Transitioning Technology and Opportunities

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Mission:
• Facilitate technology transition to the fleet, force and acquisition communities

Goals:
• Transition technologies to the fleet and acquisition
• Emphasize transition centric programs and methodologies including:
  – Efforts covering manufacturing methods used to build naval warfare systems
  – Programs that stimulate advantageous government-industry partnerships
  – An investment portfolio focusing on requirements pull by fleet and acquisition
  – Affordability
Transition Overview

• S&T passes mature technology to acquisition into development and production programs

• Agreement must exist on the maturity and readiness at the stage this happens (Technology Transition Agreement)

• Key components agreed upon in a TTA:
  -- Description of Product
  -- Completion/Transition Year
  -- Level of Risk (Technology Readiness Level)
  -- Demonstration of TRL
  -- Exit Criteria
**Objective:**
- Provide opportunities for small businesses to develop innovative technologies that address high-priority Navy needs.

**Typical Performers:**
- Small technology companies
- U.S. Research Institutions partners (STTR)

**Basic Process:**
- **TOPICS** posted quarterly on DoD SBIR/STTR website (www.dodsbir.net)
- **PHASE I** awards determine feasibility of technology
- **PHASE II** awards mature technology and develop prototypes
- **PHASE II.5** awards continue technology development with strong transition potential
- **PHASE III** awards transition the technology into a DoD application with non-SBIR funding

**How to get Involved / Contacts:**
- www.navysbir.com
SBIR/STTR Construct

- Standardized structure across SYSCOMs with defined roles for CTO and PEOs
- Each SYSCOM management structure has an SBIR/STTR Board, with CTO or equivalent chair and PEO/SYSCOM PM membership at each SYSCOM
- SYSCOM SBIR/STTR Board
  - The Board’s goal is to raise SBIR/STTR visibility to the Provider Enterprise
  - Helps ensure alignment of topics and dollars (down to PEO level) with Provider Enterprise (PE) demand and ASN (RDA) guidance
  - Incorporates Navy SBIR/STTR procedures based on best practices
  - Monitors SBIR/STTR transition and success metrics
- Topics
  - 90% topic allocation to PEOs, based on assessment
  - 10% topic allocation to PE (determined by CTO with advice of Board)
- Program Funds (managed by SYSCOM)
  - 70% of SBIR funds provided to PEOs
  - 10% of SBIR funds for PE priorities at SYSCOM
  - 20% of funds for CPP “Phase II.5” T&E matching projects
Navy SBIR Initiatives that Assist and Accelerate Transition to Phase III

- **Transition Assistance Program (TAP)** – Available to all Navy Phase II companies, provides Business Acceleration Manager who helps with DoD customer marketing and Phase III strategies

- **Opportunity Forum** – Annual June event with over 1200 attendees, third SBC’s, Primes and Navy PoR or R&D Managers

- **Commercialization Pilot Program (CPP)** – 1% of SBIR funds used by Navy so we can provide additional non-monetary transition support to SBIR firms

- **Phase II.5** - Provides SBIR/STTR funding, above normal < $1M Phase II levels, to firms with high Phase III potential

- **Primes Initiative** – Started 8 years ago, focused on educating primes CTO, R&D and Product teams how SBIR program can benefit them
SBIR/STTR Supports EM Railgun

**LAUNCHER**
- Harsh Environment Sensors
- Conductor Rails
- High Temp Polymer Composites

**PULSED POWER**
- Safe High-Voltage Cathode Materials
- Flexible Cooled Power Conductors
- Intermittent Pulsed Power Load Support

**PROJECTILE**
- Materials for Hypersonic Systems
- Mission Planning for Hypersonic Munitions
- Survivable Electronics

**SBIR-Supported Research**
- Coordinated
- Multi-discipline
- Multi-industry

**83 Contributing Projects**
- 53 Phase I
- 27 Phase II
- 3 Phase III

**46 SBIR/STTR Tech Providers**
- Traditional and non-traditional
Objective/Goal:

- To provide Naval innovations a transition path from the lab and capitalize on the Government R&D investment by advancing the development and commercialization of technology in support of the warfighter.

Basic Process:

- Businesses, universities, organizations, and individuals can collaborate with Navy labs through Cooperative Research and Development Agreements (CRADAs) and Patent License Agreements (PLAs).
- CRADAs can supply the knowledge, personnel, facilities, and equipment or other resources toward the conduct of specified RDT&E efforts that are consistent with the mission of the Naval laboratory. PLAs permit licensees to make, use and sell the intellectual property from the Naval labs.

How to get Involved / Contacts:

- navytechtransfer@onr.navy.mil
**Objective/Goal:**
- The FNC program is composed of Enabling Capabilities (ECs) that develop and deliver quantifiable products in response to validated requirements (Naval S&T Gaps) for insertion into acquisition programs of record after meeting agreed upon exit criteria within five years.

**Typical Performers:**
- DoD Labs/Warfare Centers
- Industry

**Basic Process:**
- FNC investments are refreshed by an established process that begins when OPNAV delivers its annual Naval Capability Gaps
- The ECs that do get funded represent the highest priorities of the Navy and Marine Corps

**How to get Involved / Contacts:**
- Engage EC/Product Managers in your areas of interest; review and respond to upcoming BAA/RFPs
Future Naval Capabilities (FNC) Enabling Capability (EC) Approval Process

- Widespread stakeholder involvement throughout the process
- Thorough vetting and review of technical merit and transition alignment
- Senior leadership review and approval

OPNAV/MCCDC

ONR

95 Candidate Solutions
Vet with Stakeholders
42 EC Proposals
Technical Review
37 EC Proposals

IPT Pillars

Review & Prioritization
37 EC Proposals

TOG WG/TOG

WG: DON Prioritization
35 EC Proposals Ranked 1 - 35
Three Star Adjustment and Approval
35 EC Proposals Final Rank: 1 - 35

OPNAV/USMC

Funding Line Established
15 ECs Funded 20 ECs Unfunded
Technology Transition

Objective/Goal:
- ONR’s Transition Initiatives Division directly supports technology insertion and out-of-cycle emergent needs with investment.

Typical Performers:
- SYSCOMS
- Warfare Centers

Basic Process:
- Standard proposal format
- SYSCOM CTOs coordinate project submittals
- Common proposal process
- All electronic

How to get involved:
- RTT_Contact@onr.navy.mil
- 3TTX_Contact@onr.navy.mil
- TIPS_contact@onr.navy.mil.
## Naval Technology Transition Programs

<table>
<thead>
<tr>
<th>DoN Program</th>
<th>Purpose</th>
<th>Proposal Accepted From</th>
<th>Project Duration</th>
<th>Project Funding</th>
<th>Approx. # projects funded per year</th>
<th>Proposals Due to ONR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rapid Technology Transition (RTT)</strong></td>
<td>Rapidly transition technology into Department of Navy (DoN) programs of record (PoRs) to meet emergent/urgent Naval Needs.</td>
<td>CTOs</td>
<td>Up to 2 years</td>
<td>Up to $2M</td>
<td>6</td>
<td>January</td>
</tr>
<tr>
<td><strong>Technology Insertion Program for Savings (TIPS)</strong></td>
<td>Rapidly transition technology from any source into DoN PoRs to significantly reduce operations and support costs.</td>
<td>CTOs</td>
<td>Up to 2 years</td>
<td>Up to $2M</td>
<td>7</td>
<td>January</td>
</tr>
<tr>
<td><strong>Rapid Innovation Fund (RIF)</strong></td>
<td>Transition Innovative Technology from Small Businesses to resolve operational challenges characterized by critical national security needs into Programs of Record.</td>
<td>Small Businesses</td>
<td>Up to 2 years</td>
<td>Up to $3M</td>
<td>25</td>
<td>White Papers Due Per BAA</td>
</tr>
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</table>
Objective / Goal:
• Aid in achieving reduced acquisition and total ownership costs by developing, maturing, and transitioning key manufacturing technologies / processes for the production and repair of Navy platforms and systems

Performers:
• ManTech Centers of Excellence (COEs)
• Technology Providers
• Industry

Investment Strategy:
• Primary focus on affordability efforts for: CVN 78 Class Carrier, VIRGINIA Class Submarine, Littoral Combat Ship (LCS), and DDG 51 Destroyer
• Secondary focus on Joint Strike Fighter
• Addressing Total Ownership Cost reduction – both acquisition and life-cycle

How to Get Involved / Contacts:
- Navy ManTech Program Office
- Centers of Excellence
- www.onr.navy.mil/mantech/
Navy ManTech is executed through nine Centers of Excellence (COEs):

- Execute projects; manage project teams
- Serve as corporate expertise in technological areas
- Collaborate with acquisition program offices / industry to identify and resolve mfg issues
- Develop and demo mfg technology solutions for identified Navy requirements
- Facilitate transfer of developed technologies

**Centers of Excellence (COEs):**

- **Institute for Manufacturing and Sustainment Technologies (IMAST)**
  - Penn State University, State College, PA

- **Electronics Manufacturing Productivity Facility (EMPF)**
  - Operated by American Competitiveness Institute (ACI), Philadelphia, PA

- **Navy Metalworking Center (NMC)**
  - Operated by Concurrent Technologies Corporation (CTC), Johnstown, PA

- **Electro-Optics Center (EOC)**
  - Operated by Penn State University, Kittanning, PA

- **Navy Joining Center (NJC)**
  - Operated by Edison Welding Institute (EWI), Columbus, OH

- **Composites Manufacturing Technology Center (CMTC)**
  - Operated by South Carolina Research Institute (SCRA) / Advanced Technologies International (ATI), Anderson, SC

- **Energetics Manufacturing Technology Center (EMTC)**
  - Naval Surface Warfare Center – Indian Head (NSWC-IH), Indian Head, MD

- **Center for Naval Shipbuilding Technology (CNST)**
  - Operated by Advanced Technologies International (ATI), Charleston, SC
ManTech Strategy and Approach

- Currently addressing affordability

<table>
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<tr>
<th>Primary Focus</th>
<th>Secondary Focus</th>
</tr>
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<tbody>
<tr>
<td>PEO (Subs) VIRGINIA</td>
<td>PEO (JSF) F-35</td>
</tr>
<tr>
<td>PEO (LCS) LCS</td>
<td>PEO (Carriers) CVN 78 Class</td>
</tr>
<tr>
<td>PEO (Ships) DDG 51 Class</td>
<td>PEO (LCS) LCS</td>
</tr>
</tbody>
</table>

- Platform IPTs for portfolio management
  - Representation from ONR ManTech, Program Office, and industry ensure close coordination of efforts

- Affordability Assessments updated semi-annually
  - Aug/Sep 2011 update vetted through Program Offices

<table>
<thead>
<tr>
<th></th>
<th>Total Navy ManTech Investment ($M)</th>
<th>Probable EROM Cost Savings per Hull ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIRGINIA Class Submarine</td>
<td>$68.0</td>
<td>$37.3</td>
</tr>
<tr>
<td>CVN 78 Class Carrier</td>
<td>$34.1</td>
<td>$17.6</td>
</tr>
<tr>
<td>DDG Destroyer Family***</td>
<td>$62.1</td>
<td>$23.5</td>
</tr>
<tr>
<td>Littoral Combat Ship</td>
<td>$28.8</td>
<td>$3.4</td>
</tr>
</tbody>
</table>

*** - Includes both DDG 1000 and DDG 51

- Current (Mar 2012) assessment underway and will include JSF portfolio and maintenance savings per class
VIRGINIA Class Submarine (VCS) Affordability Initiative

Background / Goal:
- Navy ManTech -- key contributor to VIRGINIA Class cost reduction effort to achieve $2B/sub in FY12
- Initiated in FY06 with focus on acquisition cost savings
- Expanded to Block IV and reduction of Total Ownership Cost (TOC)
  - Includes acquisition cost savings; maintenance cost savings; and reducing total time in drydock to improve operational availability
  - Supporting VCS Reduction of Total Ownership Cost (RTOC) effort

Payoff / Implementation:
- With current portfolio of ~$68M, ManTech has facilitated –
  - $21.3M/hull of realized cost savings in Block III - 23 projects implemented per GD EB (Dec 2011)
  - Additional projects in pipeline –
    - Acquisition Efforts: Currently projecting total acquisition cost savings of $37.3M/hull
    - Life-Cycle Efforts: For current 15 projects, projected cost avoidance per class of over $100M
The 2012 S&T Partnership Conference will provide various avenues to access ONR leaders, program managers, and business operations staff. Don’t miss this great opportunity!

Save the Date:
October 22-24, 2012 · Hyatt Regency Crystal City · Arlington, Va.

www.onr.navy.mil/events
Backup Slides
Virginia Class Submarine
SBIR/STTR Impact

Planning Systems
GCSS Development & COTS Applications

DSR
Advanced Information Systems
Software Migration
Legacy Trainer

PROGENY
Audio Signals
Active Emissions
IA
AN/WLY-1 AI&R

Trident Systems
Mobile Computing for Submarine Applications

TCN
OA Concepts

Chesapeake Science
Acoustic Interface
Design & Fabrication
Towed Arrays

MIKEL
Non-Collinear Wave Front Curvature Ranging

Sail

Darlington
SCS C4I & IM&M Technology
Combined Operations
Wide Area Network

Noesis
High Performance Brushes Technology

DAR

Control Module

Noesis
High Performance Brushes Technology

MSI
Array Improvement

Auxiliary Machinery Room

Compudrive
Electromechanical Actuator and COMT

Weapons Stowage & Handling

PROGENY
Multi Tube Weapon Simulator

Machinery Room

Non-Pressure Hull

TKC
Compudrive
Electromechanical Actuator and COMT

PROGENY
Tools For VME Interactive Acoustic Analysis

3 Phoenix
Real Time Data Fission

PEO SUB: >$1.5B in Phase III contracts!

VIRGINIA class submarine
<table>
<thead>
<tr>
<th>Enabling Capability Title</th>
<th>EC Descriptive Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simulation Toolset for Analysis of Mission, Personnel and Systems</td>
<td>Develops a software toolset for assessing and comparing early platform designs and manpower allocations.</td>
</tr>
<tr>
<td>EW Battle Management for Surface Defense</td>
<td>Develops a networked Electronic Warfare Battle Management system which can assess the readiness of EW assets and capabilities across the battlespace.</td>
</tr>
<tr>
<td>Cooperative Networked Radar</td>
<td>Develops Cooperative Networked Radar that enhances sensitivity, improves electronic protection, expands intercept geometries, and saves cost.</td>
</tr>
<tr>
<td>AIM-9X Enablers</td>
<td>Develops and delivers multiple subsystem improvements to the AIM-9X Block III Sidewinder missile system.</td>
</tr>
<tr>
<td>USV Payloads for Single Sortie Mine Countermeasures</td>
<td>Reduces the MCM timelines for detecting, identifying and clearing floating/driftng, moored and bottom mines in very shallow and shallow water.</td>
</tr>
<tr>
<td>Azimuth and Inertial MEMS Navigation System</td>
<td>Develops an accurate, lightweight, handheld, MEMS inertial navigation system with improved azimuth accuracy.</td>
</tr>
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<td>EC Descriptive Summary</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Hostile Fire Suppression</td>
<td>Develops a non-lethal effective, low cost, and low weight hostile fire suppression capability for rotary wing aircraft.</td>
</tr>
<tr>
<td>Ground Based Air Defense On-the-Move</td>
<td>Provides radar detection and laser destruction of close-in, low altitude, low radar cross section unmanned aerial system threats.</td>
</tr>
<tr>
<td>ASW Detection and Fusion for Remote Sensors</td>
<td>Not Available</td>
</tr>
<tr>
<td>High Altitude ASW from the P-8</td>
<td>Develops robust and affordable search and localization sensors that enable a P-8 to conduct ASW against multiple threat submarines while at high altitude.</td>
</tr>
<tr>
<td>Towed Array System Reliability Improvement</td>
<td>Develops a model for predicting the magnitude and distribution of forces on the Towed Array system down to the component level.</td>
</tr>
<tr>
<td>Extreme Operations: Mitigating Oxygen Imbalance at Altitude and at Depth</td>
<td>Provides the capability to detect and mitigate cognitive and physiologic deficits associated with hypoxemic hypoxia.</td>
</tr>
</tbody>
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## FY14 FNC Enabling Capabilities

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</tr>
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<tbody>
<tr>
<td>Silk Thread</td>
<td>Not Available</td>
</tr>
<tr>
<td>Tier 3 High Value Unit (HVU) Self-Defense</td>
<td>Improve HVU ASBM self-defense capabilities in A2/AD environments with advanced tracking, fire control, and homing guidance algorithms for existing ES and weapon systems.</td>
</tr>
<tr>
<td>Intelligent Collaborative Engagement</td>
<td>Destroy well-defended surface vessels conducting area denial ops by autonomously coordinating stand-in EW and kinetic ops.</td>
</tr>
<tr>
<td>Passive Sensor Surveillance</td>
<td>Develop passive sensor surveillance system to provides “fire control quality” targeting data in RF-denied or -degraded theaters.</td>
</tr>
<tr>
<td>Adaptive Tasking, Collection, Processing, Exploitation and Dissemination Services</td>
<td>Assure network connectivity for low latency data sharing, and provides for autonomous and adaptive C2 services for coordinating TCPED for ASW.</td>
</tr>
<tr>
<td>Anti-Surface Warfare (ASuW) Weapon Upgrade</td>
<td>Provide ASuW wake-homing capability for the MK-48 Mod 6/7 ADCAP torpedo, including discriminating among multiple surface contacts to target the desired HVU.</td>
</tr>
<tr>
<td>Full Sector Torpedo Defense</td>
<td>Increase the probability of survival of HVUs vs. single torpedo or a salvo of up to four torpedoes via a bow-mounted sonar, countermeasures, and engagement timeline compression.</td>
</tr>
</tbody>
</table>
## FY14 FNC Enabling Capabilities

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<tr>
<td>Acute Care Cover for Severely Injured Limbs (ACCSIL)</td>
<td>Manage blast injured extremities with a gel wound cover in the forward and far-forward settings. Also can be used to deliver pharmacological interventions.</td>
</tr>
<tr>
<td>Blast Load Assessment: Sense and Test (BLAST)</td>
<td>Address TBI through 1) in-situ and real-time detection of blast load experienced by the warfighter, 2) an assessment tool to gauge the resulting effects on cognitive functions, and 3) provide a go/no go recommendation.</td>
</tr>
<tr>
<td>Advanced Undersea Weapon System (AUWS)</td>
<td>Clandestinely position and remotely control sensor and weapon nodes to autonomously UCL and neutralize surface and subsurface threats in shallow/intermediate water depths.</td>
</tr>
<tr>
<td>Aluminum Allow Corrosion Control and Prevention</td>
<td>Assess, control, and prevent corrosion of aluminum alloys via 1) a corrosion prediction tool, and 2) lightweight coating systems to prevent corrosion and cracking.</td>
</tr>
<tr>
<td>Exchange of Actionable Information at the Tactical Edge (EAITE)</td>
<td>Provide efficient and timely automated production and dissemination of information products for the Company and below in austere environments.</td>
</tr>
<tr>
<td>Spectral and Reconnaissance Imagery for Tactical Exploitation (SPRITE)</td>
<td>Hyperspectral and wide area reconnaissance ISR capability for MCTUAS/STUAS. Complements EO wide area airborne surveillance and autonomously detects IED precursors, hidden targets, etc.</td>
</tr>
<tr>
<td>Long Range RF Find, Fix and ID</td>
<td>Improve ASuW capabilities to classify maritime targets at range, day/night, all-weather.</td>
</tr>
<tr>
<td>Efficient and Power Dense Architecture and Components</td>
<td>Increased electric system power density to enable higher power weapons and sensors (EMRG, FEL).</td>
</tr>
</tbody>
</table>