensor Station



DI-5000



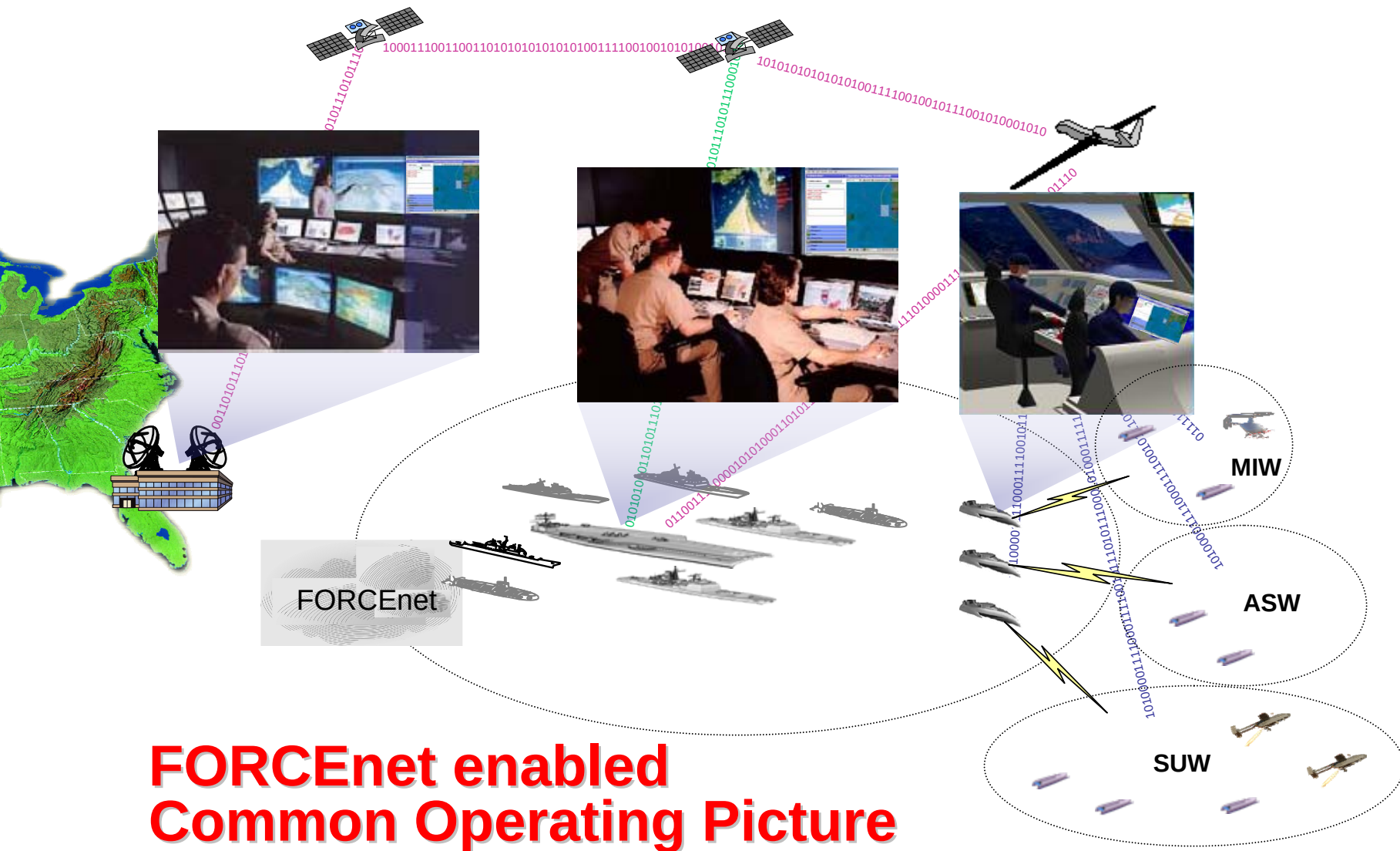
SeaFLIR



BAIS



AN/PPS-5D
GSR

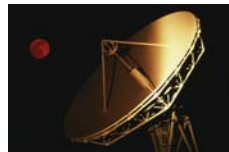




PARTICIPANTS

Technology Matrix

<u>Team</u>	<u>Technology Focus</u>
Lockheed Martin – Geodetics	Precision GPS
Lockheed Martin – Epsilon Systems	Hardened Displays
Lockheed Martin – Anthrotronix	UxS Dismounted Interfaces
Lockheed Martin – Referentia Systems	UxS Mission Planning
Raytheon – Mesa Robotics	Small, Low Cost UGS's
Raytheon – Kuchera Defense	ATFP UGV/UGS Mobility
SAIC – Sullivan International	Integrated UxS Health Mgt.
Textron – RE2	UxS Architecture/Autonomy
ARA – Stratom Incorporated	Autonomous Manipulators
ARA – Lorimar Industries	UxS Non-Lethal Payloads



DoD Office of Small Business Programs

www.acq.osd.mil/sadbv

DoD Mentor-Protégé Program
www.acq.osd.mil/sadbv/mentor_protege



OSD Open Architecture Panel SBIR Beyond Phase II



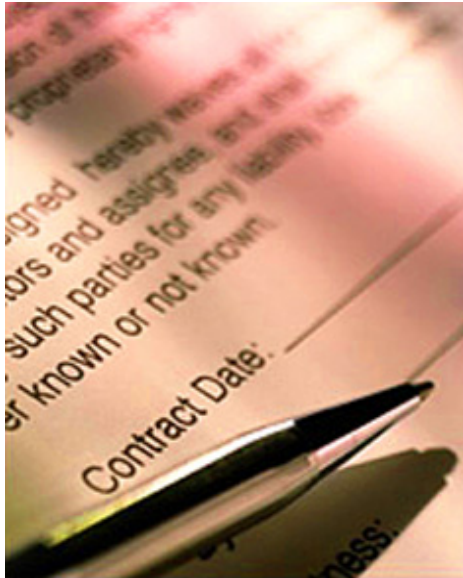
***Joan Marano-Goyco
Air Domain Lead for Open Architecture,
APEO(T)
August 22, 2007***



Naval Open Architecture

- ❑ Not
 - ❑ A program
 - ❑ A one size fits all solution
 - ❑ A change to the procurement regulations
 - ❑ Just about data rights
 - ❑ Open Source
 - ❑ Just an IP attorney issue
- ❑ Is
 - ❑ A CNO / ASN(RDA) priority item
 - ❑ OSD area of activity
 - ❑ A new way of doing business

The key to this new model is changing contracts...



"Our contracts need to be written where we have the ability to have the integrator that is designing the architecture in an open way so we can do competition for various pieces. So [that it is] easier to update with new functionality later on."

- ASN (RDA), Defense Daily , 10 October 2006

We must negotiate to:

- Employ modular architectures
- Allow for components to be decoupled and reused
- Secure appropriate data rights
- Allow for sharing of design artifacts
- Increase the use of peer reviews
- Facilitate tech insertions

"The goal now is to write open architecture requirements into contracts and provide companies incentives to meet the goals."

- ASN (RDA), Defense News , 01 November 2006



...obtaining and enforcing Intellectual Property Rights...

ISSUES WITH INTELLECTUAL PROPERTY RIGHTS

- Programs do not anticipate long-term or enterprise-wide implications when developing their acquisition strategies that address Intellectual Property Rights (IPR)
- Funding is not aligned to build and maintain “families of components” and acquire the appropriate IPR, hindering reuse
- The full impact of IPR often does not manifest itself until programs attempt to upgrade systems, at which point they learn how IPR restricts upgrade options
- The lack of a clearly defined IPR strategy before contract award complicates system certification. Procurement documents must clearly specify how the Navy will get access to source code and related information and that these materials must reside with the government for an unlimited amount of time to allow for system certification and other purposes.

We strive for Government Purpose Rights (GPR) in contracts to facilitate movement towards common solutions and reuse among systems ...



... However, we will accept more restrictive rights when the business case warrants and allow proprietary solutions to ride on the Navy-owned architecture.



Government/Contractor Collaboration by IP Escrow

- Legal construct Escrow Agreements enable parties with differing goals to collaborate while still protecting their own property interests
- Example from Real Property Law—Buyer/Seller different goals
- Contractor/Government each seeks to protect proprietary interest and property for future use/advantage
- Escrow enables Contractor and Government to cooperate by depositing proprietary information under the control of a third party Escrow Agent that determines what information may be needed and disclosed after both Contractor/Government have revealed information to the Escrow Agent rather than to an interested party



Duties of Escrow Agent in a “Knowledge IP Escrow”

- Act as Fiduciary to both Contractor/Government by holding in trust proprietary information, trade secrets, key interface tech data
- Determine the adequacy of the proprietary information, trade secrets or tech data to carry out the goal of the procurement; determine the need to selectively disclose the needed information so as not jeopardize either party's other interests.
- Require each party to make the needed contributions to the Escrow so that the agreement and procurement will be successful.
- Distribute the needed interface information or trade secret information as required by the procurement, so that each party (the Contractor and the Government) gets access to the proprietary information of the other in order to achieve an open architecture system.



Naval Open Architecture Take Away

- Working Groups needed to increase awareness of:
 - IPR for the gov't acquisition team
 - Knowledge/Technology Escrow
- Proprietary Solutions can be built to an open architecture
- Will limit breadth of Major System sole-source contracts
- Open Architecture is not Open Source
- Naval OA Web site: <https://acc.dau.mil/oa>



Beyond SBIR Phase II Conference

Open Architecture Session

Naval Open Architecture



August 22, 2007

*Distribution Statement A: Approved for public release;
distribution is unlimited.*

Mr. Douglas Marker
Advanced Technology Coordinator,
Future Combat Systems
Open Architecture
PEO IWS 7ST



Imagine a Navy where our mission systems...



... are modular, interoperable, and affordable to upgrade



Where we accommodate
changing technology
and requirements...



Where we provide
interoperable capabilities
to the warfighter...



Where we build a better
fleet for tomorrow!



How will we get there?

OPEN ARCHITECTURE

Open Architecture is the confluence of business and technical practices yielding modular, interoperable systems that adhere to open standards with published interfaces.

OA CORE PRINCIPLES

Modular design and design disclosure

Reusable application software

Interoperable joint warfighting applications and secure information exchange

Life cycle affordability

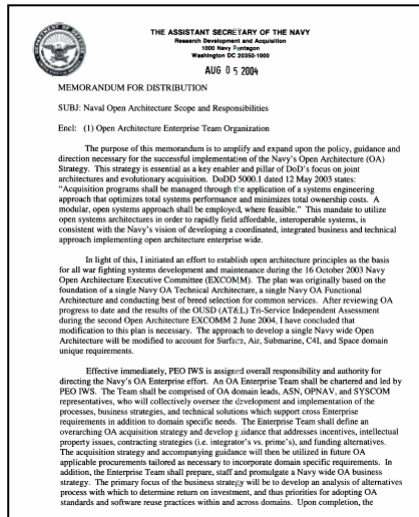
Encouraging competition and collaboration

Open Architecture is our path forward!

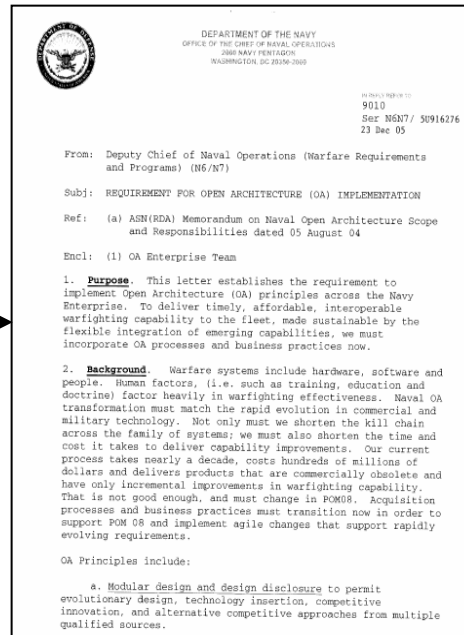


OA requirements are derived from three sources...

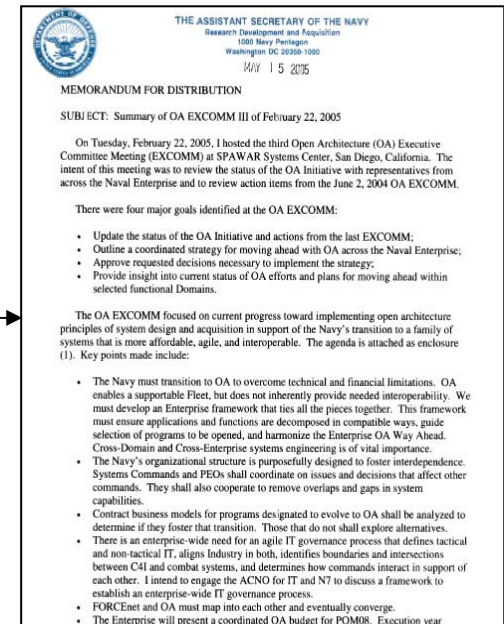
1 Aug 2004 ASN RDA mandates open architecture



2 Dec 2005 OPNAV issues OA Requirements letter



3 OA EXCOMM Action Items



Naval OA Policy

Naval OA Requirements

OA EXCOMMS

...that comprise the OA strategy

OA requires changing our contracts...



-to **increase competition**

-to **foster innovation**
and **reduce costs**

- to **share components** across
the enterprise

...and securing the appropriate data rights



Disclosing design artifacts is essential...

PEO-IWS Software Hardware Asset Reuse Enterprise Repository

<https://viewnet.nswc.navy.mil>

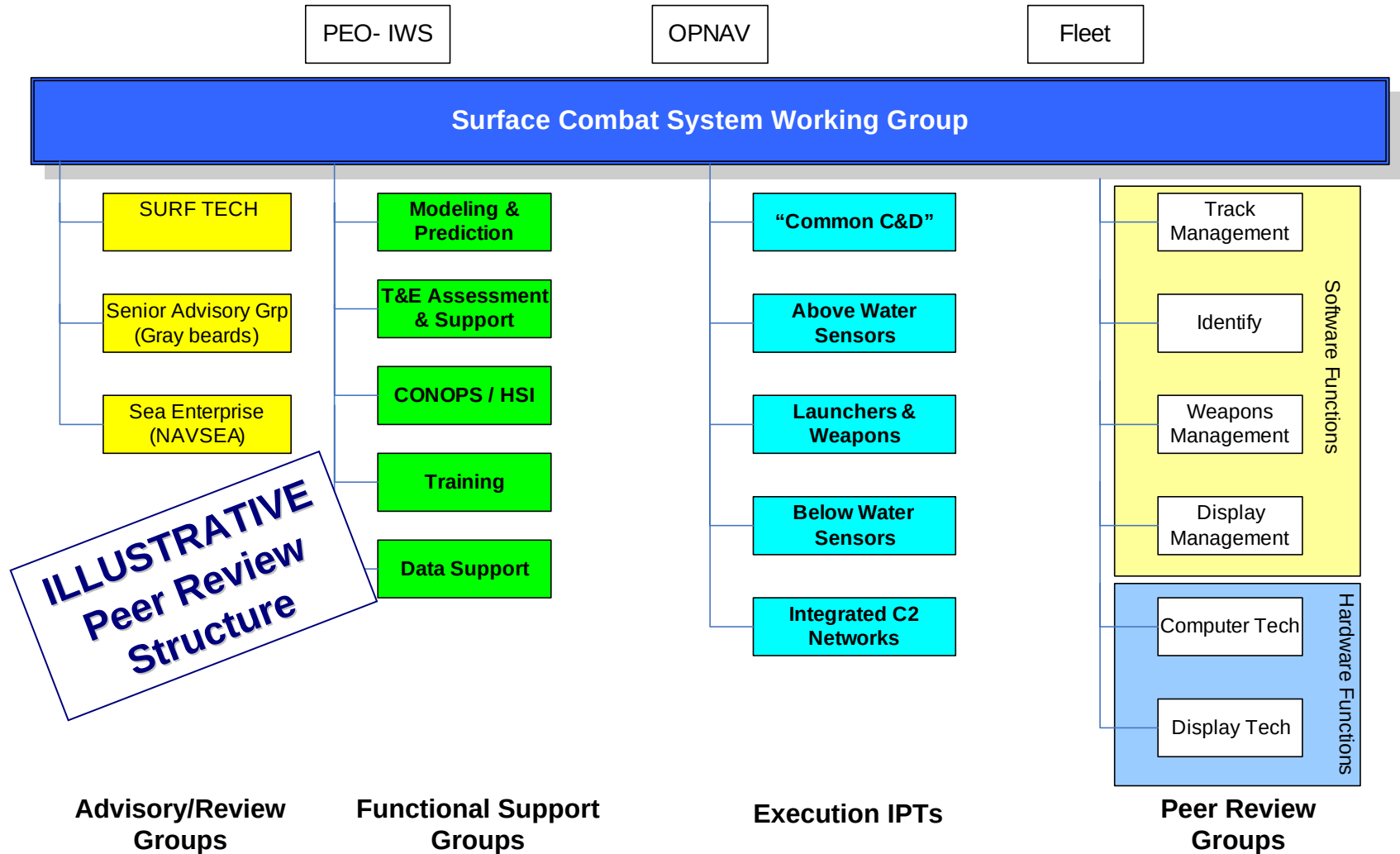
PEO-C4I & Space Collaboration Site

<https://nesi.spawar.navy.mil>

We must facilitate the sharing of government off the shelf products between programs, better understand the interfaces of systems to improve interoperability, and create opportunities for new products.



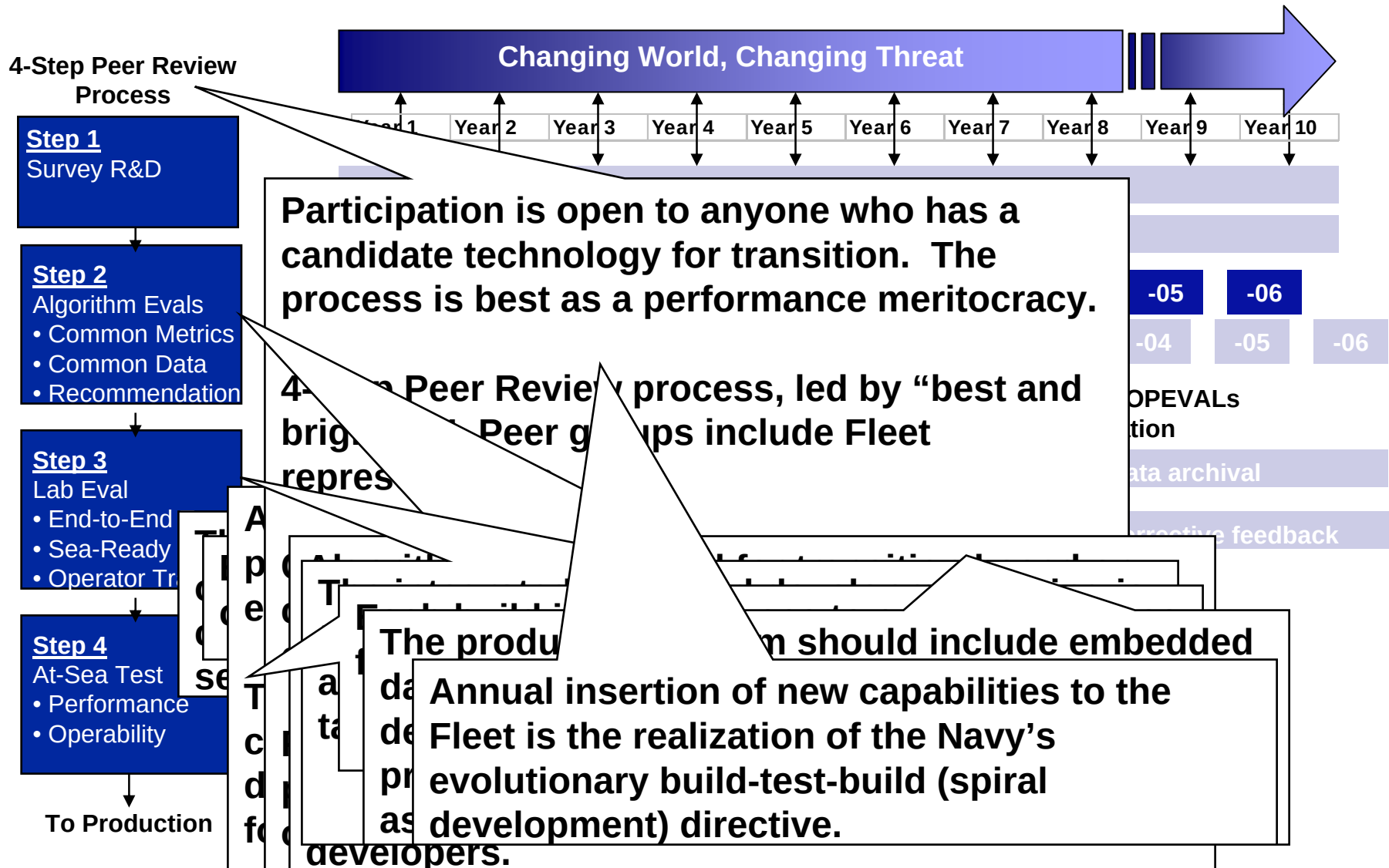
...as is increasing collaboration



Peer Reviews, COIs, and Collaboration Sites are some methods



OA enables the rapid insertion of new capabilities

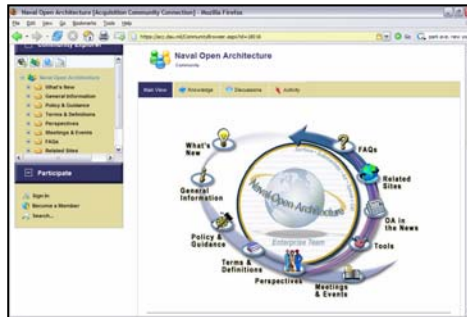




To institutionalize OA, we are changing behaviors thru training, education, and outreach

OA Website

<https://acc.dau.mil/oa>



OA Continuous Learning Module

<https://learn.dau.mil>



OA Industry Days



Industry Partners -
You are invited to attend the

NAVAL OPEN ARCHITECTURE INDUSTRY DAY

14 February 2006
0900 - 1245

Hosted by PEO-IWS
Location: Anteon,
1100 New Jersey Avenue

For details, please visit
<https://acc.dau.mil/oa>

To RSVP contact: Monty Ruckman at
mruckman@anteon.com
or 202-756-7336

Open Architecture Assessment Tool

Design Tenet: Interoperability					
STANDARDS					
A1	The use of standardized data and functional models, based on an open standard domain ontology is essential to how readily separate systems can exchange information and appropriately utilize each other's functional capabilities. Where two systems don't understand the same thing in exactly the same way, there will be greater or lesser problems. The larger the system, the greater the problems that semantic misunderstandings will create.				Score
A1.1	With what interoperability standards does the OA of Assessment professionally comply?				Score
NA	How standards based	Project specific standards	Corporate standards	Domain standards	Enterprise/International standards
A1.2	How standards based is the OA of Assessment's data model?				Score
NA	How standards based	Project specific standards	Corporate standards	Domain standards	Enterprise/International standards
SCOPE					
A2	What is the scope of the data model that the OA of Assessment uses to support interoperability with other systems?				Score
NA	How standards based	The data model is based on	The data model is based on	The data model is based on	The data model is based on
A2.1	What is the scope of interoperability of the OA of Assessment?				Score
NA	How standards based	System - expects to interoperate with other systems within the FOR	Domain - expects to interoperate with other systems within the Domain	Joint - expects to interoperate with other systems within the JCS	Joint - expects to interoperate with other systems within the JCS
SERVICES					
A3	A service is a software component, described by metadata interface, SLA, policies, dependencies which can be understood by a program. The metadata is published to enable use of the service by components which may be remote from it, and which need have no knowledge of the service implementation beyond its published metadata. A service can be implemented many ways, for example, an enterprise Web Service, an enterprise Java Bean, or a Business Process Execution Language construct. A description of the state data that it manages and its proper invocation sequences are optional.				Score
A3.1	To what extent does the OA of Assessment, using as a client, utilize mechanisms for the discovery and invocation of services?				Score
NA	How standards based	Services are discovered manually and invocation is an ad-hoc process	The OA of Assessment uses external services that are characterized	Services can be dynamically located and invoked	Discovery of services is based on metadata and service
Quick Start / About OAA / Feedback / Assessment Information / Technical Questions / Programmatic Questions / Total Score / Tech Score					



OA changes the way we do business today to build the fleet of tomorrow

OA GOALS

1. Change the Naval processes and **business** practices to "utilize open systems architectures in order to rapidly field affordable, interoperable systems."
2. Provide OA **Systems Engineering** leadership to field common, interoperable capabilities more rapidly at reduced costs
3. Change the Naval and Marine Corps **Cultures** to Institutionalize OA Principles

OA PRACTICES

Disclose design artifacts
Negotiate appropriate data rights
Foster enterprise collaboration
Reuse GOTS products
Institute Peer Reviews
Develop new business models
Incorporate OA in contracts

Publish interfaces
Isolate proprietary components
Use widely adopted standards
Modularize systems

DAU OA Training
Outreach
Government Symposias & Industry Days
NPS Research



Government Programs and initiatives to help small companies

- The Department of Defense Office of Small Business Programs (OSBP) at <http://www.acq.osd.mil/osbp/>
- The Department of the Navy Office of Small Business Programs (OSBP) at <http://www.donhq.navy.mil/OSBP/>
- Naval Research Laboratory Office of Small Business Programs at <http://sadbunrl.navy.mil/SADBU.htm>
- The Department of Navy Small Business Innovative Research at <http://www.navysbir.com/index.html>
- The Department of Navy Program Executive Office for Integrated Warfare Systems Software Hardware Asset Reuse Enterprise Repository at <https://viewnet.nswc.navy.mil>



Not all inclusive



Naval OA Contacts:

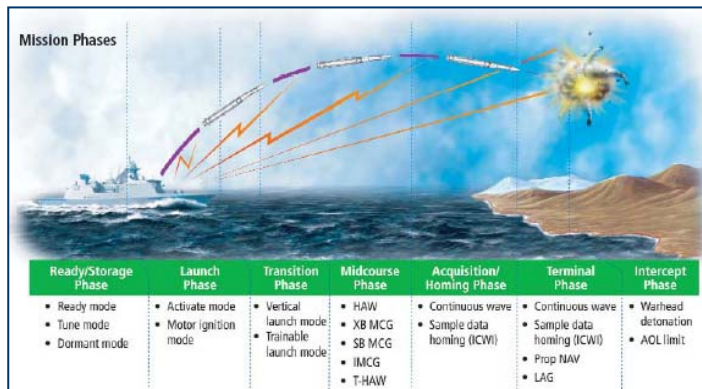
Ms. Rene Thomas-Rizzo, Deputy Program Manager, Future Combat
Systems, rene.thomas-rizzo@navy.mil

Mr. Nick Guertin, OA Director, nickolas.h.guertin@navy.mil



The application of OA principles is being applied to weapons programs today

Evolved SeaSparrow Missile (ESSM) is an international cooperative upgrade of the RIM-7 SeaSparrow Missile. ESSM provides self-defense battlespace and firepower against high-speed, highly maneuverable anti-ship missiles.



Adopted OA Principles

- ✓ **Design Disclosure** – interfaces are shared among 10 different countries
- ✓ **Reusable software** – several components from the SeaSparrow Missile are reused
- ✓ **Interoperable joint warfighting applications**- data exchanged among several applications
- ✓ **Lifecycle affordability**- lifecycle costs are significantly reduced by sharing resources among the consortium
- ✓ **Collaboration** – 10 countries are collaborating to improve the performance of the SeaSparrow Missile



Industry initiatives to build partnerships with small companies

■ Industry Technology / Collaboration Centers



Lockheed Martin



General Dynamics

Representative



Northrop Grumman

Leveraging SBIR to Address Technology Needs

Mr. Richard McNamara
PEO Submarines

Panelists

- Ms Kay Griffith-Boyle – PEO C3T, Army
- CAPT Shane Gahagan – PEO (A), Navy
- CAPT Thomas Payne – USN, JSF
- Mr. Paul Koskey – MDA / DV

Questions to Consider

- How Do You Define Your Technical Needs
- What Impact Does The SBIR Timeline Have On Your Use Of Program Innovation
- Do You Use SBIR As Risk Reduction
- How Do You Handle “Success”

Q&A

Evolutionary Acquisition Promotes Rapid Technology Transfer



Distribution Statement A:
Approved for public release;
distribution is unlimited

21 AUG 07

Ms. Katrina Wahl
Deputy for Acquisition Management
Missile Defense Agency



Integrated Ballistic Missile Defense System

Sensors



Defense Support Program



Space Tracking And Surveillance System



Sea-Based Radars



Forward-Based Radar With Adjunct Sensor



Midcourse X-Band Radar



Early Warning Radar

Boost Defense Segment



Midcourse Defense Segment

Terminal Defense Segment



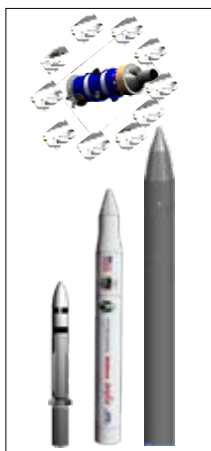
Airborne Laser



Kinetic Energy Booster



Aegis Ballistic Missile Defense / Standard Missile-3



Multiple Kill Vehicle



Ground-Based Midcourse Defense



Terminal High Altitude Area Defense



Sea-Based Terminal



Patriot Advanced Capability-3

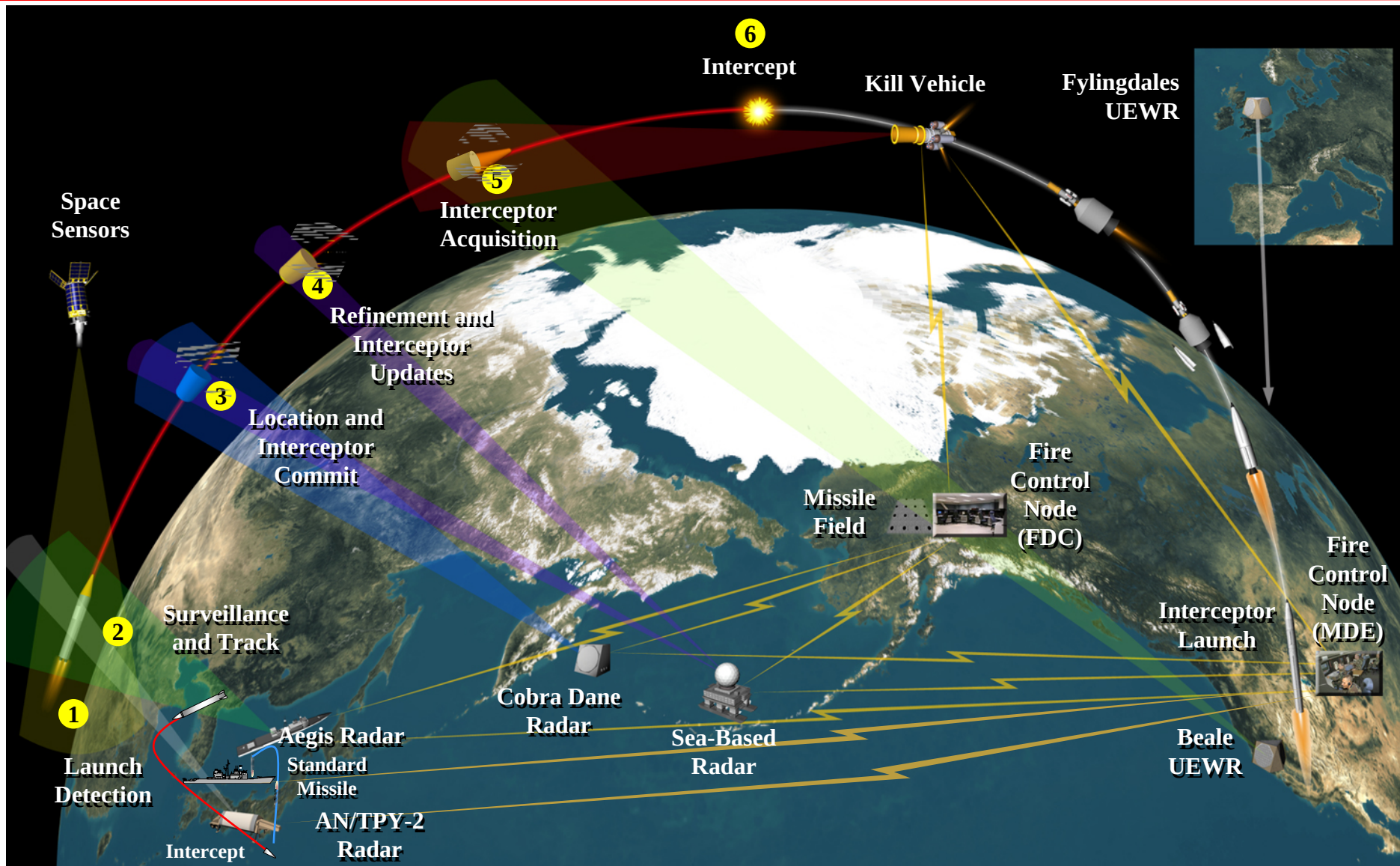
Command, Control, Battle Management & Communications



NMCC USSTRATCOM USNORTHCOM USPACOM EUROM CENTCOM



An Integrated Approach To Ballistic Missile Defense



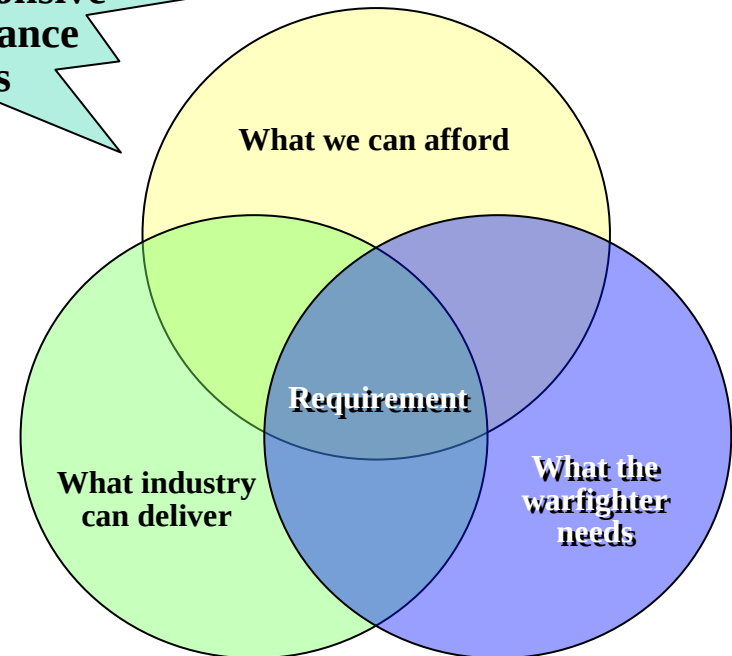


MDA Capability-Based Acquisition

Capability-Based

- Up-front acknowledgement that specifics of future threat are unknown, but general characteristics are
- Emphasizes useful existing technology over hoped-for developments
- Willingness to accept militarily useful early capabilities while continuing to improve through continuous Spiral Developments
- Fixed budget drives affordability trades

**Flexible and Responsive
No Key Performance
Parameters**



Management by Knowledge Points

- **Knowledge Points:** Events which demonstrate critical technologies or capabilities at component and system levels
- **Data from Knowledge Points drive key decisions**



Continuous Spiral Development

Warfighter

Spiral
1

Spiral
2

Spiral
3

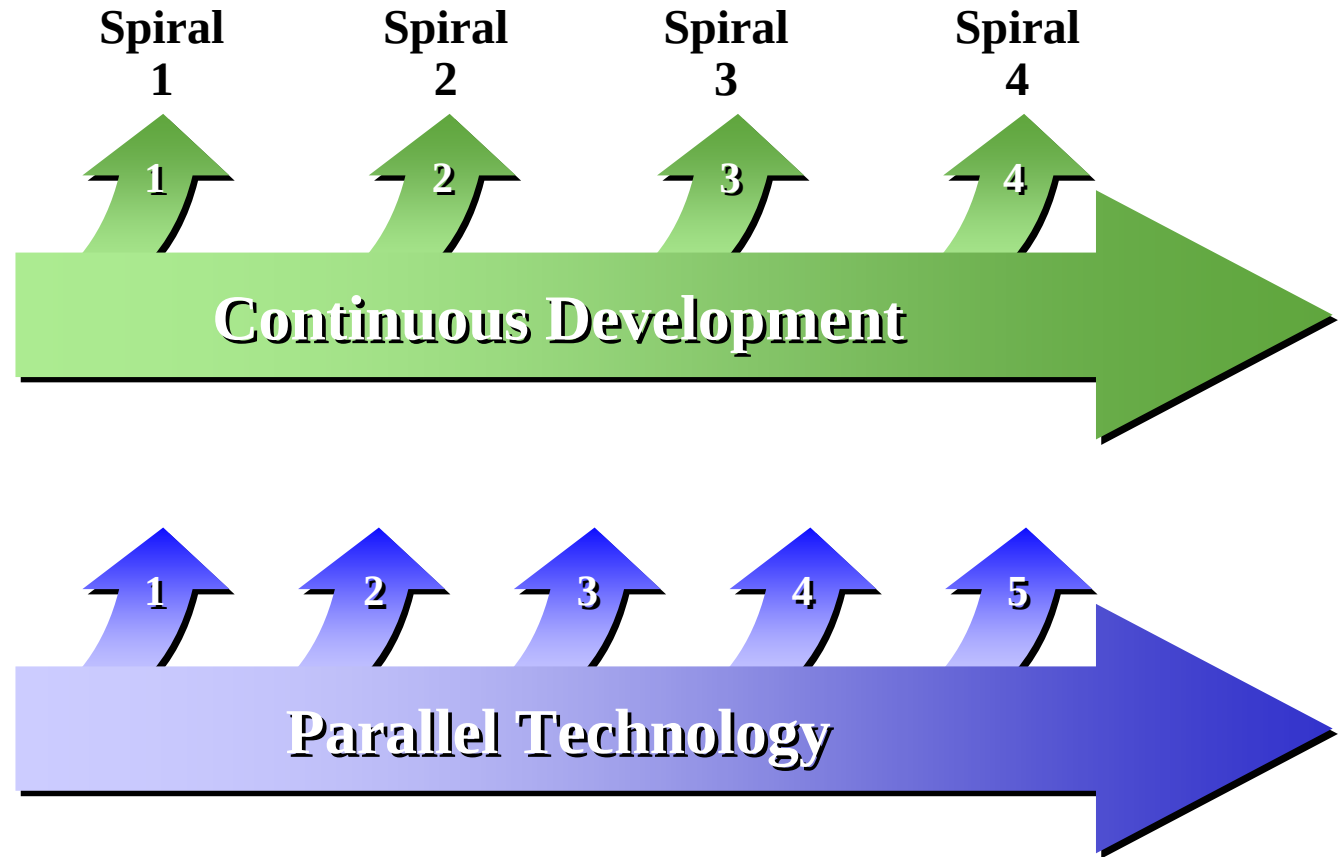
Spiral
4

Developer

Continuous Development

Technologist

Parallel Technology





Some Implications Of Capability-Based Approach

- **Robust technology investment**
 - Aimed at filling gaps
 - Carried to higher maturity level (TRL 6 or 7) before entering development
 - Solid strategy for transition to development
- **Spiral development**
 - Event-based improvements
 - Open architectures, modular designs
 - Low risk and short developments
- **Demands stronger Government skills**
 - Assessing technical maturity and risk
 - Proposal cost and schedule realism
 - Life cycle cost estimating



Leveraging Innovative Technology

- **Leveraging technology breakthroughs increasing system capability**
 - **Seeking best technical and operation concept solutions from Defense, industry and academic sources**
 - **Solutions to improve integrated capability and availability**
 - **Solutions to reduce cost and improve return on investment**
 - **Solutions to accelerate Technology Transition on the Ballistic Missile Defense System**



The Future Of SBIR And Missile Defense

- **SBIR program and Technology Transition key to future system capability**
 - **Technology Transition success is not only product insertion**
 - **Broaden focus is include**
 - **Transition of knowledge**
 - **Transition of understanding**
 - **Capturing all forms of Technology Transition improves SBIR success and system capability**
 - **Technology Transition synchronized with system spiral development and the Block construct can be an ideal approach to planning for incremental improvements in capability**
- **Building collaborative Technology Transition working relationships**
 - **MDA Knowledge Centers, Research Area Leads, SBIR Program Office, Advance Technology, System Engineering, and industry**
 - **Teaming to prioritize promising technology**
 - **Teaming to implement ideas for advancing technology beyond TRL 5, and expediting Technology Transition**



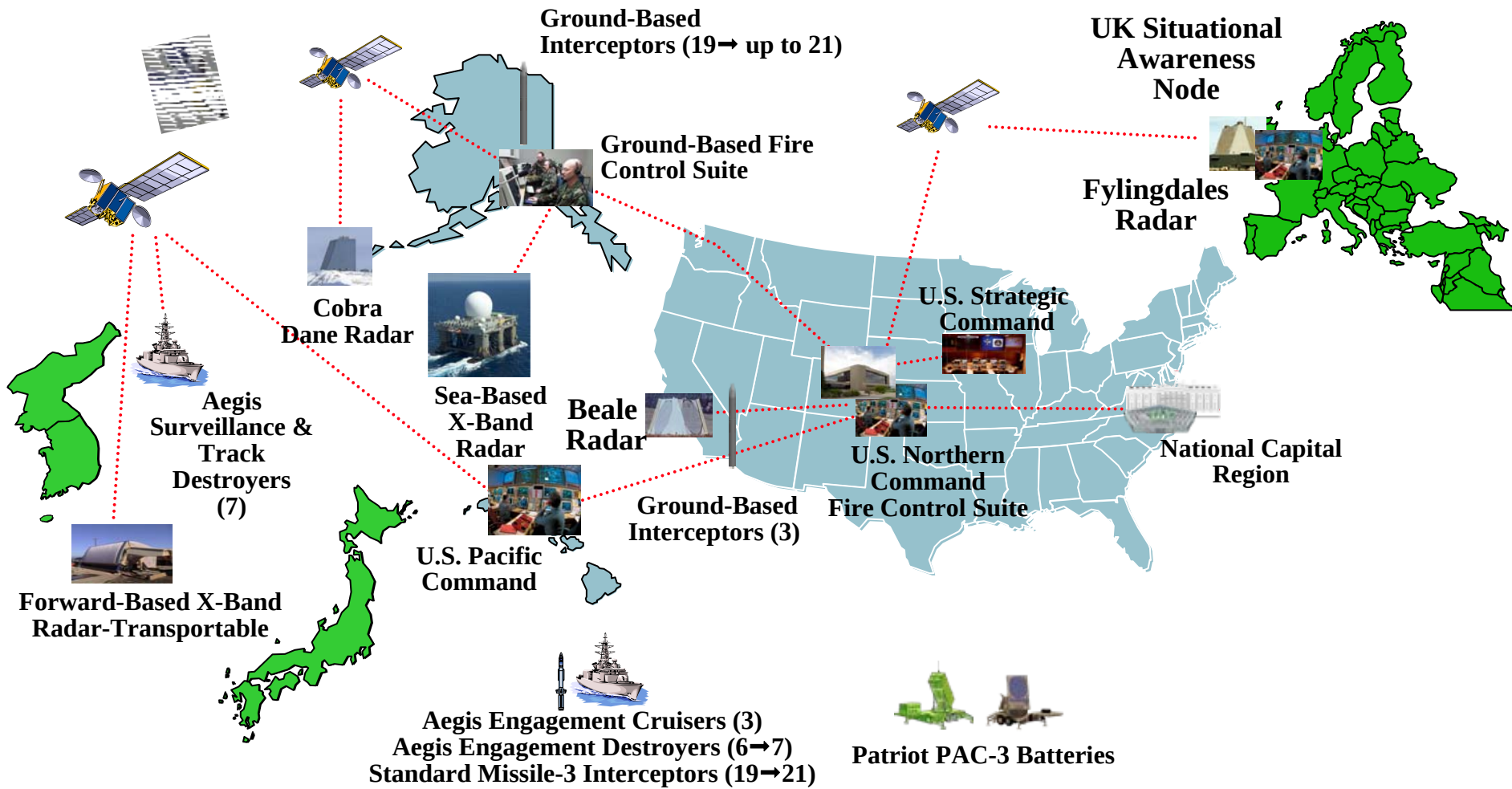


BACKUP



System Configuration

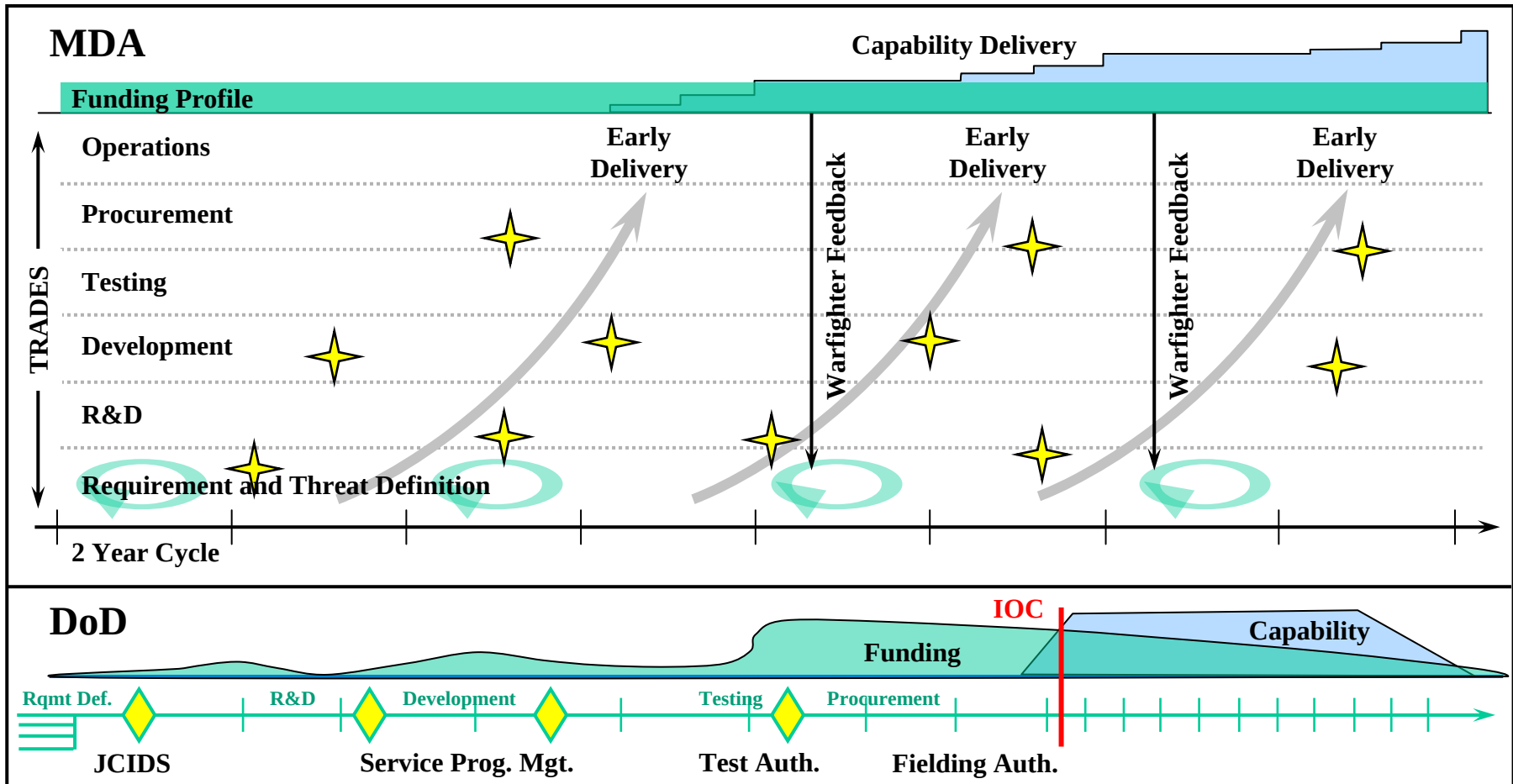
August 2007 → End 2007



None Of This BMD Capability Existed In June 2004



Capability-Based Acquisition



Strengths

- Fully flexible funding
- Combined development and operational testing
- Integrated capability management

Risks

- Transition to services



Missile Defense Technology Needs

- **Space Technology**
- **Interceptor Technology**
- **Modeling and Simulation**
- **Discrimination**
- **Radar Technology**
- **Information Assurance**
- **Integration**
- **Safety / Insensitive Munitions**
- **Manufacturing Technology**
- **Airborne Component Technology**

SMALL BUSINESS INNOVATION RESEARCH SMALL BUSINESS TECHNOLOGY TRANSFER

UNITED STATES ARMY **SBIR** **STTR** Programs

VISION

To be the Army's *premier* source of innovative technology solutions, providing direct access to America's high-tech small business research and development community, enabling our Soldiers deployed around the world.

23 August 2007



Susan Nichols
SBIR Program Manager

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

SBIR Technology Transition Barriers to Overcome

- **Lack of small business opportunities and expertise:**
 - Understanding / access to Army acquisition / transition process
 - Knowing / understanding PM requirements, needs, timelines
 - Immature small business management processes
 - Ineffectual communication of SBIR capabilities
 - Limited opportunities / forums to interface with PMs / Primes
- **Lack of Government / prime resources:**
 - Overwhelming amounts of SBIR data
 - Significant risk concerns, no developed SBIR Transition Plans
 - Prioritization of effort -> Limited transition funding and time
- **Lack of quantifiable performance metrics**
 - Needed to develop lessons learned and improve technology transition processes

**No interested third party to bridge gap between
small businesses & programs**



Army SBIR CPP Overview

- **Established in response to 2006 National Defense Authorization Act**
- **Objective: Increase SBIR transition and commercialization success**
 - Identify a focused set of active SBIR Phase II projects that:
 - Meet a high priority U.S. Army need
 - Exhibit high probability of transition to operational Army
 - Exhibit strong potential for commercial use
 - Fund participants to support furthering development of Phase II technology for transition targets
 - \$15M available for CPP investment in FY07
 - Funded as an extension to existing Phase II contract
 - Assist identified CPP participants with commercialization and transition activities related to Phase II technology
- **Results oriented ROI is the primary measure of success**
 - 3rd party funding and sales revenue related to Phase II transitions and commercialization

CPP Value Proposition

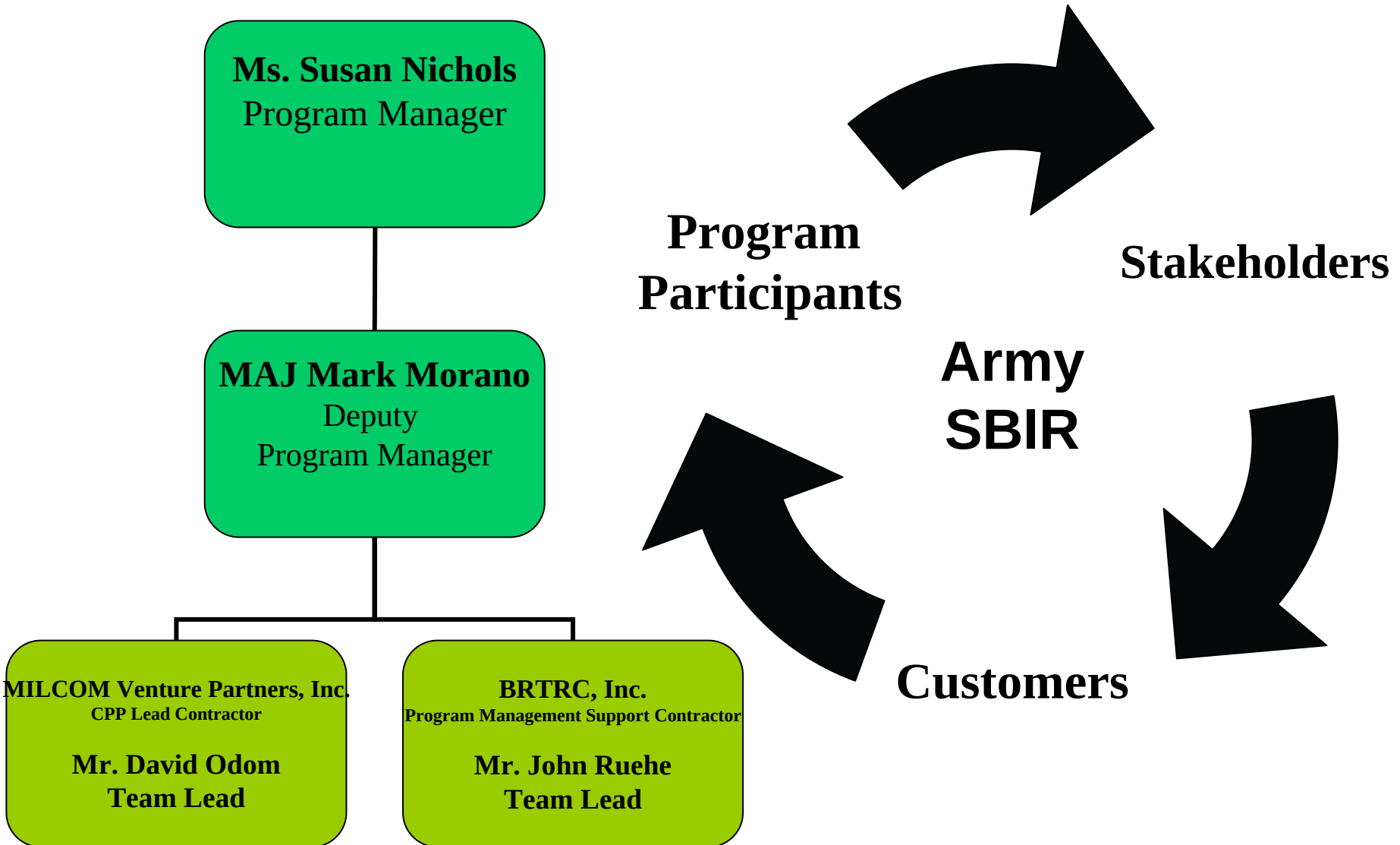
- **Firms receive:**
 - CPP funding for furthering the SBIR technology
 - Business planning and third party fund raising assistance
 - Marketing materials and strategic guidance
 - Technology brokerage, advocacy, and transition planning
 - Accelerated path to product transition
- **Government PMs and Primes receive:**
 - A pre-qualified set of firms addressing specific capability gaps/program needs with viable product solutions
 - Risk reduction of technology through CPP support and complementary 3rd party funding
 - Direct liaison with small business and opportunity to guide product targets for maximum program impact and accelerated transitions
- **SBIR Program receives:**
 - Developed, measured, and reported metrics of program success
 - Leveraging of PEO / PM transition tools and processes
 - Increased technology transition



Organizational Conflicts of Interest and Data Rights Protection

- MILCOM currently has no financial interests in any ongoing Army SBIR project, to include investment, ownership, or control. MILCOM has established an Organizational Conflict of Interest (OCI) plan that requires MILCOM to report any actual or potential conflicts of interest in connection with the CPP and provides for a resolution process in the event of any such report. There have been no such reports to date.
- Participating firms will receive assistance in how to obtain: third-party (non-SBIR) funding to include private sector and/or non-SBIR government funding, sales of the specific technology, and in some cases, possible venture capital investment by other entities if desired by the SBIR small business. MILCOM has not been engaged to provide any investment into SBIR small businesses.
- Firms provide project information on a voluntary basis including both technical and business data necessary to assist with identification of SBIR projects that have characteristics for participation in the CPP. This information is treated confidentially. As detailed on the collection form, the information will not be disclosed outside the government and its contractor unless (a) it is or becomes generally known or available to the public other than as a result of a breach of confidentiality by the government, (b) it was or becomes available to a third party on a non-confidential basis from a source who is not an agent, employee, officer, director or related party of the government or its contractor, (c) disclosed to a government support contractor who has signed an appropriate non-disclosure agreement and has agreed to adequately protect such data, (d) agreed to by the Phase II SBIR company, or (e) required by law, governmental, administrative or judicial rule, regulation or process.
- Small business response to the CPP has been overwhelmingly positive. To date, over 80% of eligible firms have begun the process for participating in the initial review.

Army SBIR CPP Team



Army SBIR CPP Network

Army Research Institute
Army Test and Evaluation Center
Engineer Research & Development Center
Medical Research & Materiel Command
Space & Missile Defense Command
Army Program Executive Offices
RDECOM Labs and Centers

**Program
Participants**

Stakeholders

**Army
SBIR**

ASA(ALT)
TRADOC
PEOs/PMs
RDECOM IPTs
ATO Managers
Logistics Transformation
Agency
ManTech
DoD
Other Federal Agencies

Customers

Small Business Concerns
Defense Primes
Program Participants
Stakeholders

Army SBIR Role

- Oversee management of CPP
 - Determine eligible candidates
 - Review and assess recommended participants and approve if appropriate
 - Ensure investment fund is available
 - Review and assess recommended investments and approve if appropriate
 - Comply with reporting requirements
 - Ensure electronic tools are developed/modified as required and are available for CPP candidates and participants

MILCOM Role

- Management of CPP Activities
 - Assess Phase II projects' commercialization and transition potential
 - Recommend CPP participants to the Army
 - Recommend CPP participant funding levels to the Army
 - Assist selected CPP participants with commercialization and transition
 - Marketing and business plan development
 - Facilitate customer collaboration
 - Co-develop technology transition plans and agreements
 - Support identification of 3rd party funding/investment opportunities

BRTRC Role

- Provide program support to CPP
 - Develop and maintain web based tools
 - Ensure Army SBIR website contains updated CPP information
 - Collect and manage data for reporting requirements
 - Facilitate communication between stakeholders, customers, program participants and MILCOM



Army SBIR CPP Contacts

- MILCOM Email channel for project firms and public: armycpp@milcomvp.com
- Army SBIR email: sbira@us.army.mil
- Link for more information:
http://www.armysbir.com/sbir/cpp_desc.htm

SMALL BUSINESS INNOVATION RESEARCH SMALL BUSINESS TECHNOLOGY TRANSFER

UNITED STATES ARMY **SBIR** **STTR** Programs

VISION

To be the Army's *premier* source of innovative technology solutions, providing direct access to America's high-tech small business research and development community, enabling our Soldiers deployed around the world.

23 August 2007



Susan Nichols
SBIR Program Manager

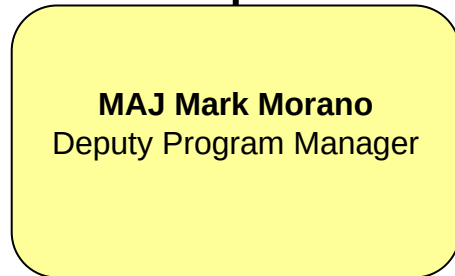
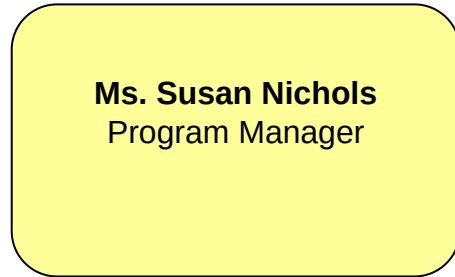
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.



Army SBIR CPP Overview

- Established in response to the 2006 National Defense Authorization Act
- Objective: Increase SBIR transition and commercialization success
 - Identify a focused set of active SBIR Phase II projects that:
 - Meet a high priority U.S. Army need
 - Exhibit high probability of transition to operational Army
 - Exhibit strong potential for commercial use
 - Fund participants to support furthering development of Phase II technology for transition targets
 - \$15M available from CPP initial fiscal year
 - Funded as an extension to existing Phase II contract
 - Assist identified CPP participants with commercialization and transition activities related to Phase II technology
- Results oriented ROI is the primary measure of success
 - 3rd party funding and sales revenue related to Phase II transitions and commercialization

Army SBIR CPP Team

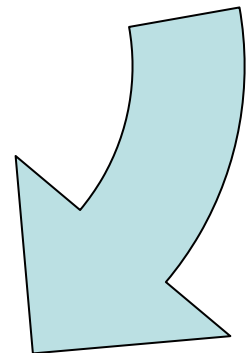
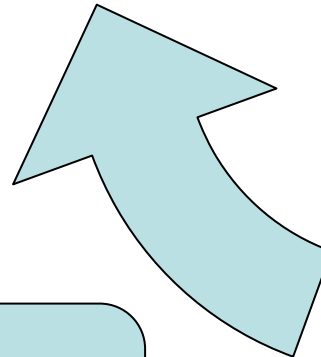
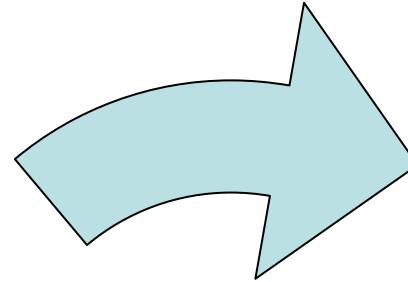


Program
Participants

Stakeholders

**Army
SBIR**

Customers



Army SBIR CPP Network

Army Research Institute
Army Test and Evaluation Center
Engineer Research & Development Center
Medical Research & Materiel Command
Space & Missile Defense Command
Army Program Executive Offices
RDECOM Labs and Centers

Program
Participants

Stakeholders

ASA(ALT)
TRADOC
RDECOM IPTs
ATO Managers
Logistics
Transformation Agency
ManTech
DoD
Other Federal Agencies

**Army
SBIR**

Customers

Small Business Concerns
Defense Primes
Program Participants
Stakeholders

Army SBIR Role

- Oversee management of CPP
 - Determine eligible candidates
 - Review and approve/reject recommended participants
 - Ensure investment fund is available
 - Review and approve/reject recommended investments
 - Comply with reporting requirements
 - Ensure electronic tools are developed/modified as required and are available for CPP candidates and participants

MILCOM Role

- Management of CPP Activities
 - Assess Phase II projects' commercialization and transition potential
 - Recommend CPP participants to the Army
 - Recommend CPP participant funding levels to the Army
 - Assist selected CPP participants with commercialization and transition
 - Marketing and business plan development
 - Facilitate customer collaboration
 - Co-develop technology transition plans and agreements
 - Support identification of 3rd party funding/investment opportunities

BRTRC Role

- Provide program support to CPP
 - Develop and maintain web based tools
 - Ensure Army SBIR website contains updated CPP information
 - Collect and manage data for reporting requirements
 - Facilitate communication between stakeholders, customers, program participants and MILCOM

SBIR Technology Transition Barriers to Overcome

- **Lack of small business opportunities and expertise:**
 - Understanding / access to Army acquisition / transition process
 - Knowing / understanding PM requirements, needs, timelines
 - Immature small business management processes
 - Ineffectual communication of SBIR capabilities
 - Limited opportunities / forums to interface with PMs / Primes
- **Lack of Government / prime resources:**
 - Overwhelming amounts of SBIR data
 - Significant risk concerns, no developed SBIR Transition Plans
 - Prioritization of effort -> Limited transition funding and time
- **Lack of quantifiable performance metrics**
 - Needed to develop lessons learned and improve technology transition processes

**No interested third party to bridge gap between
small businesses & programs**

- **Firms receive:**
 - Technology and business assessment
 - Market research, preparation, and training
 - Technology brokerage, advocacy, and transition planning
 - Participation in outreach forums
- **Government PMs and Primes receive:**
 - Wide access to technical/management data
 - Direct liaison with small business
 - Support in resolving program risk/gaps
- **SBIR Program receives:**
 - Developed, measured, and reported metrics of program success
 - Leveraging of PEO / PM transition tools and processes
 - Increased technology transition

Army SBIR CPP Contacts

- MILCOM Email channel for project firms and public: armycpp@milcomvp.com
- Army SBIR email: sbira@us.army.mil
- Link for more information:
http://www.armysbir.com/sbir/cpp_desc.htm

SMALL BUSINESS INNOVATION RESEARCH SMALL BUSINESS TECHNOLOGY TRANSFER

UNITED STATES ARMY **SBIR** **STTR** Programs

VISION

To be the Army's *premier* source of innovative technology solutions, providing direct access to America's high-tech small business research and development community, enabling our Soldiers deployed around the world.

21 August 2007



Susan Nichols
SBIR Program Manager

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.



Army SBIR CPP Overview

- Established in response to the 2006 National Defense Authorization Act
- Objective: Increase SBIR transition and commercialization success
 - Identify a focused set of active SBIR Phase II projects that:
 - Meet a high priority U.S. Army need
 - Exhibit high probability of transition to operational Army
 - Exhibit strong potential for commercial use
 - Fund participants to support furthering development of Phase II technology for transition targets
 - \$15M available from CPP initial fiscal year
 - Funded as an extension to existing Phase II contract
 - Assist identified CPP participants with commercialization and transition activities related to Phase II technology
- Results oriented ROI is the primary measure of success
 - 3rd party funding and sales revenue related to Phase II transitions and commercialization



Army SBIR CPP Contacts

- MILCOM Email channel for project firms and public: armycpp@milcomvp.com
- Army SBIR email: sbira@us.army.mil
- Link for more information: http://www.armysbir.com/sbir/cpp_desc.htm

Headquarters U.S. Air Force

Integrity - Service - Excellence

Technology Transition and Acquisition Excellence: Taking it to the Next Level



***The Honorable Ms Sue Payton
Assistant Secretary of the Air Force
(Acquisition)***



U.S. AIR FORCE

AF Technology Transition

- **Technology transition: the use of technology in military systems to create effective weapons and weapon support systems***
- **New Goal: S&T community with MAJCOMs & Programs of Record focus on transitioning technology to affordable products to address Warfighter needs**
- **Several programs and processes transition technology to address Warfighter needs**
 - **Advanced Technology Demonstrations (ATD)**
 - **Advanced / Joint Concept Technology Demonstrations (A/JCTD)**
 - **Independent Research and Development (IRAD)**
 - **Small Business Innovation Research program (SBIR)**

* Definition from *Manager's Guide to Technology Transition in an Evolutionary Acquisition Environment*, 31 Jan 03, Defense Procurement and Acquisition Policy Office of the Under Secretary of Defense



U.S. AIR FORCE

AF SBIR Transition/Success Stories

... commercialization spin-offs

Oxygen Sensor



TauTheta Instruments, InterSpace, Physical Sciences

Objective: Develop an on-line oxygen sensor to determine the oxygen content of the air above the fuel in aircraft fuel tanks (C-17)

Commercial Use: To be adapted by large airliner manufacturers

Command and Control (C2) of Airlift Assets



ConnectedWireless Corporation

Objective: Develop more effective C2 of strategic airlift and refueling aircraft in remote areas

Commercial Use: Company has become a fast growing innovator in supply chain management of hardware and software systems.

Infrared (IR) Focal Plane Array

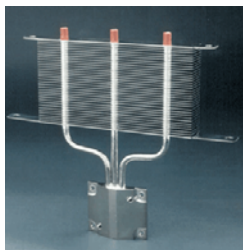


Fermionics Corporation

Objective: Improve semi-conductor quality to in-turn improve performance of IR Focal Plane Arrays for numerous AF applications such as Space Based IR System (SBIRS)

Commercial Use: detectors used for medical imaging and the short-wave arrays are applied to paper automation machines

Heat Pipe Wick Structure



Thermacore International, Inc.

Objective: Develop compact and innovative cooling system for electronic components

Commercial Use: Thermacore's technology is found in almost all laptop computers sold today and has been used successfully to cool many other types of electronics.

Piezoelectric Vibration Dampening Material



Active Control Experts

Objective: Develop material that would dampen the vibration in turbine engines

Commercial Use: Licensed the technology to K2, a snow ski manufacturer that now sells the Merlin IV, made out of that exact material, for about \$750 a pair

New Coating Process Protects B-2 Engines From Ice Damage



Microphase Coatings, Inc.

Objective: SBIR- developed coating technology works to dramatically reduce ice ingestion in B-2 engines.

Commercial Use: Considering transfer of technology to other aircraft that present less demanding flight environments



U.S. AIR FORCE

Why is the AF SBIR Program Important?

- **AF SBIR program is the largest of the DoD agencies (approximately \$340 million)**
 - **SBIR provides a rich source of technological innovation in a wide array of technology areas**
 - **Serves as potential feeders for follow-on Critical Experiments and Advanced Technology Demonstration Programs and to tech efforts focused on solving near and mid-term Product Center technology challenges**
- **Small Businesses**
 - **Hold 41% of US Patents**
 - **Obtain 13 times more patents per employee than large business concerns**

AF SBIR Program: Facilitates Technological Innovation for the AF Science & Technology Base



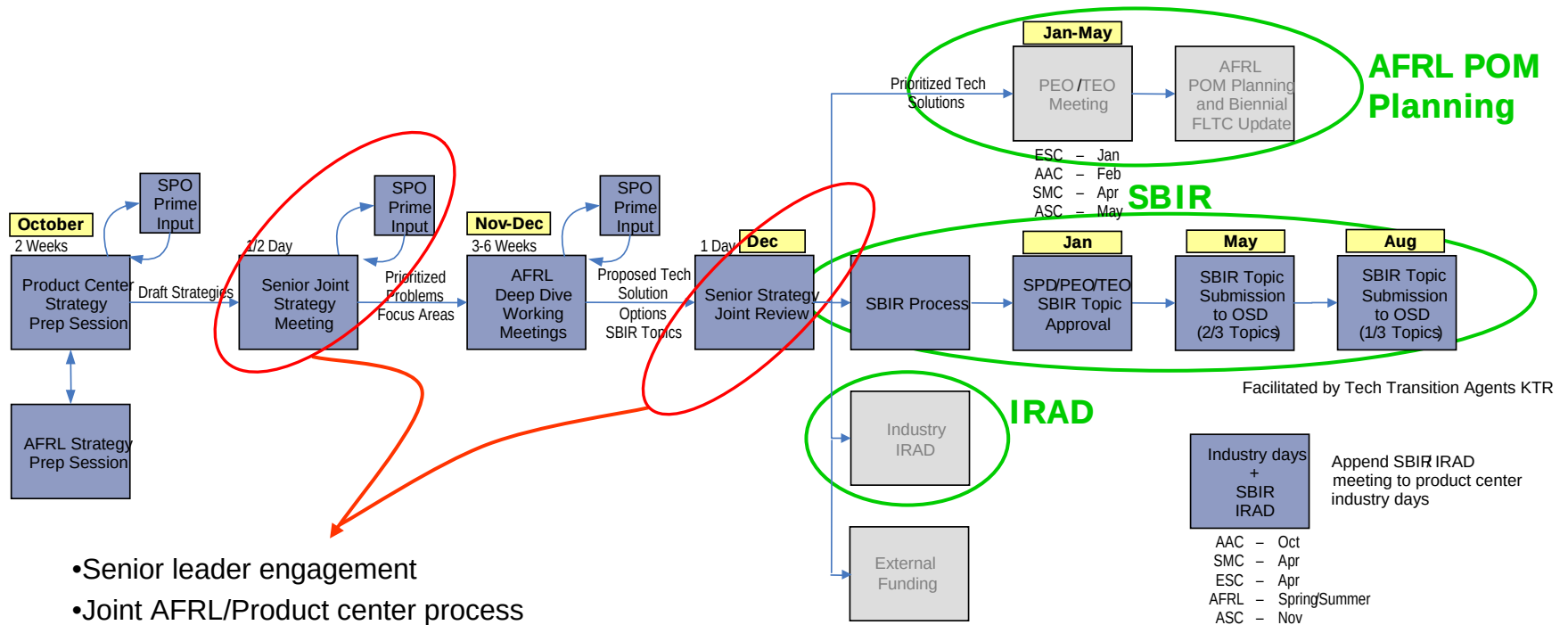
AF Commercialization Pilot Program (CPP)

- **Air Force has sought to improve the effectiveness of the SBIR Program**
 - **2004 & 2005 legislative initiatives requested a percentage of SBIR budget for administrative functions**
 - **Congress approved a Commercialization Pilot Program (CPP) in 2006**
 - **Focused on accelerating the transition of SBIR developed technologies and products to Phase III and into the acquisition process**
 - **Permits 1% of each services SBIR budget to accelerate the transition of technologies and products**



U.S. AIR FORCE

Air Force Product Center / AFRL Hunter/Gatherer Process



- Senior leader engagement
- Joint AFRL/Product center process
- Multi-directorate AFRL engagement
- PEO/TEO approval
- SPO Primes participation

- FY07 ESC/AAC/SMC process
- ASC slightly different process

Strategy Driven Process

AF SBIR CPP Focus (Transition Support)

- **AF hired SBIR contractor support personnel to facilitate transition**
 - **Embedded at Product Centers, JSF and F-22 SPOs**
 - **Used to gather PEO's technology based needs**
 - **Facilitate “match.com” SBIR workshops with primes and small businesses**
 - **Work with local AF SBIR Program Managers**
 - **Assists in identifying SBIR Phase II programs with high probability of transitioning**
 - **Creating a “tool box” of small business assistance instruments**
 - **Mentor-Protégé and Manufacturing Technical Production Programs, etc**
-



U.S. AIR FORCE

AF SBIR CPP Focus (Transition Support)

- **Supporting Product Center/AFRL technology needs gathering process**
 - More strategic SBIR topic generation process with closer ties to acquisition community and prime contractors
 - Future SBIR topics solving stated Product Center tech needs facilitates technology transition
- **Supporting SBIR technology interchange workshops with each Product Center**
 - Provides “match.com” service between Product Center, Primes, and SBIR small businesses
 - Identification of SBIR Phase II efforts directly associated with Product Center’s technology based needs
 - Assisting in identifying SBIR Phase II programs with high probability of transitioning
 - Tracking and recording all SBIR product transitions, compiling a list of the projects commercialized and publishing success stories
 - Air Force acts as “Honest Broker”



U.S. AIR FORCE

www.sbirstttrmall.com

For additional information about the AF SBIR Program contact:

Mr. Charles M. Plant, Jr., AFRL/XRS, (937) 656-4091, charles.plant@wpafb.af.mil

Mr. Stephen Guilfoos, AFRL/XRS, (937) 656-9021, stephen.guilfoos@wpafb.af.mil

The screenshot shows the homepage of the AF SBIR/STTR Virtual Shopping Mall. The header features the Air Force SBIR/STTR logo and the title 'VIRTUAL SHOPPING MALL'. A large image of a shopping mall interior is in the background. On the left, an orange sidebar lists navigation links: OVERVIEW, TECHNOLOGY MALL, ELECTRONIC LIBRARY, REPORT SUBMITTALS, SCHEDULE OF EVENTS, POINTS OF CONTACT, NEWS/UPDATES, GLOSSARY, LINKS, CONTACT US, SMALL BUSINESS LISTING, SMALL BUSINESS AREA, STTR SOLICITATION, CURRENT SBIR/STTR SOLICITATION, and a DoD TECHMINT logo. The main content area includes a 'WELCOME TO AF SHOPPING MALL' section with links to senior AF leaders' statements and a disclaimer. Below this is a 'WHAT'S NEW' section with a 'More...' link, featuring two news items: '3rd Quarter 2005 SBIR Advantage Newsletter now in Electronic Library - 9/29/2005' and 'Air Force SBIR 06.1 Topic Pre-Release Now Available - 8/15/2005'. To the right of the news items is a mailing list sign-up form with a 'Submit' button. At the bottom, there is a graphic of a mountain range with the text 'Today's Small Business Technologies for Tomorrow's Missions' and a link to the 'Privacy and Security Policy'.

Air Force SBIR/STTR

VIRTUAL SHOPPING MALL

OVERVIEW
TECHNOLOGY MALL
ELECTRONIC LIBRARY
REPORT SUBMITTALS
SCHEDULE OF EVENTS
POINTS OF CONTACT
NEWS/UPDATES
GLOSSARY
LINKS
CONTACT US
SMALL BUSINESS LISTING
SMALL BUSINESS AREA
STTR SOLICITATION
CURRENT SBIR/STTR SOLICITATION

WELCOME TO AF SHOPPING MALL
SEE WHAT SENIOR AF LEADERS ARE SAYING
AF SHOPPING MALL DISCLAIMER

WHAT'S NEW [More...](#)

3rd Quarter 2005 SBIR Advantage Newsletter now in Electronic Library - 9/29/2005

Air Force SBIR 06.1 Topic Pre-Release Now Available - 8/15/2005

Enter your email to be added to our mailing list:

DoD TECHMINT

Today's Small Business Technologies for Tomorrow's Missions

[Privacy and Security Policy](#)



U.S. AIR FORCE

Conclusion

- Air Force has a record of successes
- Working better communication between product centers, warfighters, prime contractors, program offices and small businesses
- More focused direction of the entire SBIR program toward CPP model
- SBIR program is a valuable tool in meeting warfighter needs



AF SBIR Program: Focused on Technology Transition



AnthroTronix, Inc.

8737 Colesville Rd, L203

Silver Spring, MD 20910

www.atinc.com

info@atinc.com

Background

- **Founded July, 1999**
- **15 Employees**
- **Business Strategy**
 - For Profit R&D Contract Services
 - Retain IP-Build IP Portfolio
 - Product Development
- **Launched Subsidiary-AT KidSystems**
 - Rehabilitation Products
 - Educational Products

Core Technologies

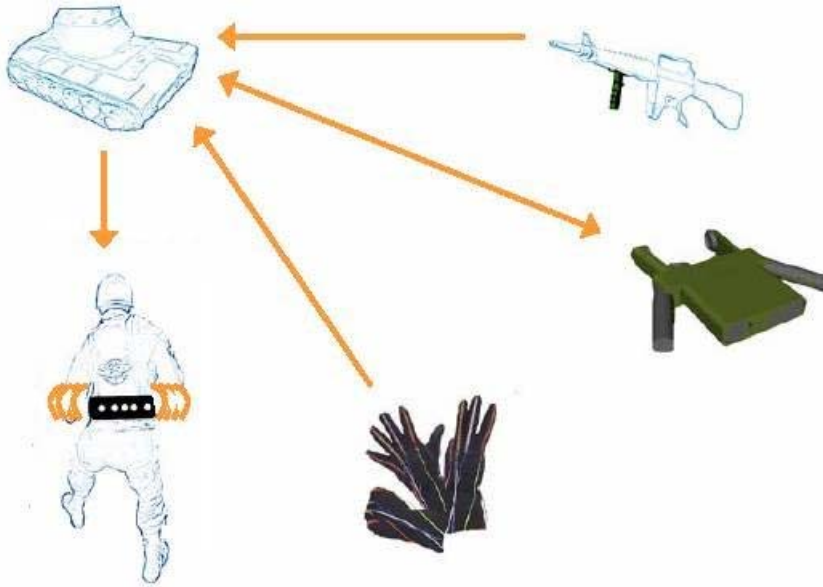
- **Advanced Human-Machine Interfaces**
- **Multimodal Interfaces**
- **Adaptive Control Interfaces**
- **Communication & Command/Control**
 - Wearable Computers
 - Robotic Platforms
- **Complex Systems Integration**
- **Experimental Design and Testing for Technology Transfer**
- **Simulation and Training**

Awards/Honors

- 2006 Peak Performance Award
- 2005 Tibbetts SBIR Award
- 2004 World Economic Forum - Technology Pioneer
- 2003 American Dream Award
- 2002 Maryland Innovator of the Year
- Featured in Time Magazine and Forbes

Funding Agencies

- U.S. Navy, Office of Naval Research
- U.S. Army, Army Research Labs
- DARPA
- OSD
- NASA
- National Center for Defense Robotics
- National Science Foundation
- National Institutes of Health
- Department of Education



Core Concepts

- Embedded Interfaces for Dismounted Soldier
 - Wearable & Weapon-Mounted Form Factors
 - Ruggedized Technologies
 - Facilitate Communication and Command/Control
 - Increase Remote Situational Awareness
- Multimodal Interface Technologies
 - Applied Force, Voice, Gesture, Body Movement
 - Allow for Dynamic Interaction

SBIR II

- Human-Robot Control Interface
 - (US Army ARL - SBIR II)

SBIR II Plus

- Human-Robot Control Interface
 - (U.S. Army ARL -SBIR II Plus)
- Technology Transfer
 - (TATRC-SBIR II Plus)
- VIRTE
 - (ONR-SBIR II Plus)

DoD Mentor Protégé Program

- Lockheed Martin, Advanced Technology Labs / AFRL

Technologies Developed

- Operator Control Units
- Input Devices
- Visual Displays
- Vibrotactile Displays
- 3D Simulated Environments
- Speech and Gestural Interfaces

Overview Advanced Interface Technologies



Mounted Force Controller



JAUS Simulator



iGlove



Vibrotactile/Processor Belt



Weapon Mounted Display



Visually Integrated Sensor Unit (VISUnit)



JAUS OCU



- Control and Feedback Device with head tracking.
 - Robot and payload control
 - Computer interface
- Features/Advantages
 - Multiple Modes
 - First person
 - Remote
 - Map mode
 - 3D overlay
 - Remote camera pans/tilts with motion of user's head
 - User can investigate from robot's perspective
 - Increased Situation Awareness
 - JAUS compliant





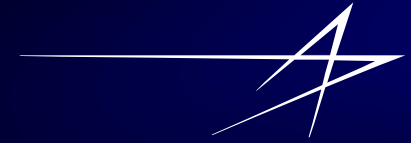
SBIR Beyond Phase II

Bridging Technological Edge to the Warfighter

August 23, 2007

**Mario A Ramirez
Manager SBIR/STTR Programs
Lockheed Martin Corporation**

Lockheed Martin Corporation



LOCKHEED MARTIN

2006 Sales \$39.6B

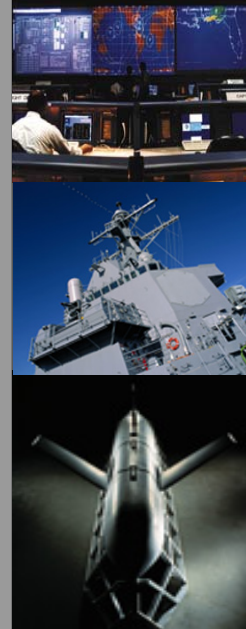
Aeronautics (AERO)



Space Systems (SPACE)



Electronics Systems (ESBA)



Information Systems & Global Services (IS&GS)



Locations with >200 Employees



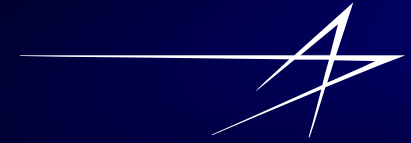
Successful SBIR Project



- Meets Warfighter Needs
- ROI
- Aligned with LM technology development needs
- Value both revenue and non revenue success

ROI to the Warfighter

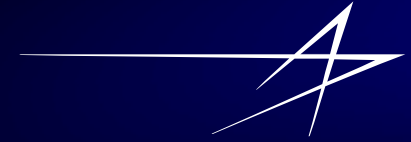
Collaboration Benefits



- **Benefits to the government...**
 - More Efficient Transition of SBIR Technology
 - More Players, Competition, and 'Bang for the Buck'
 - More Topic Submittals
- **Benefits to Small Business...**
 - Access to Lockheed's Expertise
 - Greater Probability to Transition Technology
- **Benefits to Lockheed Martin...**
 - Utilization of Technologies Complimentary to LM
 - Develop Strategic Small Businesses Relationships

SBIR is a repeatable source of technology concepts

Subcontract Excellence



Our role as a
systems integrator
increases
subcontractor's
role and criticality



- **More responsibility for technical development**
- **Collaboration with LM**
 - *Early involvement*
 - *Risk management*
 - *EVM and schedule*
- **Predictive Risk and Performance modeling**

**We manage our subcontractors as an extension of
our business and expect them to do the same**

Supplier Expectations



- **Supply Base Expectations**

Commitments

Meet them all

Quality

100% in everything you do

Delivery

On time, every time

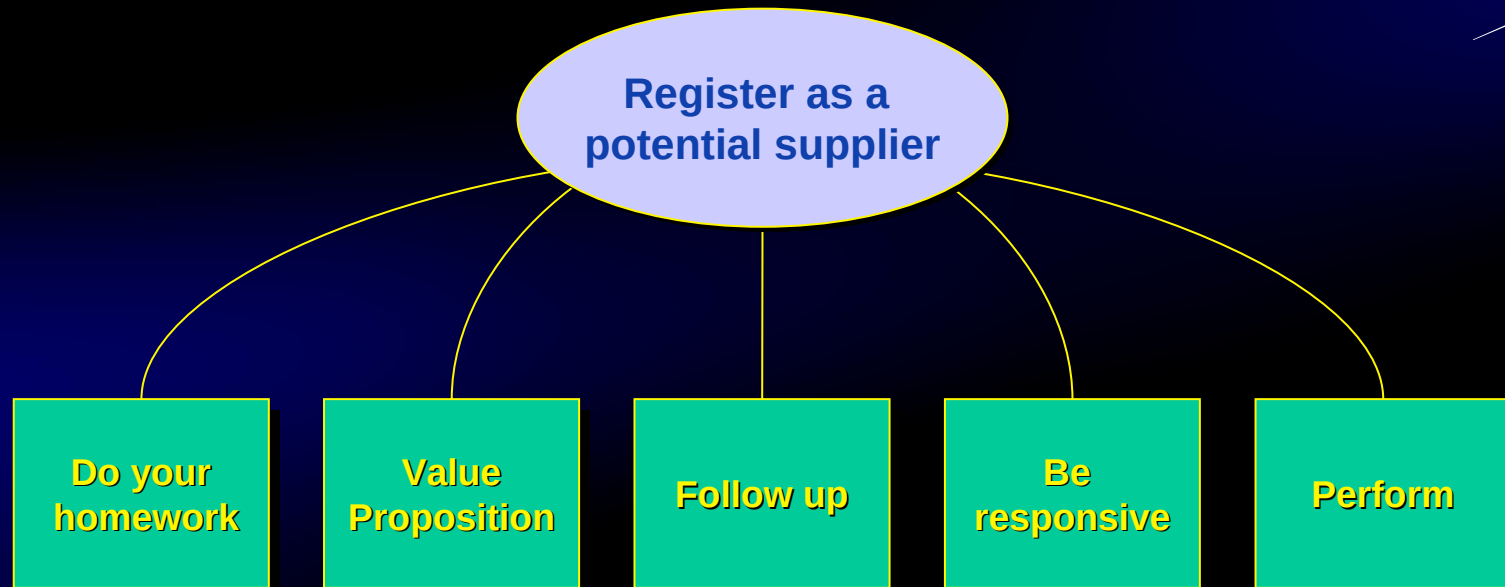
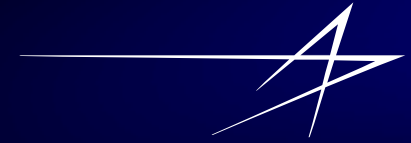
Cost

Meet targets, deliver value



Our customers expect and the war fighter relies on 100% mission success of “our” products and services

Tips on Becoming a LM Supplier



- ⇒ *We are always interested in quality suppliers that bring solutions and lower cost products that meet requirements*
- ⇒ *CTPAT compliance, International and government Contracting requirements knowledge*

Contact Methods – Supplier Website



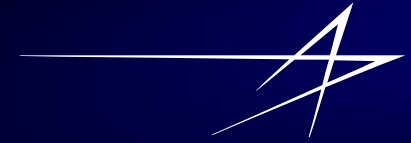
- <https://supplinet.external.lmc.com>
- **LM has established a Web site for suppliers and potential suppliers**
 - Information includes: LM Business pursuits, Terms and conditions, approved special processes
- **We encourage you to register as a potential supplier**
 - This an internal search engine for new suppliers
 - Allows you to specify your capabilities and offerings
 - Gives you a single point of entrance to LM
- **Telephone Call System: 877-LMC-SBLO (877-562-7256)**

Some business is contracted centrally,
but the majority is contracted at the program/site level.

Program Elements



LM21 Operating Excellence



- Lockheed Martin's LM21 Operating Excellence Program provides:

- ⇒ Roadmap, principles & tools to cut costs
- ⇒ Eliminates waste & enhance customer satisfaction

- LM21 Operating Excellence Program Objectives:

- ⇒ Drive process capability
 - ⇒ Delivers on customer value
 - ⇒ Provides common focus for productivity

Lean Processes with Six Sigma capability throughout the enterprise and supply chain

DoD Office of Small Business Programs



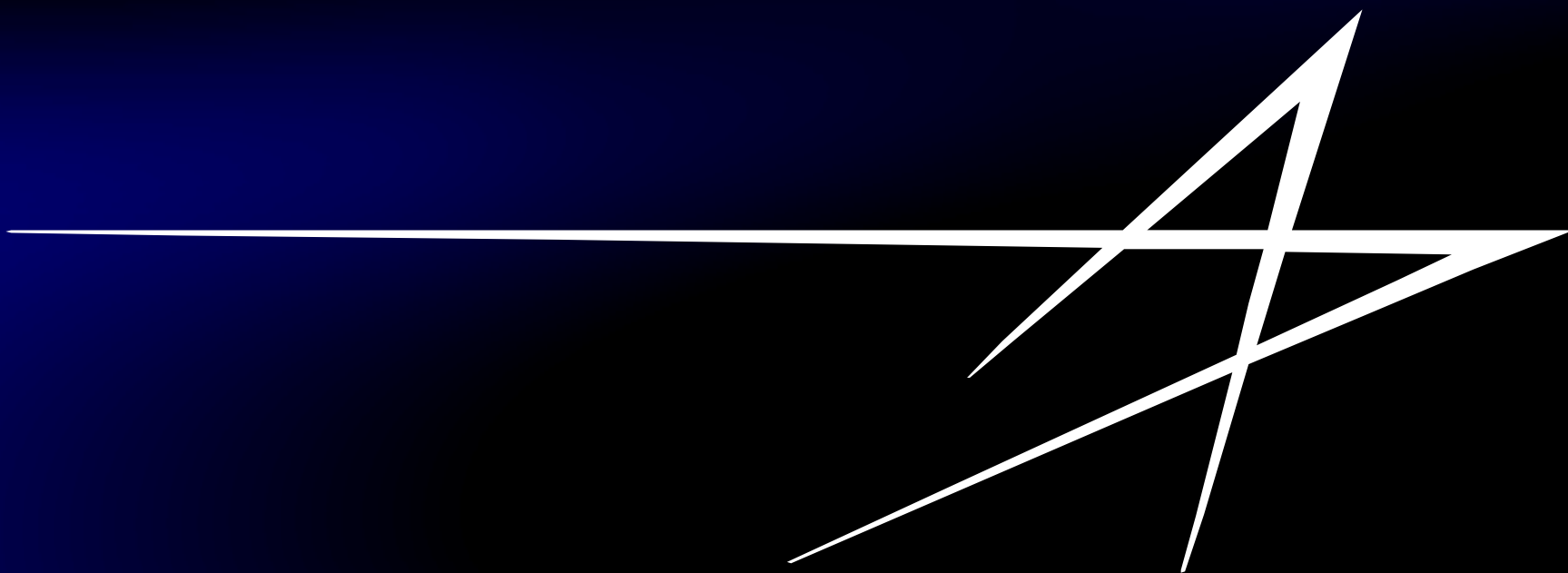
- **Mentor Protégé Program**
 - Referentia Systems Inc.
 - Anthro Tronix Inc.
 - Geodetics
 - Epsilon Systems Solutions
 - Adaptive Technologies Inc.
- **Benefits to Small Business...**
 - Access to Lockheed's Expertise
 - Developmental Assistance

Protégé becomes valued business partner

Working with Lockheed Martin



- **Small Business Innovative Research Program**
 - Collaborative Topic Generation at Front End
 - Phase I / II / III Involvement
 - Examples of Successes
 - Point of Contact: Mario Ramirez, Manager, SBIR Program
 - Email: mario.a.ramirez@lmco.com
- **IRAD Projects**
- **Other CRAD Opportunities**
- **Partnering / Teaming**





Ace Sarich, P.E.

Vice President & Founder

Voxtec International

20 Ridgely Ave. Ste

Annapolis, MD 214

410.626.1110

www.voxtec.com

PHRASELATOR®

Spiral Development Timeline

DARPA One is Integrated with COTS Voice Recognition Software



Newly Designed Device Deployed to USCG Units Supporting INS Operations



9/11 Attacks
Accelerate Phraselator® Translation System Development

Model 1000 Prototypes Deployed to Afghanistan



Phraselator P2 Development Announced

V2.5 Application Upgrade Released



Phraselator P2mX Released



1999

2000

2001

2002

2003

2004

2005

2006

2007



Voice
slator
Bosnia



Integrated DARPA One Way is Deployed in Support of Arabian Gulf Maritime Ops (MIO)



Phraselator Model 1000 Developed



Phraselator Model 1100



Phraselator P2



Upgraded Module Builder PRO™ Toolkit



V2.6 Ap
Upgrad

SBIR Success

Phase II and 5 Phase III awards

\$10M invested by DARPA, JFCOM & SOCOM

Key Milestones

Positioned PTS R&D to M1000, M1100, P2, and SQ
product releases

Secured award of 5-year Phase III IDIQ contract from
VAIR with over \$45+M ceiling

Business Development

R Phase II R&D funding still an important part of our
development

Phase III contract sales account for 60% of revenues

Commercial product sales feed IR&D efforts to
commercialize further R&D

Market Expansion

Enforcement (LE)

Responders (FR)

rectional Facilities (CF)

OTE: Currently working closely with FED on initiative to expand
E, FR, and CF markets

struction

th Care

ve American Language Revitalization

hornton Media, Inc. (TMI)

2-Way

are a player in 2-Way

going R&D into viable 2-Way System

relationship with IBM

re product applications

Questions

Thank you very much!

www.voxtec.com



NDIA
Beyond SBIR Phase II Conference
23 August 2007

Innovative Manufacturing Process Improvements

Douglas Schaefer MDA/DEP

Steve Linder MDA/DEP

Barb Foley MDA/DEP



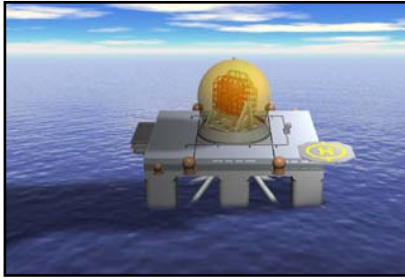
Agenda



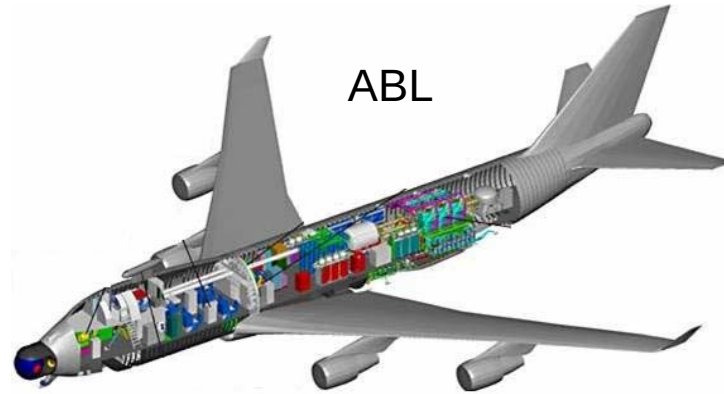
- MDA/DEP Focus
- Topic Being Published
- Key Issues
- Summary of Topic
- Contact Information
- Questions?



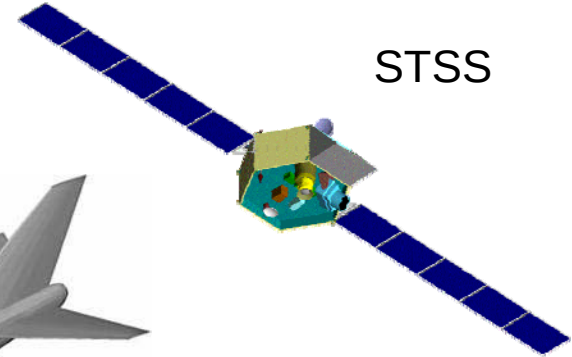
BMDS Elements



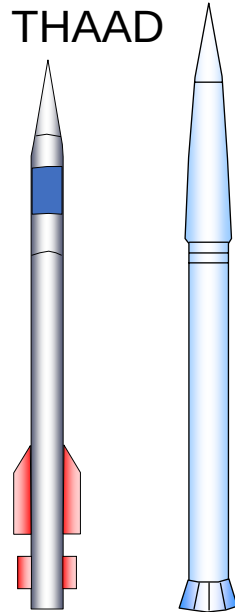
RADAR & RF
(Sensors)



ABL



STSS

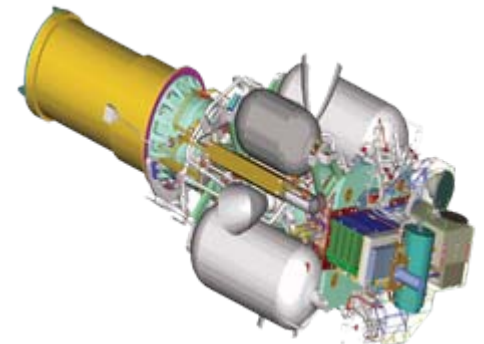
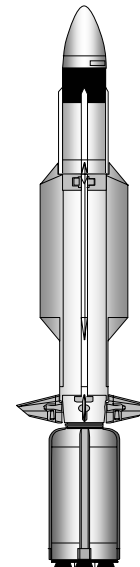


THAAD

PAC-3



SM-3 Aegis BMD



GMD/EKV



MDA/DEP FOCUS



- BMD System/Element Near Term Spiral Development
 - Potential For Near-Term Insertion (1-3 Years)
 - EMRL Of 3 Or higher
 - Demonstrated Capabilities For Multiple Applications
 - Component Commonality
 - Modularity/Scalability
- Demonstrate Producibility
 - Best Industry Practices
 - Foster Tie-in With MDA Primes, 1st, 2nd, and 3rd Tier

Focused On Leverage / Cost Sharing



Topics:



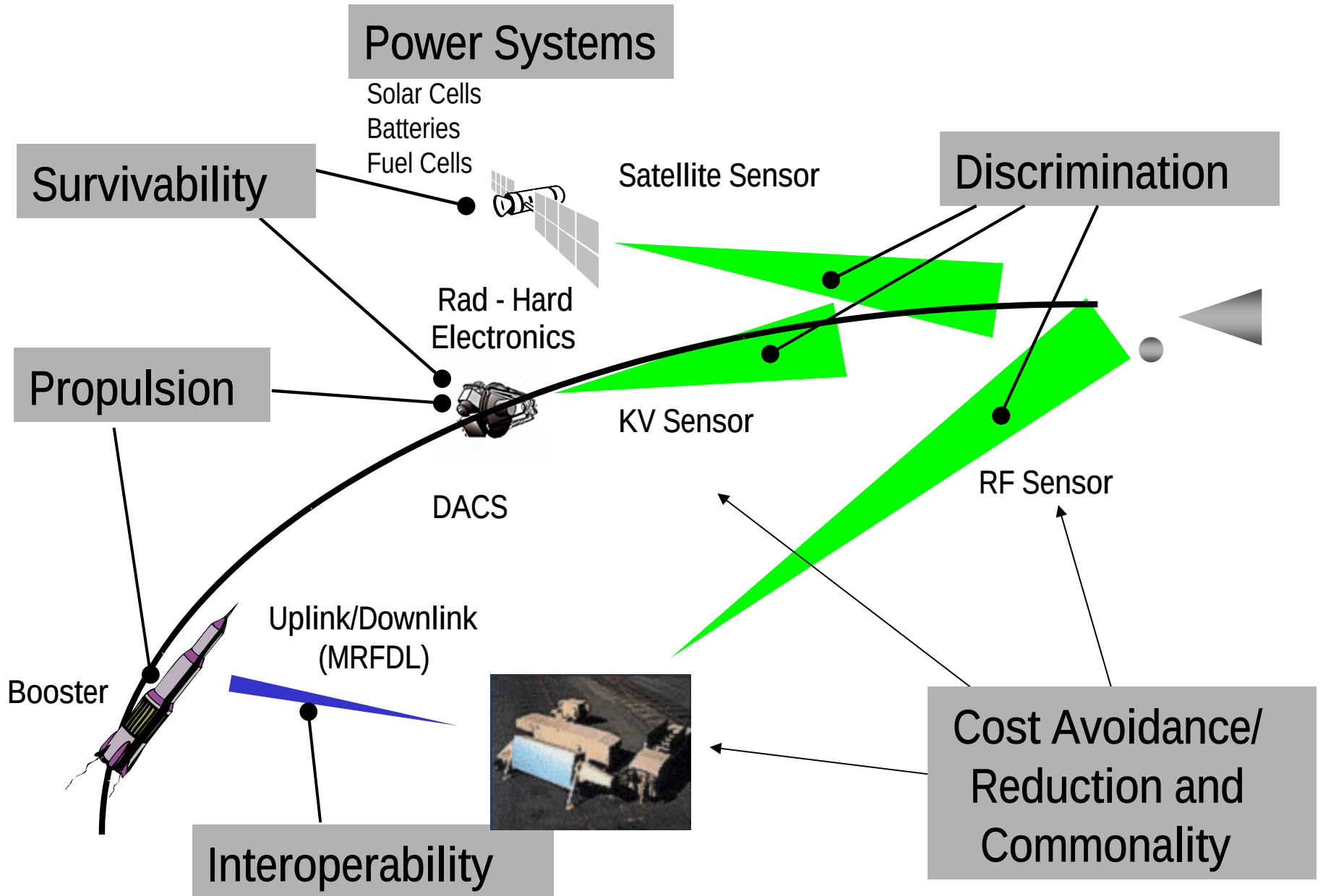
Innovative Manufacturing Process Improvements

Develop and apply innovative manufacturing processes that improve capabilities, sub-systems and component performance, product quality and reliability, reduce unit costs, reduce cycle time, reduce process variability, and enhance manufacturing yields in these technical areas:

- Advanced Missile Materials and Process Technologies
- Ballistic Missile Defense System Innovative Power Generation and Storage Devices
- Improved Manufacturing Processes for Propulsion Technology
- Innovative Manufacturing Technologies for Low Cost, High Reliability Electronic Packaging
- Manufacturing Technology Innovations for Advanced Electro Optical Components/Systems for Missile Defense Applications
- Mitigating Lead-Free Issues in Electronic Circuit Board Manufacturing and Repair
- Production Enhancements for Integrated Anti-Tamper Technologies



Key Issues





Electro-Optical Components/Systems



- **Identify and develop innovative manufacturing, packaging, integration, and processing technology for developing robust and reliable seeker/sensor components and electro-optical devices for missile defense applications.**
- **Areas of interest:**
 - Materials processing, manufacturing, packaging, or integration of components used for cold shield, thermal vacuum housing, sensor cryogenic interface, integrated dewar assembly, transmission windows and anti-reflective coating in missile interceptor or satellite seeker units
 - Design, packaging, and integration techniques for producing fiber coupled laser diode modules that have high optical coupling efficiency
 - Material processing and manufacturing of highly thermally conductive materials



Power Storage Devices



- **Improve the quality, reliability and producibility of batteries and related power sources, including concentrator solar arrays, through innovative ideas applied in creative ways to accommodate unique MDA system, subsystem and component requirements.**
- **Areas of Interest:**
 - Improved Manufacturing & Production
 - Primary Reserve Batteries for Missile Applications
 - Aerospace-grade Secondary Lithium Batteries
 - Active Primary Batteries
 - Space-qualifiable Radiation Hardened Solar Arrays



Manufacturing Processes for Propulsion Technology



- **Manufacturing improvements for low-cost, high-performance materials and components for solid boost motors as well as solid and liquid divert and attitude control systems (DACs).**
- **Areas of interest:**
 - High temperature ablation-resistant structural materials
 - Structural insulative materials
 - Liquid Propellants



Advanced Missile Materials and Process Technologies



- **Enhance the performance and/or producibility of missile body structures, components and thermal protection systems for implementation into ballistic missile defense (BMD) systems through development or utilization of novel materials and processes.**
- **Areas of Interest:**
 - Kill Vehicles: Components that optimize composite performance to achieve material properties approximating those of beryllium while maintaining or enhancing producibility, reliability, cost effectiveness, and volume/mass efficiency
 - Aerostructures: Lightweight integrated heat shield and airframe designs which enhance the current thermal protection system (TPS) designs and improve insulative performance of the TPS, lightning strike performance and rain erosion performance



Innovative Manufacturing Technologies for Low Cost, High Reliability Electronic Packaging



- **Develop and demonstrate innovative manufacturing technologies, test/inspection procedures, accelerated test methods and/or software tools to mitigate program risk relative to the insertion of low-cost electronic packaging technologies into high performance and high reliability MDA/military systems.**
- **Areas of interest:**
 - Reliability Assessment tools that can accurately predict long term reliability failure mechanisms
 - Test procedures and protocols that will manifest failure mechanisms in realistic test times
 - Application of reliability tools and assessment protocols on new manufacturing processes and microelectronic components to establish long term life reliability
 - Models and tools that establish correlations between application stresses and test methods for low cost packaging technologies
 - Develop cost effective reliability test methods for the application of new electronic manufacturing technologies and application test protocols



Mitigating Lead-Free Issues in Electronic Circuit Board Manufacturing and Repair



- **Mitigate issues in electronic circuit board manufacturing and repair related to lead-free solders and surface finishes.**
- **Areas of Interest:**
 - New and reliable processes for soldering lead-free Ball Grid Array (BGA) electronic components on circuit boards manufactured with tin-lead solder and subsequent reworking circuit boards with BGAs
 - New conformal coating materials to mitigate the risk of tin whisker caused short circuits on electronic assemblies



Production Enhancements for Integrated Anti-Tamper Technologies



- **Develop and implement manufacturing techniques to enhance the integration of Anti-Tamper into the weapons systems or component manufacturing processes.**
- **Areas of Interest:**
 - Seamless integration
 - Reduce time, technical risk, or cost



MDA/DEP Expectations



What MDA/DEP Wants To See In SBIR Responses:

- Demonstration Of New And Innovative Process Technologies That:
 - Reduce Cost,
 - Reduce Manufacturing Cycle Time,
 - Improve Performance, And/Or
 - Improve Reliability
- Technology Roadmaps For Implementing Promising Manufacturing Technology Processes Into Current Or Future Supply Chain
- Plans For Near Term Insertion Into BMD Element Systems, Subsystems, Or Components



Questions



- Questions after August 19, 2007 need to be submitted through the SBIR/STTR Interactive Topic Information System (SITIS)
<http://www.dodsbir.net/sitis/>
- For reasons of competitive fairness, direct communication between proposers and topic authors is not allowed starting August 20, when DoD begins accepting proposals for this solicitation.
- However, proposers may still submit written questions about solicitation topics in which the questioner and respondent remain anonymous and all questions and answers are posted electronically for general viewing until the solicitation closes.
- All proposers are advised to monitor SITIS (07.3 Q&A) during the solicitation period for questions and answers, and other significant information, relevant to the SBIR 07.3 topic under which they are proposing.



BACKUP



Contact Information



– IPT Coordinators:

- Steve Linder, MDA/DEP, 703-882-6318, steve.linder@mda.mil
- Barb Foley, MDA/DEP, 703-882-6179, barbara.foley.ctr@mda.mil

– IPT Members:

- Electro Optics - Steve LeClair, MDA/DEP, 703-340-4369, steve.leclair@mda.mil
- Power Systems - Sam Stuart, NSWC/Crane, 812- 854-5958, samuel.stuart@navy.mil
- Propulsion - Greg Stottlemeyer, MDA/DEP, 703-882-6321, gregory.stottlemeyer@mda.mil
- Advanced Materials - Eddie Japson, MDA/DEP, 703-882-6313, eddie.japzon@mda.mil
- Advanced Manufacturing Processes - Steve Linder, MDA/DEP, 703-882-6318, steve.linder@mda.mil
- Anti-Tamper – Doug Simon, MDA/DEP, 703-882-6211, douglas.simon@mda.mil



Integrating Small Business Innovation Research (SBIR) Developed Technologies into Boeing Products

Dr David Whelan

VP Enterprise Growth

21 August 2007

filling in **John Shakespeare**

Washington DC Operations

(703) 465-3335

“Beyond SBIR Phase II: Bring Technology Edge to the Warfighter”

Arlington, VA

Boeing uses SBIR to discover, develop , evaluate emerging technology from non-traditional organizations

- **Leading-edge technologies, new concepts, and small business experts potentially giving Boeing a competitive advantage**
- **SBIR provides seed funding to small businesses for development and insertion of new technologies**
- **Opportunity to grow the generation of future research topics to provide technology enabling new products and features.**
- **Support by Boeing puts small businesses in a better competitive position as it demonstrates “commercialization potential”**
- **SBIR is an extension of the same government customers with whom Boeing pursues new or expanded business**

Why Boeing Participates

- Able to build partnerships with small businesses in the development of technology as a part of the SBIR program
- Assists in meeting DoD small business program goals over the long term through participation in SBIR - “good faith effort”
- *Achieve “win - win” by helping small businesses be successful*



Boeing Participation

- **Phantom Works and IDS currently working with 28 small businesses on SBIR contracts**
 - 5 Phase I
 - 21 Phase II
 - 2 Phase III
- **Have worked with over 100 companies on over 200+ technology projects over the last 10 years**
- **Presence at 4 or 5 national or regional SBIR conferences each year**
 - **Approximately 10 personnel are here to speak with you one on one over the next two days**

Examples of Phase II SBIR Contract Support in 2006

- **Onboard Space Autonomy through Integration of Health Management and Control Reconfiguration**
- **Denial of Service Countermeasures Appliance for Computer Network Operations**
- **Advanced Flow Control Actuators for Fuselage Drag Reduction**
- **Nano Engineered Coatings**
- **Metal Rubber Protective Aircraft Coatings**
- **Target Scene Resolution and Calibration**
- **Modeling, Testing and Deploying a Multifunctional Radiation Shielding**
- **Real Time Fault Tolerant Computing for GMD**
- **Innovative Weight Efficient Combined Structural/Thermal Protection System**
- **Satellite Communication Links**
- **Nano Phase Powder Based Exothermic Braze Repair Technology**
- **Self Sensing Local/Global Structural Health Monitoring System**

Phase III Successes

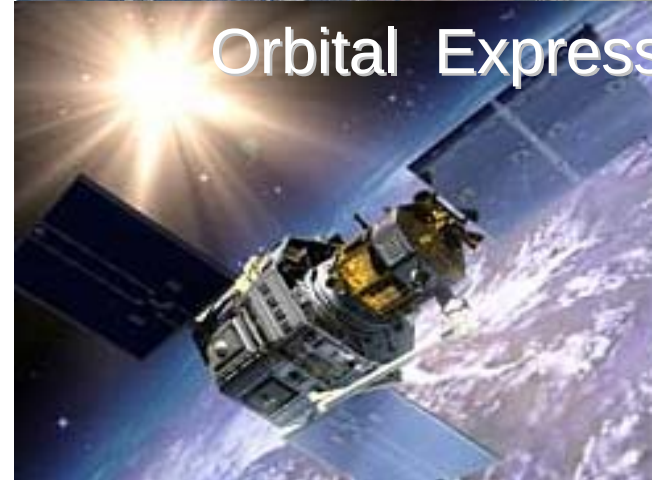
- **Virtual Cockpit Development Program**
 - **Microvision, Inc as prime, Boeing as sub**
 - Awarded Phase I and II
 - Army awarded Phase III contract in Sep '99
 - Additional awards in 2000 and 2001
- **Advanced Adaptive Autopilot for JDAM**
 - **Guided Systems Technology as prime, Boeing as sub**
 - Awarded Phase I and II
 - Air Force awarded Phase III contract in Mar '01
- **Cruise Missile Autonomous Routing System (CMARS) for Tomahawk Mission Planning System**
 - **Scientific Systems Co, Inc as prime, Boeing as sub**
 - Awarded Ph I in Mar 1999, Ph II in Dec 1999
 - Navy Awarded Ph III in Oct 2004; Boeing awarded subcontract in 2006 – matched by Navair

Phase III Successes

- **Robust Image Based Navigation System for UAV**
 - **Scientific Systems Company, Inc, Boeing as sub**
 - Phase I and II from Navy
 - Phase III from awarded Jun 2007
- **Talon NAMATH GPS – SDB & JDAM Application**
 - **NAVSYS Corporation**
 - Phase I from Air Force
 - Phase III contracts awarded to NAVSYS and Boeing
 - Period of Performance – Nov 05 through Sep 06
- **Robust Surface Navigation (Network Assisted GPS)**
 - **NAVSYS Corporation**
 - Phase I and II awarded to NAVSYS by Army
 - Subcontract from Boeing - qualifies as a Phase III contract
 - DARPA & Air Force Program – PW White Space Project

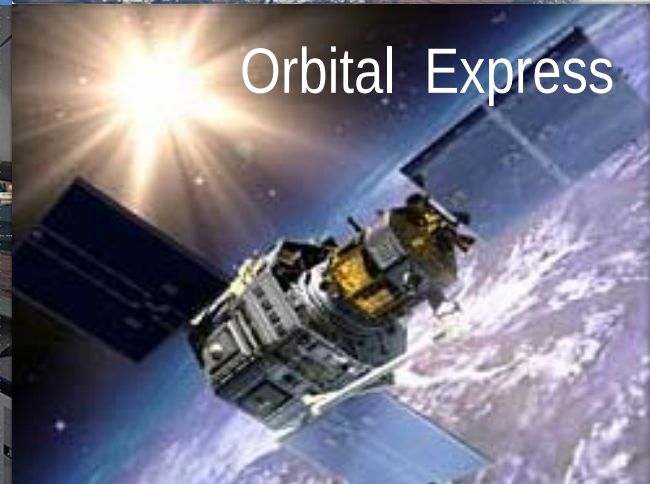
Boeing SBIR Participants Advanced Systems & Technology

David Whelan - Enterprise Growth
Jeff Frericks - White Space Programs
Gail Taylor-Smith - Strategic Technologies
Brian Sisco - Product Development- P-8A
William Renton - Structures- 787
Mark Myers - Engineering Project Management
William Freiberg - Operations Analysis
Timothy Coogan - Subsystem Development
Kay Blohowiak - Material Process & Physics
Per Beith - Global Broadband Systems
Raul Alvarado Jr - Supplier Diversity
Richard Hendel - SBIR Initiative Project Manager



Summary

- **The government's SBIR program continues to grow in importance each fiscal year**
- **IR&D can be enhanced for both small business and Boeing through SBIR partnerships**
- **A “long term” project with large payback potential**
- **Boeing is an active participant in the program and continues to search for technology and develop partnerships through the SBIR program and venues**





DoD Science and Technology

Dr. André van Tilborg

*Deputy Under Secretary of Defense
(Science & Technology)*

PANEL MEMBERS

Moderator

Dr. André van Tilborg, Deputy Under Secretary
of Defense (Science & Technology)

Panelists

Dr. Robert Leheny, Deputy Director, DARPA

Dr. Dale Uhler, Acquisition Exec, USSOCOM

Dr. Darrell Galloway, Acting Director, CBD

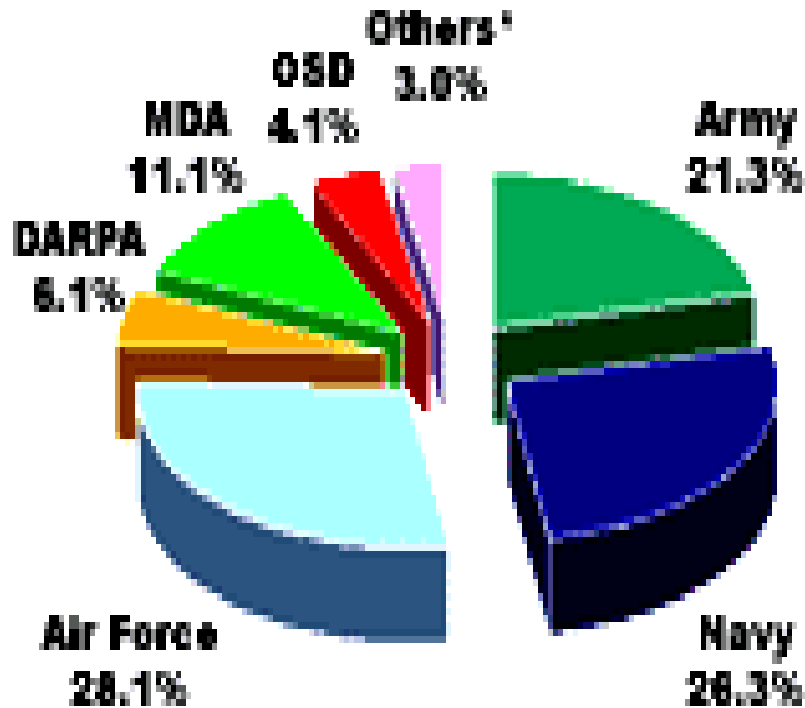


... to ensure that the warfighters today and tomorrow have superior and affordable technology to support their missions, and to give them revolutionary war-winning capabilities.

Office of the Deputy Under Secretary of
Defense for Science and Technology

DoD Small Business Innovative Research Program

DoD SBIR Components



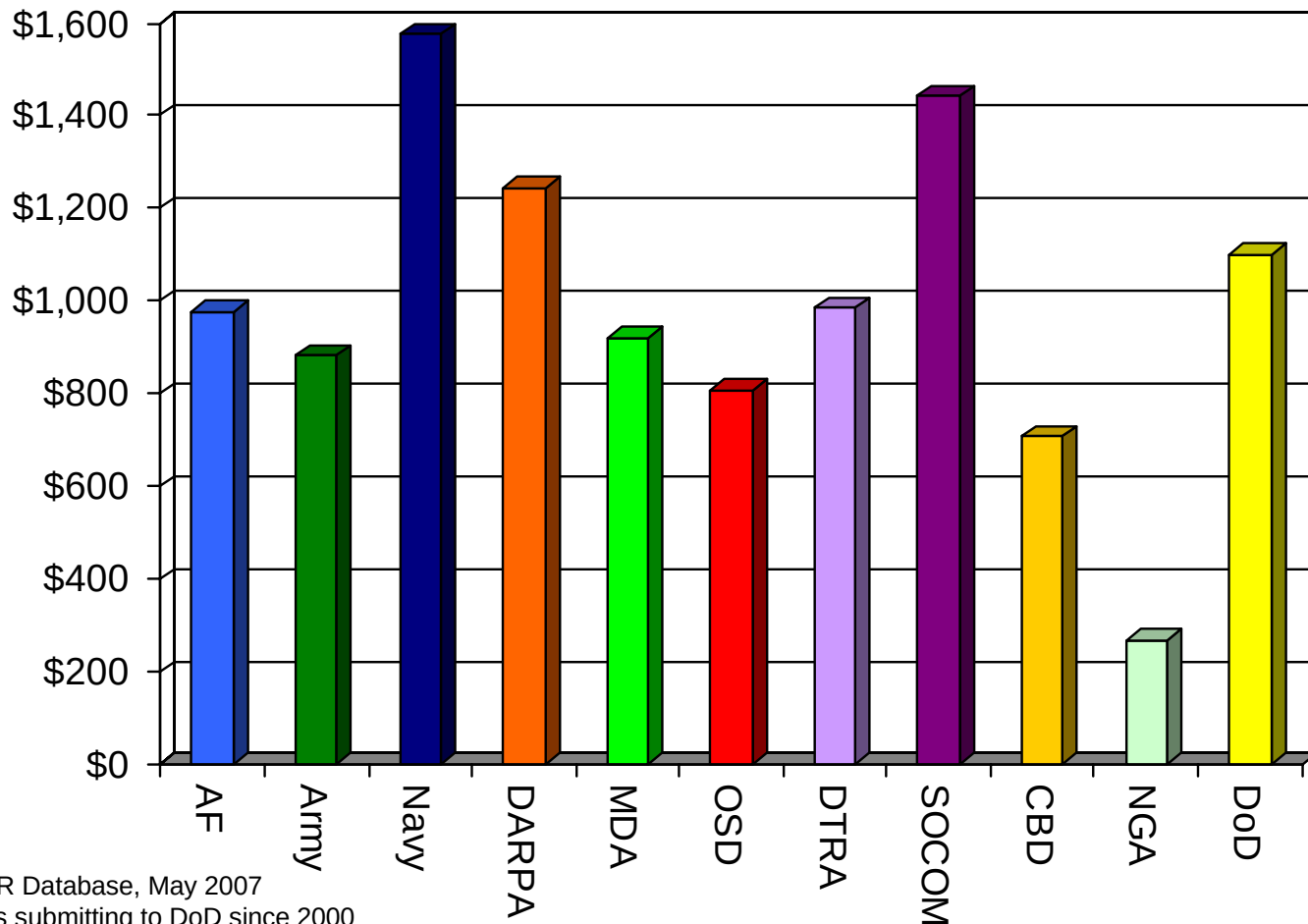
*Others Includes: DTRA, SDCOM, OSD, MDA, DLA, DMEA

\$1.14 billion in FY 2007:

- Army
- Navy
- Air Force
- Missile Defense Agency
- Defense Advanced Research Projects Agency
- Office of Secretary of Defense
- Chemical Biological Defense
- Special Operations Command
- Defense Threat Reduction Agency
- National Geospatial-Intelligence Agency
- Defense Logistics Agency
- Defense Microelectronics Activity

DoD SBIR Commercialization Average of All Projects

AF, Army, Navy, DARPA, MDA, OSD, DTRA, SOCOM, CBD, NGA vs. Overall DoD



Source: DoD CCR Database, May 2007
Reported by firms submitting to DoD since 2000
Award Year 1995-2004

Title: Advanced Remote Sensor System called OmniSense®

Performer: McQ Associates Inc.

OSD SBIR Investment \$1,700,000 (2 OSD topics* under Smart Sensor Web Initiative)

Sales and Investments to Date: \$41,000,000+

Summary

A fully networked satellite linked persistent surveillance system:

- integrates advanced sensors in the field to a powerful map based User Interface

- visualizes the operational situation

- provides command and control of the sensors over the same network used by the sensors

Impact: Currently deployed in Iraq and Afghanistan monitoring roads, borders, and areas of interest for insurgent activities.

*Two OSD Phase II SBIRS: One with ONR (OSD00-SSW01); the second with AFRL/Rome (OSD00-SSW01)



OmniSense® Automatically Captures Color Day and Infrared Night Images to Provide Confirmation of the Detection and Additional Details About the Target.

Title: CFOAM® New High Temperature Multifunctional Material

Performer: Touchstone Research Laboratory, Ltd.

OSD SBIR Investment \$850,000 (OSD topic OSD98-043)

Sales and Investments to Date: \$16,053,560

Summary

CFOAM is a new structural material:

- made from coal, inexpensive, lightweight, fire-resistant, impact absorbing**

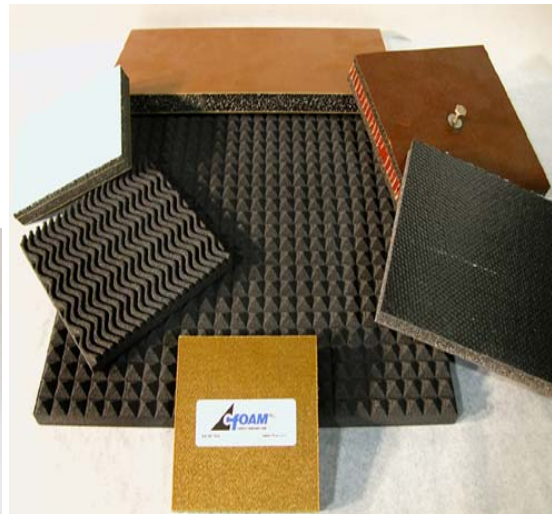
- can be thermally insulating or conducting**

- electrical resistivity can be varied over nine orders of magnitude**

- has been produced in a variety of forms from thin sheets to near-net-shape 3D components**

- can be cut, milled, turned, etc. with conventional equipment and tooling**

Impact: Integration with other materials including impregnation with phenolic or other resins, and lamination with Kevlar™, phenolic-resins, or other laminates is straight forward, using commercially available equipment.



Title: Machine Diagnostic Signal Processing Units

Performer: Intelligent Automation Corporation

OSD SBIR Investment \$850,000 (OSD01-CBM10 Structural Component Substantiation Method)

Sales and Investments to Date: \$11,150,000

Summary

As part of the OSD Conditioned Based Maintenance Initiative, this project
developed the enabling diagnostic technology
allows continuous monitoring of adverse vibrations
reduction of controllable vibrations
use of vibration characteristics to predict component faults

Impact: Integrated into the Army's Vibration Management Enhancement Program (VMEP) and related UH-60 engine diagnostic systems. This system has been installed in over 600 on-board diagnostic systems on helicopters deployed throughout the world, including over 30 systems in combat.

Below is the IAC1209 and the new "Super" hums, flying on the Army's Shadow UAV and has been selected for the Engine Vibration Management System for the C-17 aircraft.



IAC 1209



TAKEAWAY FOR INDUSTRY

- SBIR Program is an important element in the Department of Defense overall R&D investment
- Often products emerge from SBIR that have significant operational impact
- Often SBIR support leads to broader investment and commercialization

Commercialization Pilot Program CPP

23 August 2007

CPP PURPOSE

- ❑ Accelerate the transition of SBIR-funded technologies to Phase III
 - ❑ Enhance connectivity among SBC, LBC, DoD S&T and Acquisition communities.
 - ❑ Improve SBC capability to provide identified technology to the Department, directly or as a subcontractor.
-

REQUIREMENTS

- Identify SBIR research projects with the potential for rapid transition to Phase III
 - SEC certify in writing that the successful transition of the research program into Phase III
 - Acquisition process is expected to meet high priority military needs of the Department
 - CPP resources will be used for payment expenses to administer the CPP
-

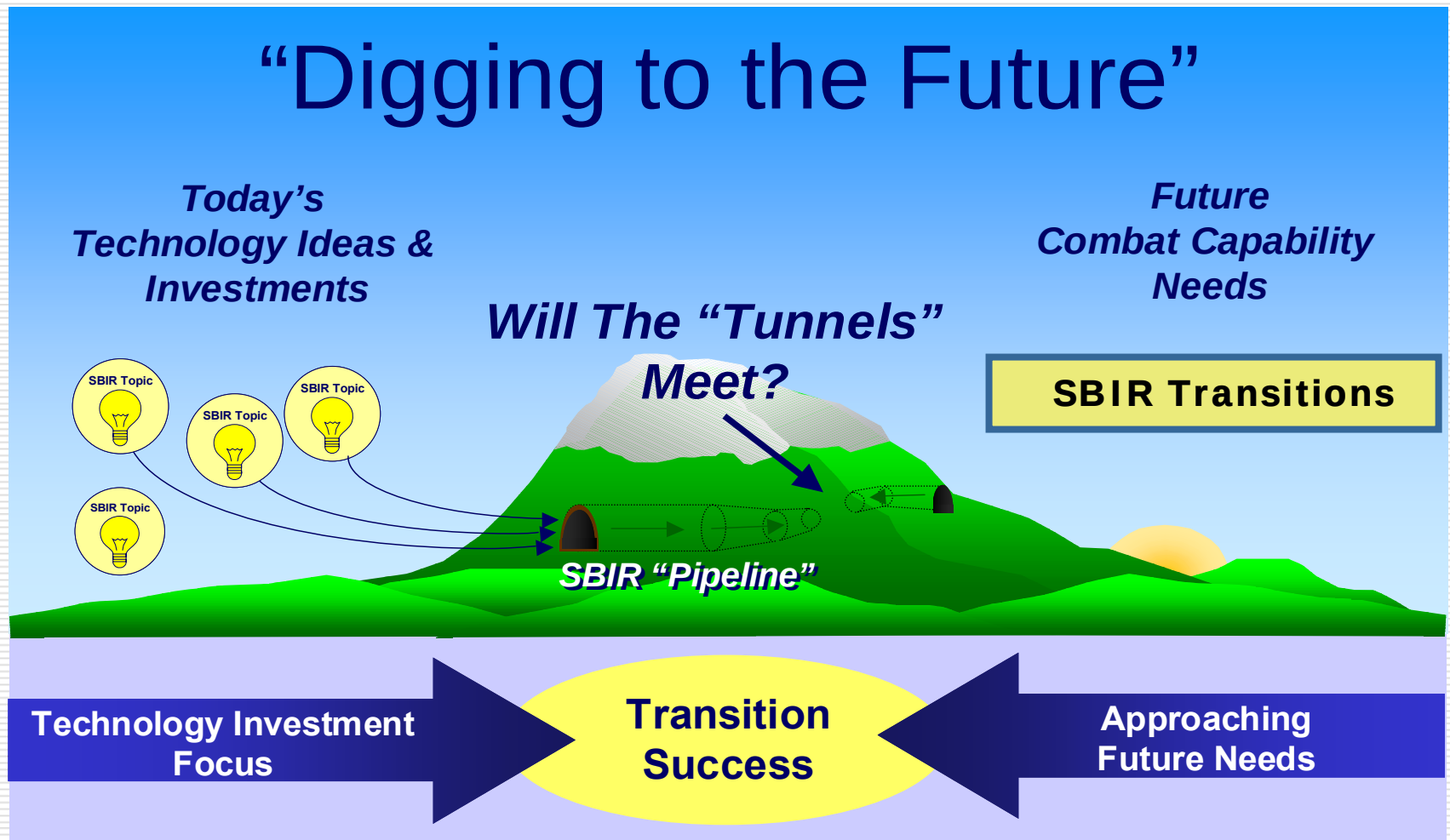
ADDITIONAL REQUIREMENTS

- ❑ Details of the CPP Plan
 - PEO
 - Program
 - Prime
 - ❑ Amount of funds
 - ❑ Use of funds
 - Activities
 - Incentives to facilitate transitions
 - Results expected
-

FUNDAMENTAL SBIR MANAGEMENT CHALLENGE

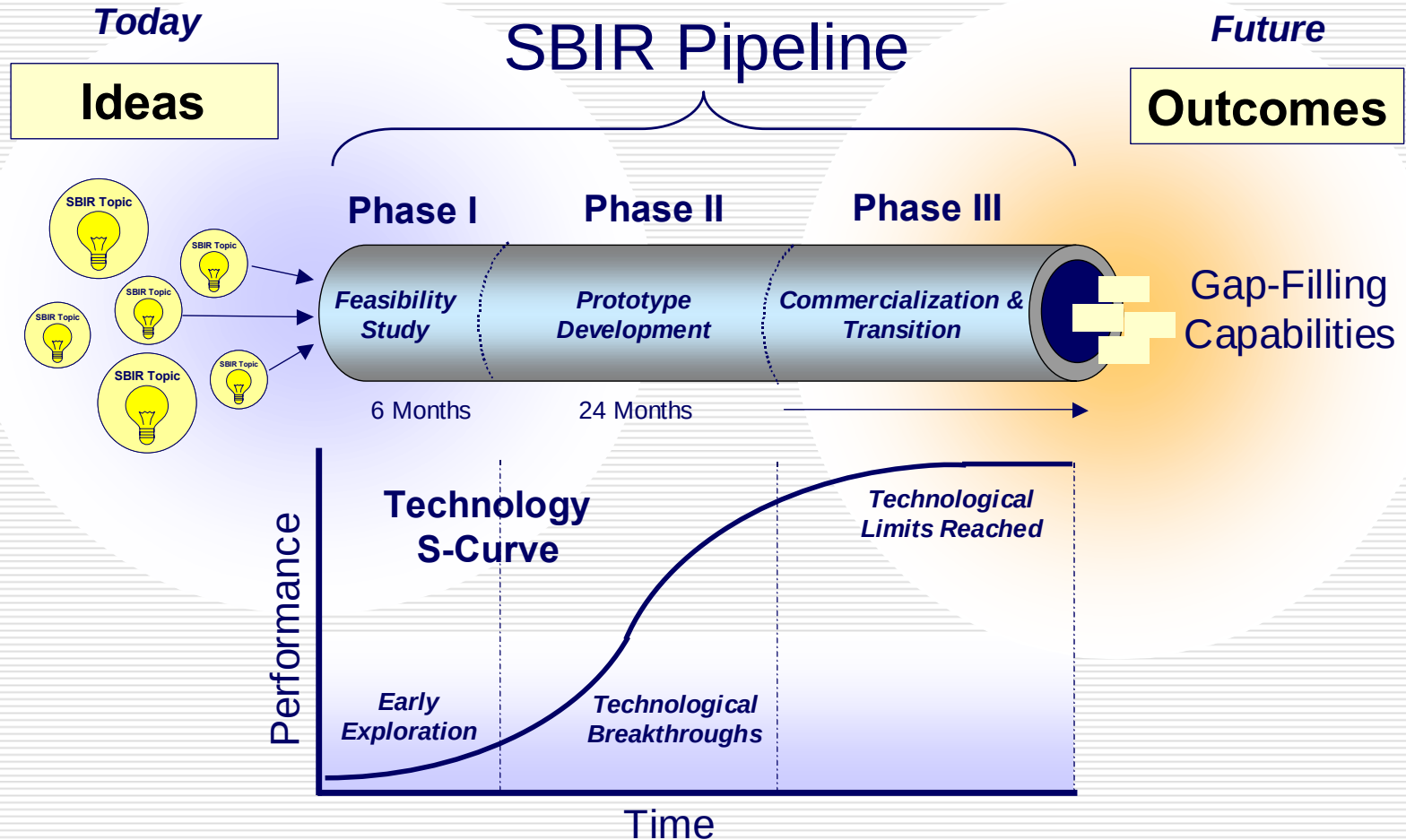
Transition success hinges upon strategic technology investment focus and roadmapping towards future capability needs

“Digging to the Future”



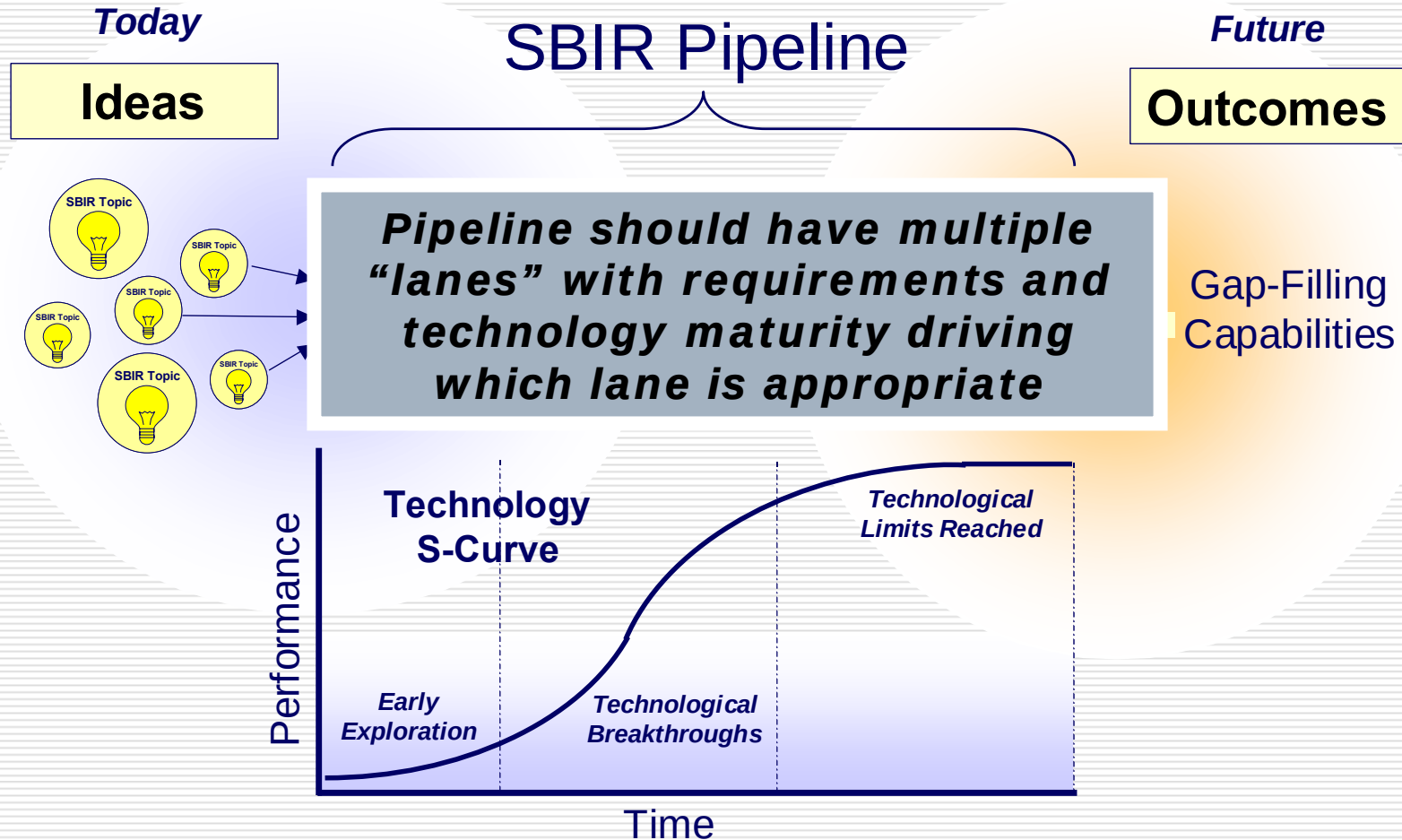
SBIR “Pipeline”

Typical flow of SBIR workload is steady from topic generation to end



CPP SBIR “Pipeline”

CPP accelerated process needs to move beyond batch decision making to counter today's threats



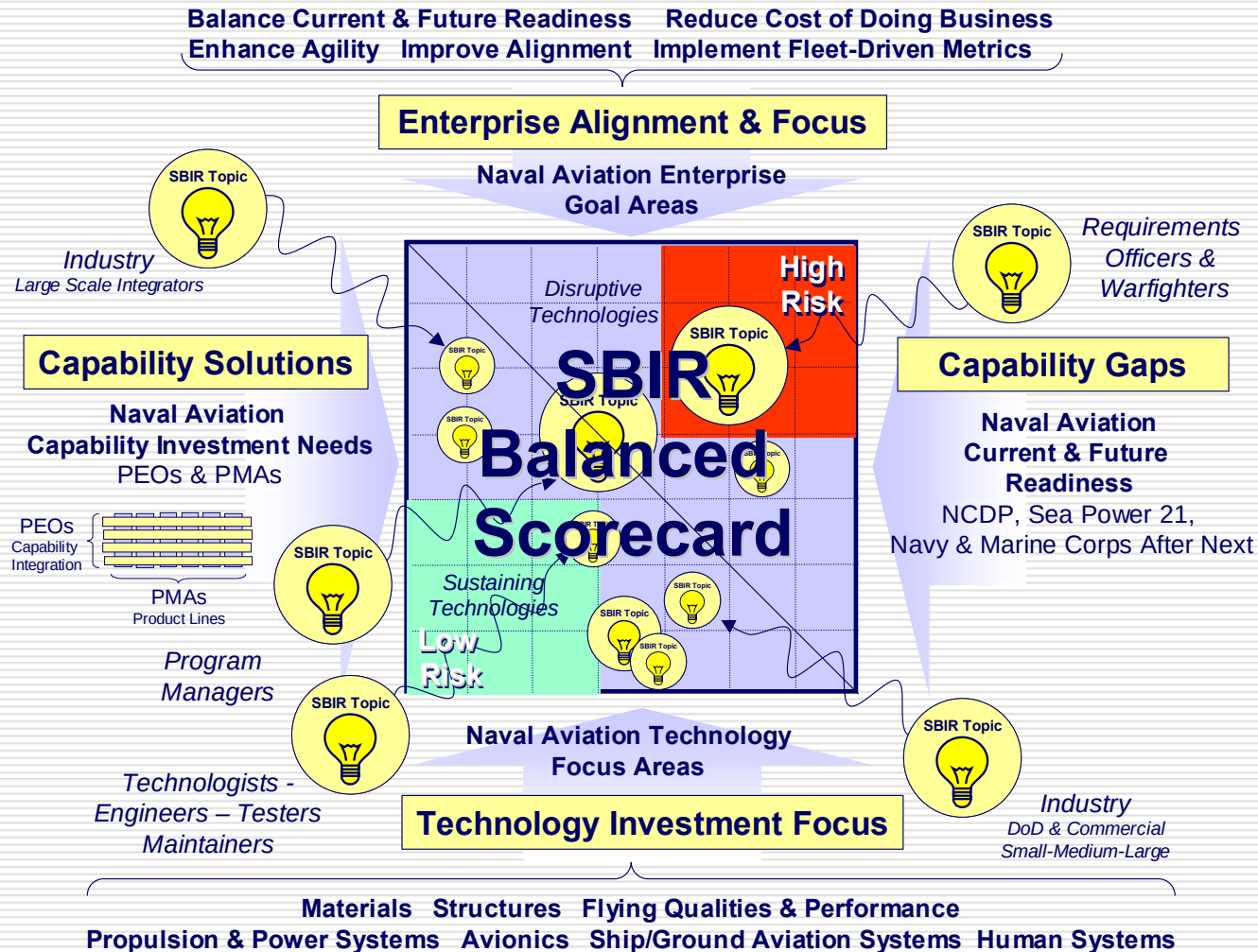
YOUR SBIR SCORECARD SHOULD:

- ✓ Balance Current & Future Readiness
 - ✓ Reduce Cost of Doing Business
 - ✓ Enhance Agility
 - ✓ Improve Alignment
- ✓ Implement Metrics Management of Technology



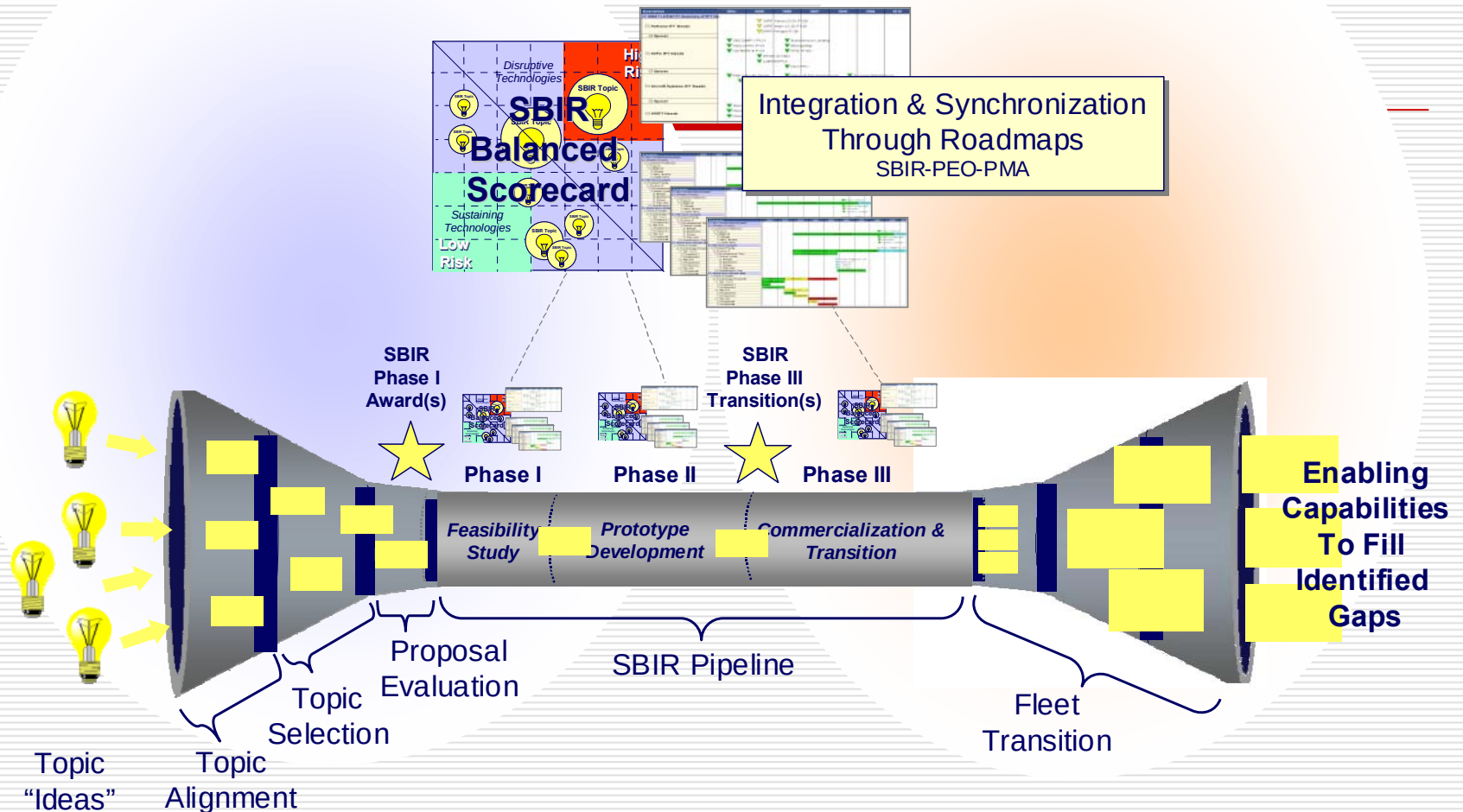
SBIR BALANCED SCORECARD

Alignment and visibility of SBIR “Topic Portfolio” using a Balance Scorecare approach enhances Strategic Management of technology.



Strategic Alignment & Synchronization

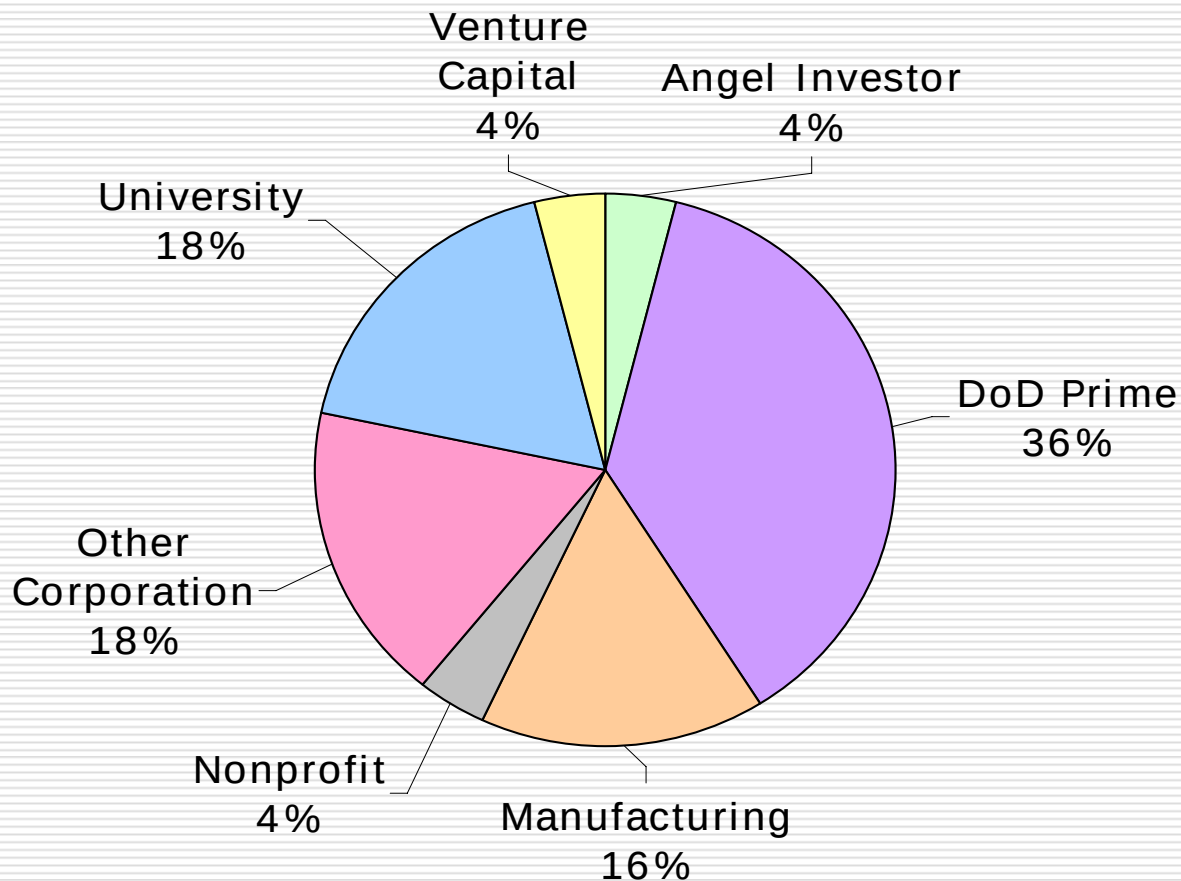
The PEOs and PMs play critical roles throughout the SBIR process enabling integration and synchronization of technology investments with future capability and product-line roadmaps



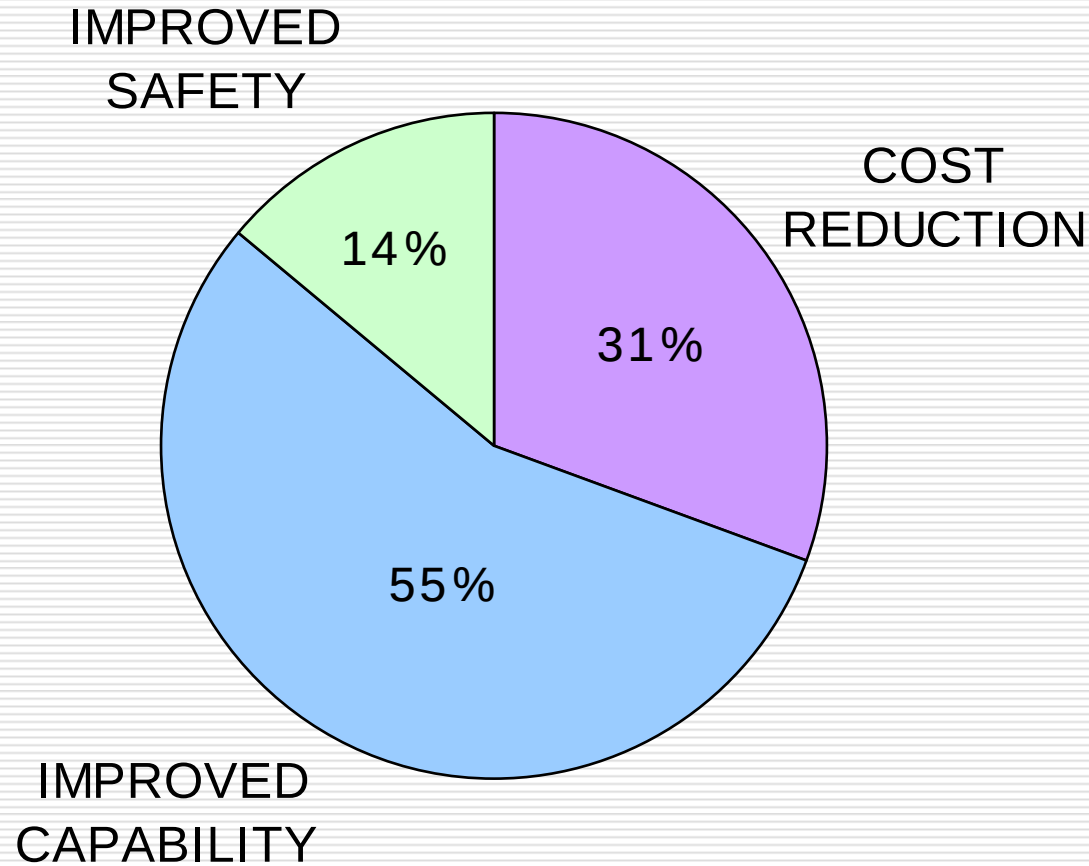
2006-07 CPP PELIMINARY DATA

- ☐ Early
 - ☐ Incomplete
 - ☐ Mostly Planning
-

Early Preliminary Data Shows CPP Firms Strong in Partnering



CPP VALUE TO THE WARFIGHTER

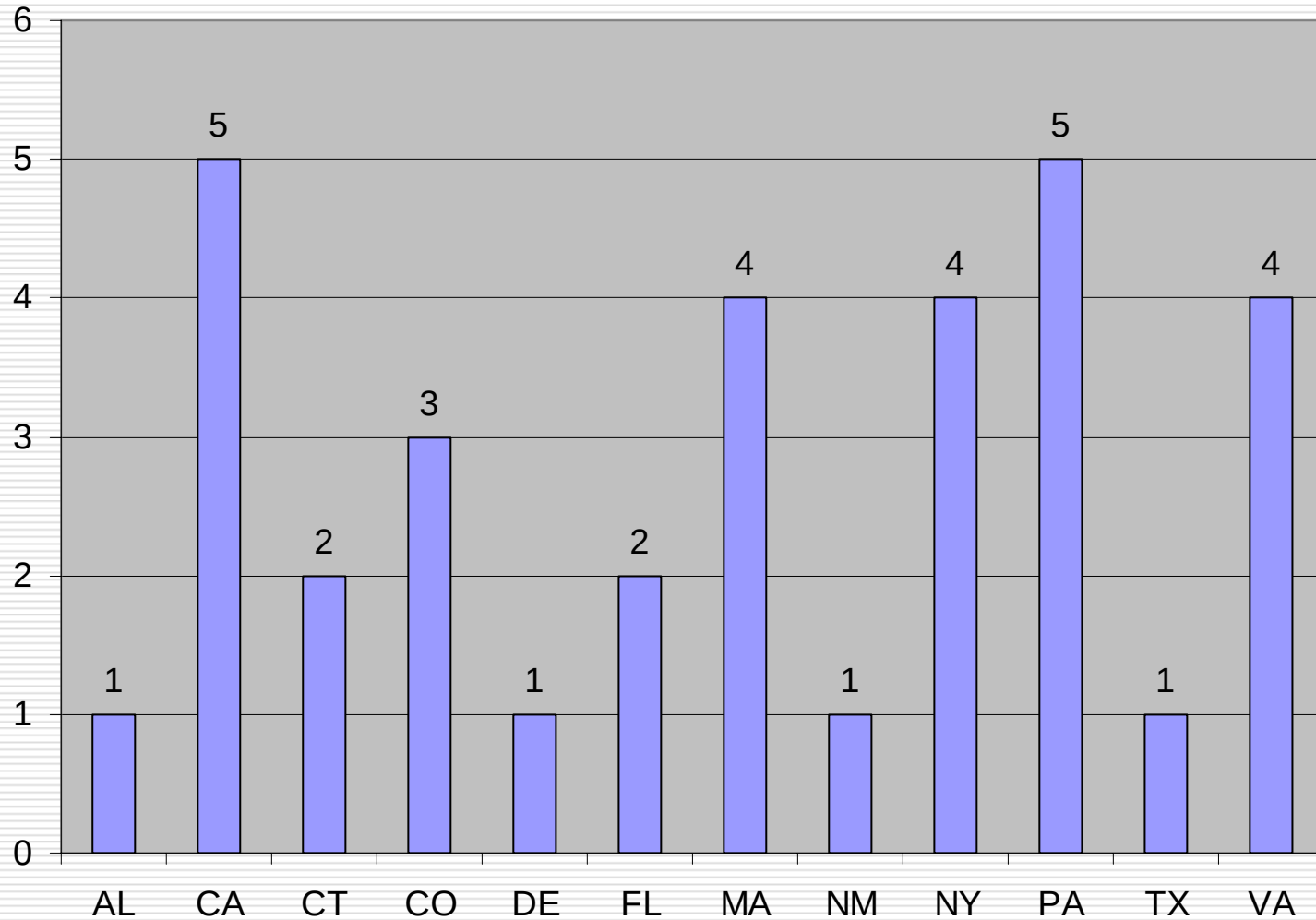


■ COST REDUCTION

■ IMPROVED CAPABILITY

■ IMPROVED SAFETY

PARTICIPATION IN CPP BY STATE



WHY CPP

- ☐ We Need Agility
- ☐ Cost & Schedule Overruns are Not Acceptable
- ☐ SBIR Can Deliver More
- ☐ We Owe the Troops our Best
 - Innovation
 - AND Transitions
- ☐ It takes a TEAM

**Air Force, Army and Navy:
How can we make CPP successful?**

CPP POINTS OF CONTACT

AIR FORCE:

Richard Flake, CPP Program Manager
(937) 255-0706
richard.flake@wpafb.af.mil

NAVY:

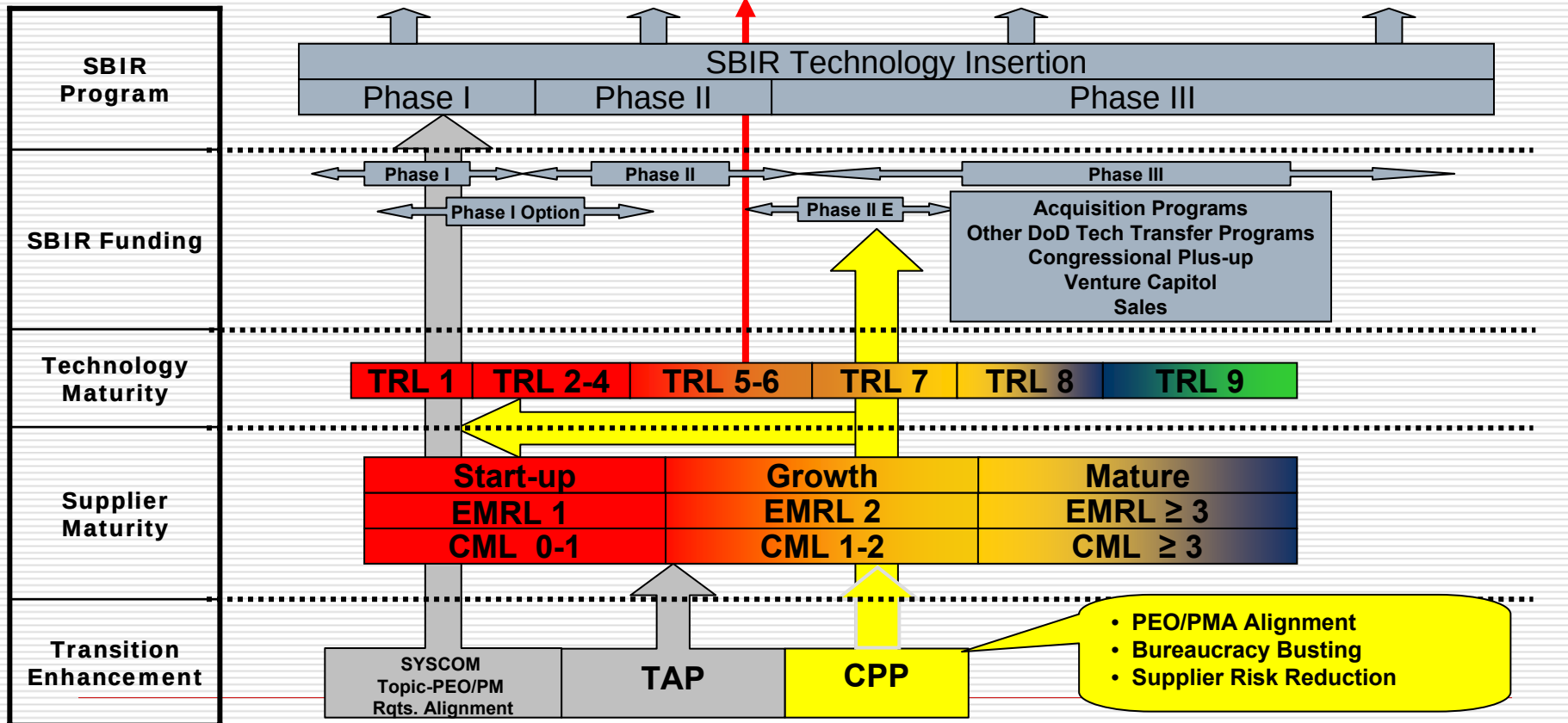
Lee Ann Boyer
(703) 696-4841
boyerl@onr.navy.mil

ARMY:

Susan Nichols
(703) 806-0859
susan.nichols@us.army.mil

BACK-UP SLIDES

SBIR Technology Insertion Within the DoD Acquisition Process



Sourcing Innovation in a Consolidated Industry: Sustaining Competitive Edge

Beyond SBIR Phase II: Bridging Technological Edge to the Warfighter

John P. Waszczak, PhD
Director Advanced Technology & SBIR/ STTR
jpwaszczak@raytheon.com
520-545-9585

21 August 2007

Working Together



Win! Win! Win! Win!

Venture Capital Financing Issues

“Beyond SBIR Phase II”
Hyatt Regency Crystal City
August 22, 2007

Sources of New Venture Financing



- Self, Friends, and Family
- Federal Government Grants & Contracts
- Business Angels
- ✓ Venture Capital Investors
- Small Business Investment Companies (SBICs)
- Trade Credit and Factoring
- Asset-based Lending
- Mezzanine Capital
- Private Placements of Equity (Relational Investors)
- Public Offering
- Public Debt

VC Stages



- Pre-Seed / Seed
- Start-Up
- First-Stage
- Second-Stage
- Third-Stage, Mezzanine
- Bridge Financing/ Pre-IPO



High

Time-to-Liquidity
Investor's Expected Return
Technology Risk
Business Risk
Entrepreneur's Cost of Capital

Low

Self-Assessment for VC Readiness



- Team
- Market
- Technology

Today's Panel



- Tom Weithman – Managing Director, CIT GAP Funds
- Don Rainey – Partner, Intersouth Partners
- Gian Brown – President, SAIC Ventures
- Rohit Shukla – CEO, LARTA Institute
- Ted Hobart – Partner, Chart Venture Partners

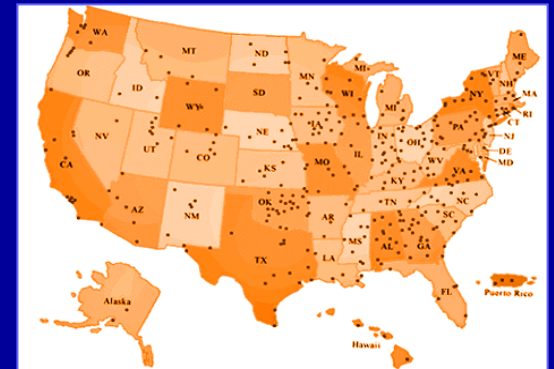
Beyond Phase II: Opportunities via Manufacturing Strategies

August 23, 2007

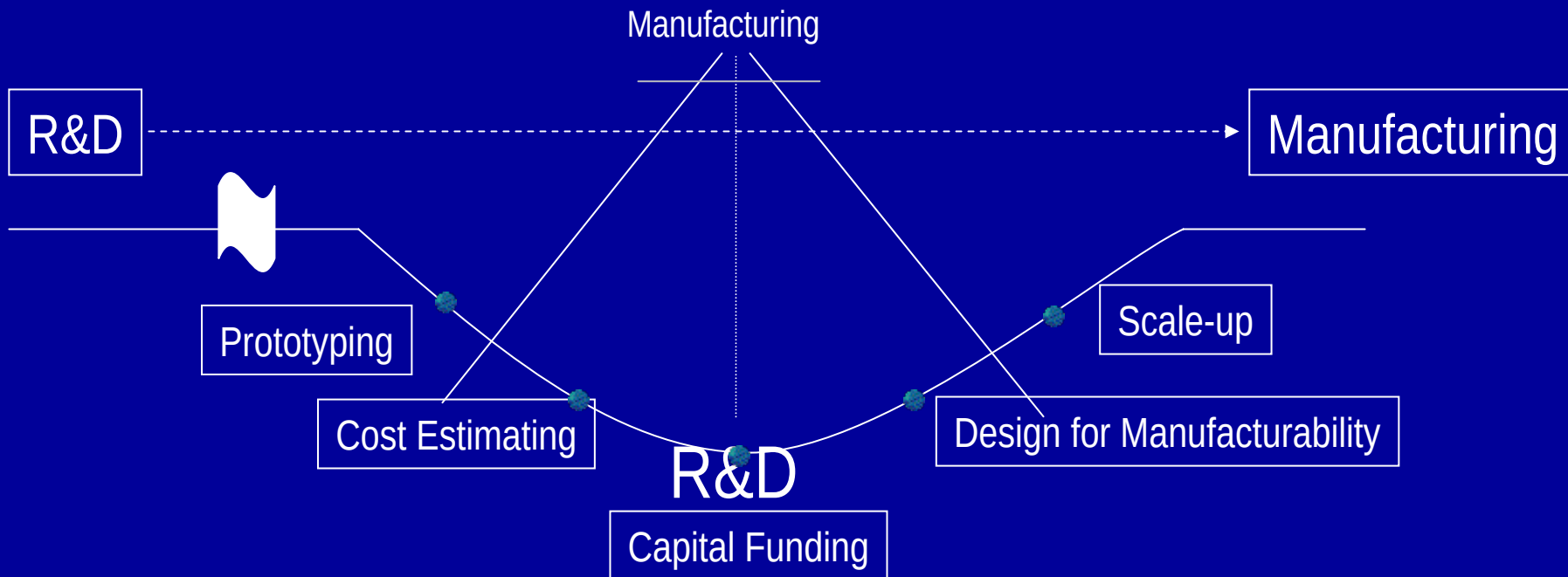


NIST MEP & SBIR/STTR

- 1,500 field engineer staff
- Service 10% of SBIR/STTR Phase II's
- Pilot efforts w/Phase II Awardees



The Road to Manufacturing



Lower Costs – Faster to Use

- Up to 85% Cost Inherent in Design
 - *“Form / Function / Fit / Weight”*
- Mitigating Production Risk
 - *“Scale-up / Specs / Quality / Delivery”*

Manufacturing Strategies

Required Investment, potential risk & skill levels

	Process “Scaling” Skills	Manufacturing Skill & Expertise	Equipment Capital Investment	Sales & Distribution
Manufacture “In-House”	High	High	High	High
Manufacture & Assemble	Med	High	Med	High
Manufacture Outsource	Low	Low	Low	High
License	Low	Low	Low	Low



When?

- Phase II

Tab Wilkins

Sr. Technology Advisor & Account Manager

NIST MEP

twilkins@nist.gov

(301) 646-4069



Navy CPP an Overview

Mr. John R. Williams
Director Navy SBIR, STTR & T2
williajr@onr.navy.mil
August 21, 2007



2006 National Defense Authorization Act Sec. 252

- ❑ All four provisions amend original SBIR law, *15 USC 638* *and* emphasize the defense commercialization goal.
- ❑ Authorizes SECDEF and SECNAV to create CPP and identify SBIR research programs that have potential for rapid transition and meet high priority requirement.
- ❑ Requires involvement of PEOs and PMs in SBIR topic development, and Phase III transition planning and approval.
- ❑ Allows use of 1% of SBIR funds for CPP administration.
- ❑ Requires annual reporting of CPP and SBIR commercialization activities by PEOs, PMs and primes.
- ❑ Ties into SBIR law Executive Order 13329, which encourages manufacturing innovation.
- ❑ Allows for T&E work in Phases II and III.



Navy's CPP Vision

The Navy CPP initiative will accelerate the transition of SBIR projects into high priority Navy systems by providing needed assistance to SBIR firms and key technology stream participants.

Success occurs when the SBIR developed technology is inserted into a product or service to meet an identified Navy/DoD need.



Navy CPP

An Evolving Program

- ❑ Program is in infancy and will be subject to a modifications, variations and experimentation as we determine what works and does not.
- ❑ What will be discussed today and later this week are current strategies that will change over the next few years.
- ❑ First year has been spent studying best practices, documenting success trends, and strategizing. Second year's focus is on continued experimentation and evaluation.



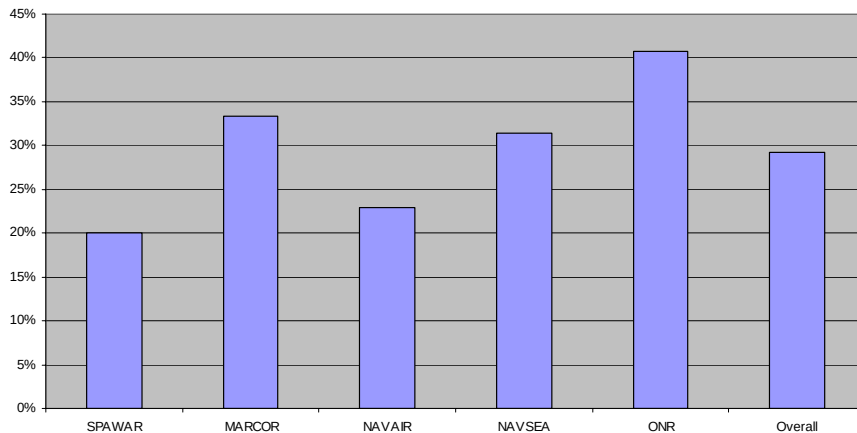
SBIR Accelerated Transition Initiative (SAT)

- ❑ Value that “super-sizing” Phase II’s has on technology insertion (add \$1M plus to Phase II)
- ❑ Ability to attract matching funding from a variety of sources, especially acquisition programs
- ❑ A way to “bridge the gap” between current Phase II efforts and acquisition program technology acceptance
- ❑ Ability to generate common data gathering and evaluation tools and processes that could be used to improve Navy-wide transition results

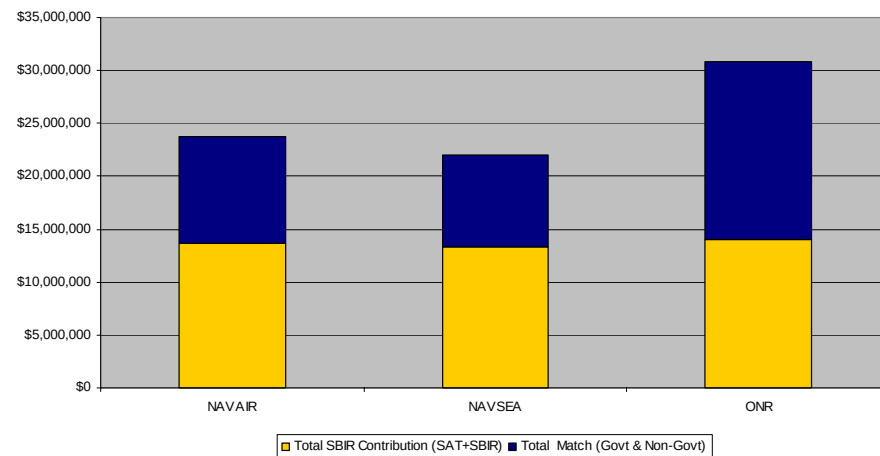


SAT Results

% Proposals Receiving Awards



SBIR Accelerated Transition Initiative (SAT) Project Funding by Source



- ❑ SAT received 120 proposals and is in the process of making 35 awards, a 29% acceptance rate.
- ❑ The total award value for the SAT contracts is expected to be \$81.2M with approximately \$37.1M or 45.7% provided by matching (non-SBIR or non-Government) funding.



Why CPP?

- ❑ To increase the transition from SBIR to Fielded Navy Systems. Some common impediments include:
 - ❑ Projects not mature enough at end of Phase II for transition
 - ❑ Topics aligned to programs already in Milestone B where most technology solutions are already determined (i.e., product arrives too late in process)
 - ❑ No funding to bridge the gap from Phase II to Phase III (TRL 5-7)
 - ❑ Primes/System Integrators view SBC's as "unreliable suppliers"
 - ❑ Need firms to "grow smartly" and prepare for transition to production earlier to be considered as potential manufacturer
 - ❑ Quality control and risk reduction efforts required for supplier certification/qualification largely go ignored/unfunded
 - ❑ Right product at the wrong time (no money to purchase items)
 - ❑ Primes and PM's not incentivized to incorporate SBIR technologies



How is CPP different?

- ❑ Focuses on transition vice technology development
- ❑ Focus on accelerating/streamlining SBIR process from topic development to Phase III award
- ❑ Specifically addresses high priority needs (tech pull)
- ❑ Allows for expanded Test & Evaluation support prior to Phase III increasing the maturity level (TRL 6/7 vs. 4/5)
- ❑ Will provide non-financial assistance to firms (e.g., Technology Insertion Planning, Manufacturing Assessments, Business Planning, Risk Assessments, Quality Assurance Certifications, Independent Testing Agents, etc.)
- ❑ Provides added funds so Navy can provide additional assistance
- ❑ Requires more interaction with PEOs and PM's



The Ideal CPP Candidate

- ❑ Technology that meets identified high priority DoN requirement
- ❑ Transition will result in quantifiable Life Cycle Cost savings to the Navy and improves affordability of new systems
- ❑ Clear transition path with insertion date < 3 years
- ❑ Matching funds from Program of Record or Prime
- ❑ Sound business and financial systems



Who do I Contact for More Info?

- ❑ DoN/ONR CPP
Program Manager
Lee Ann Boyer
leeann.boyer@navy.mil
- ❑ CPP Program Support
Database Manager
Lore-Anne Ponirakis
loreeanne.ponirakis.ctr@navy.mil
- ❑ NAVAIR CPP
Program Manager
Kim Berche
kimberly.berche@navy.mil
- ❑ NAVSEA CPP
Program Manager
Michelle Willis
michelle.e.willis@navy.mil
- ❑ SPAWAR CPP
Program Manager
Elizabeth Rogers
elizabeth.rogers@navy.mil
- ❑ Marine Corps CPP
Program Manager
Paul Lambert
paul.a.lambert@usmc.mil