Disruptive Technologies Conference 2011

Dr. Walter F. Jones

Executive Director

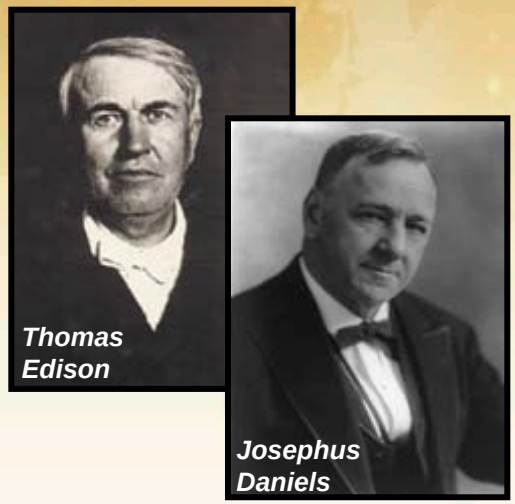
Revolutionary Research . . . Relevant Results

OFFICE OF NAVAL RESEARCH

The Office of Naval Research

Revolutionary Research . . . Relevant Results

Naval Research Laboratory *(Appropriations Act, 1916)*
"[Conduct] exploratory and research work…necessary …for the benefit of Government service, including the construction, equipment, and operation of a laboratory…."


Thomas Edison

Josephus Daniels

Office of Naval Research *(Public Law 588, 1946)*
"…plan, foster, and encourage scientific research in recognition of its paramount importance as related to the maintenance of future of naval power, and the preservation of national security…"


Harry S. Truman


Vannevar Bush

Office of Naval Research - London Office *(1946)*
"…reporting on the latest developments and to assist visiting American scientists to make contact with their colleagues in Europe…"

Transitioning S&T *(Defense Authorization Act, 2001)*
"…manage the Navy's basic, applied, and advanced research to foster transition from science and technology to higher levels of research, development, test, and evaluation."

88 Years of Naval Research

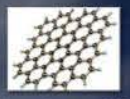
Revolutionary Research . . . Relevant Results

Naval S&T Milestones

ACCOMPLISHMENTS ACROSS ALL DOMAINS

Powered by Naval Research


Virtual At-Sea Training (Live-Fire Combat Skills)


Nobel Prize to ONR Researchers for Graphene


NTS-2 Satellite in NAVSTAR GPS


Nobel Prize to Dr. Jerome Karle, NRL


Navy Aerosol Analysis and Prediction System


High Temperature Superconductive Degaussing


Free Electron Laser

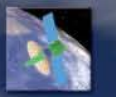

Timation and NAVSTAR GPS


Coronal Mass Ejection


High-Energy Magnets


Clementine Spacecraft


Hyperspectral Imager for Coastal Oceans


Tactical Microsatellite


First Detection of X Rays from the Sun


First Unmanned Helicopter


Owens Valley 40m Radio Telescope


Mobile Robots


ONR-funded Tech finds RMS *Titanic*

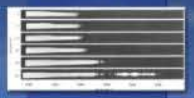

Interactive Multisensor Analysis Training (IMAT)


SHARP Reconaissance


Large Displacement Unmanned Underwater Vehicle


Multistatic Radar Tested at NRL


Plan-Position Indicator


First Far-Ultraviolet Spectrum of the Sun


Vanguard I Launched


Aqueous Film Forming Foams (AFFF)

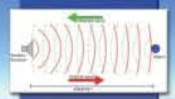

Excimer Laser Technology


Global Atmospheric Prediction System


High-Strength Low-Alloy Steels


Dragon Eye UAV


Integrated Topside (INTOP)


Sound Navigation and Ranging (SONAR)


Uranium 235 Production


Principles of Modern Fracture Mechanics

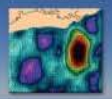

Project Whirlwind Digital Computer


First U.S. Intelligence Satellite


Far Ultraviolet Lunar Camera


Sidewinder Air-to-Air Missile


Neural Networking Computer Chips


First Operational Global Ocean Model

CBR Sensors for Fleet Security

Gamma-Ray Radiography

First Concept for a Nuclear Submarine

Synthetic Lubricants

Particle Accelerators

SEALAB I and II

Lithium Batteries

Aegis Combat System

Ultra-High Strength Steel

QuikClot® Combat Gauze

World-Record Setting 33 MJ EMRG Shot

NRL Commissioned

1920s

First U.S. Radar Patents

1930s

ONR Founded 1946

1940s

Vertical Take-Off and Landing

1950s

Bathyscaphe *Trieste* reaches 35,800 ft.

1960s

SOund SUrveillance System (SOSUS)

1970s

Acoustic Microscopy

1980s

Hull Anti-Fouling Coatings

1990s

Remote Environment Monitoring Units

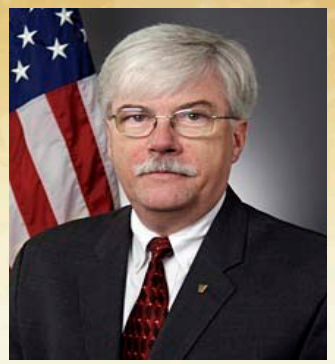
2000s

Anti-Torpedo Torpedo

2010 & Beyond

Leadership for S&T

RADM Nevin Carr Jr.
Chief of Naval Research



Dr. Walter Jones
Executive Director

BGen Mark R. Wise
Vice CNR

Guidance Comes From…

Assistant Secretary of the Navy (Research, Development and Acquisition)

Vice Chief of Naval Operations

Assistant Commandant for the Marine Corps

Assistant Secretary of Defense for Research & Engineering

Aligning to Strategic Guidance

Revolutionary Research . . . Relevant Results

SECNAV Priorities

- Taking care of our Sailors, Marines, Civilians, and their families
- Treating energy in DON as an issue of national security
- Creating acquisition excellence
- Optimizing unmanned systems

CNO Priorities

- Build the Future Force
- Maintain Warfighting Readiness
- Develop & Support Our Sailors, Civilians and Families

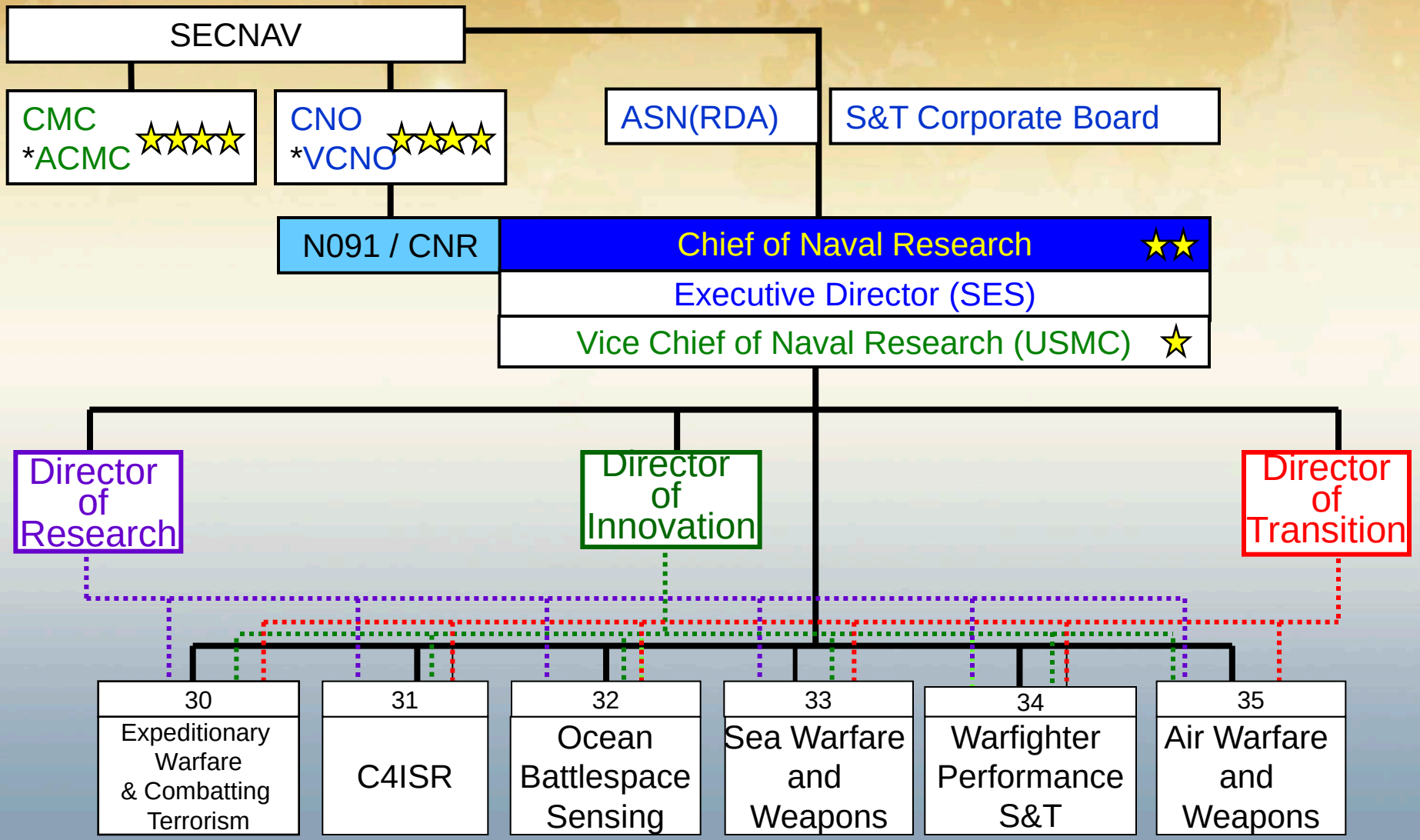
Commandant Guidance

- Provide the best trained and equipped Marines to Afghanistan
- Rebalance USMC for the future
- Better educate and train Marines
- Keep faith with our Marines, Sailors and families

CNR Priorities

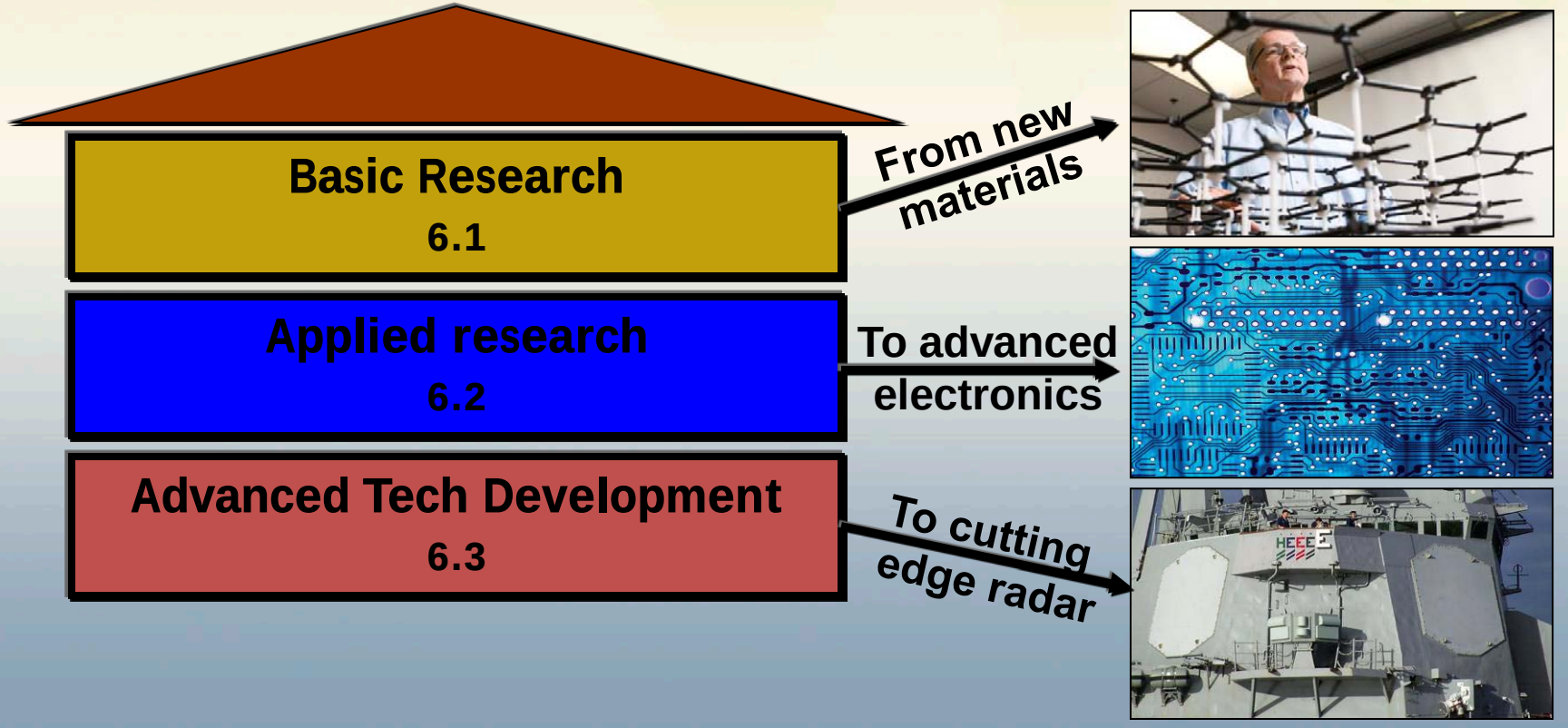
- Focus on S&T areas that provide the biggest payoff for our future
- Be innovative in our thinking and business processes
- Improve our ability to transition S&T into acquisition programs
- ***Improve strategic communication and engagement with stakeholders***

Office of Naval Research



Unique Structure

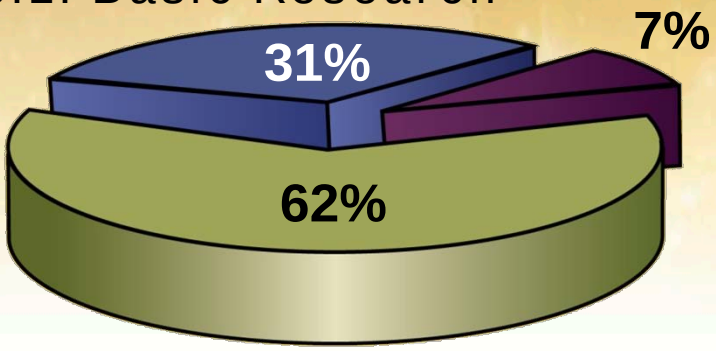
- All three S&T funding lines under one roof
- Program Officer can see a program through D&I → Applied Science → Transition



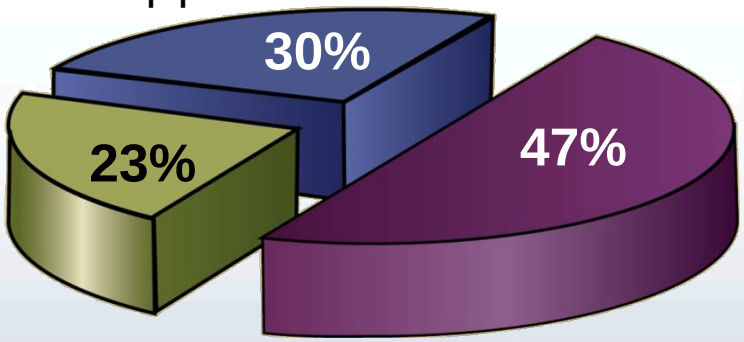
Investment Balance

Revolutionary Research . . . Relevant Results

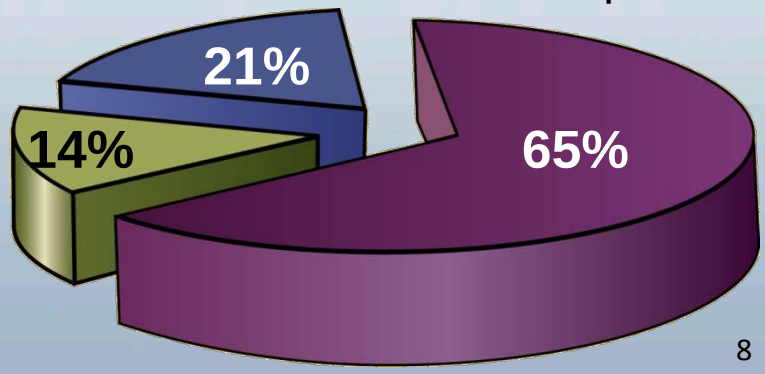
6.1: Basic Research



6.2: Applied Research



6.3: Advanced Tech Development



Naval Labs and Centers

University & Nonprofit

Industry

How We Execute

Revolutionary Research . . . Relevant Results

ONR Global

FFRDCs

UARCs/Academia

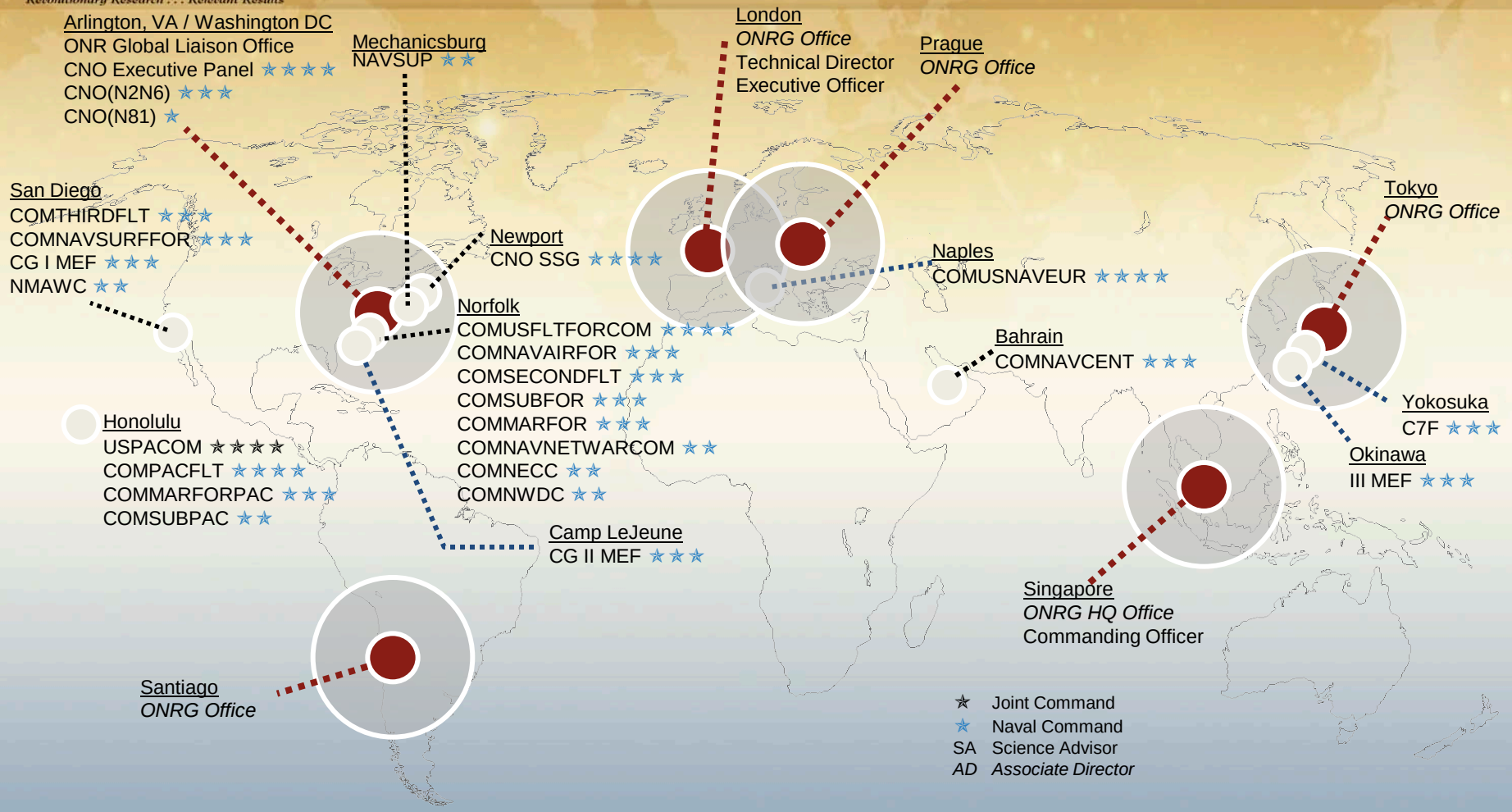
Industry

NRL/Warfare Centers

- 30 Countries
- 50 States
- 983 Companies
  - 744 small business
- 412 Universities & Nonprofit Entities
- 3,340 Principal Investigators
- 3,000 Grad Students

ONR Global Footprint

Revolutionary Research . . . Relevant Results

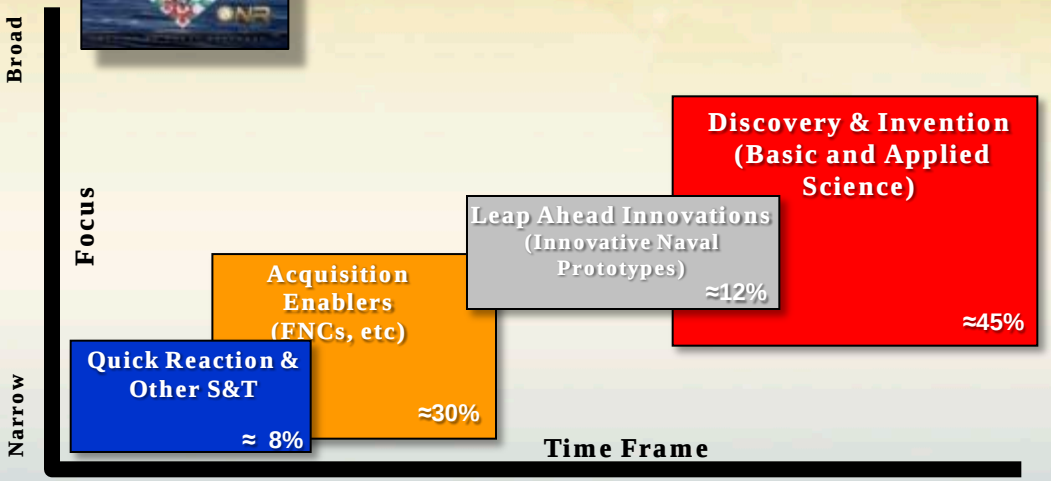


ONR Global is an Echelon 2 Command under the CNR

Naval Science and Technology

Revolutionary Research . . . Relevant Results

"…plan, foster, and encourage scientific research in recognition of its paramount importance as related to the maintenance of future of naval power, and the preservation of national security…" *(Public Law 588, 1946)*



Focus Areas:

- **Assure Access to Maritime Battlespace**
- **Autonomy & Unmanned Systems**
- **Expeditionary & Irregular Warfare**
- **Information Dominance**
- **Platform Design & Survivability**
- **Power & Energy**
- **Strike & Integrated Defense**
- **Total Ownership Cost**
- **Warfighter Performance**

Science, Technology, Engineering & Math (STEM)

Quick Reaction

Fleet Driven Material Solutions

1-2 yrs

Acquisition Enablers

Evolutionary POR component improvements

3-5 yrs

Leap Ahead Innovations

Disruptive Technologies

5-7 yrs

Discovery & Invention

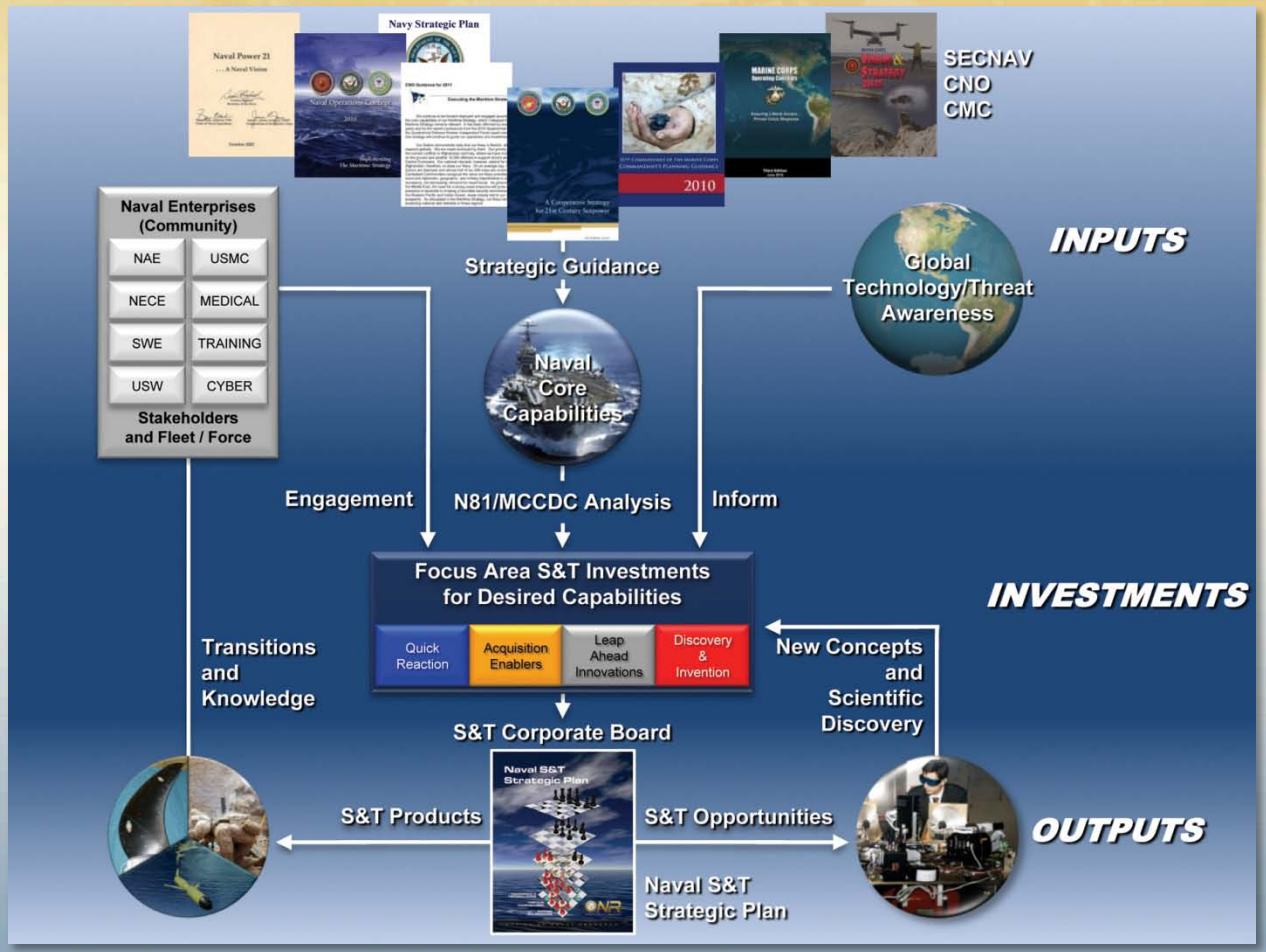
Fundamental Science focused on naval problems

5-20 yrs

Naval S&T Strategic Plan

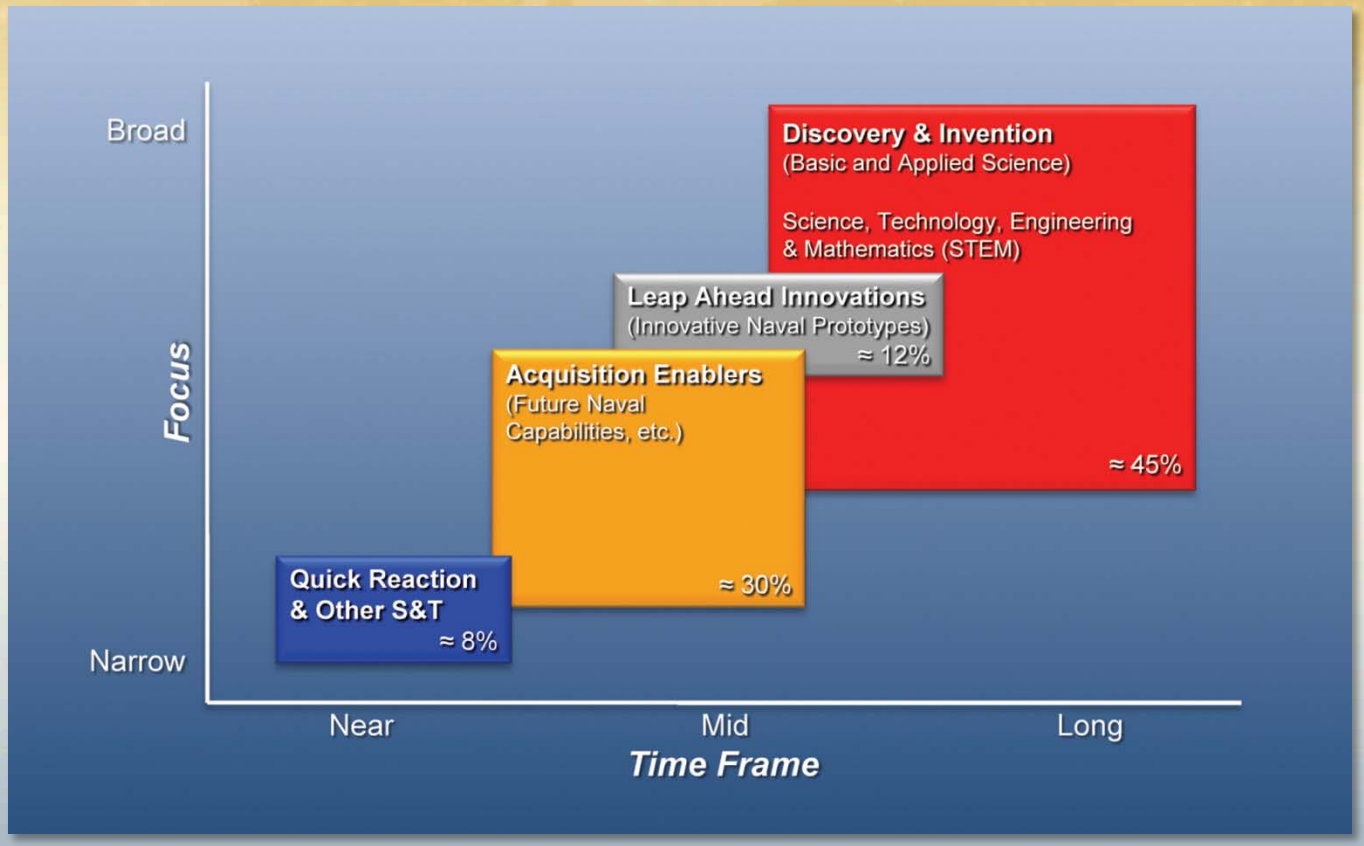
- Second update of the original Naval S&T Strategic Plan
- Focused on top-down guidance, informed by fiscal realities of POM13
- Strategic Context – development guided by Cooperative Strategy for the 21st Century, SECNAV Guidance, Naval Strategic Plan, and Vision and Strategy 2025
- Focus Areas consolidated from 13 to 9; includes addition of one new area on Autonomy and Unmanned Systems

Naval S&T Strategic Process



ONR S&T Investment Portfolio

Revolutionary Research . . . Relevant Results



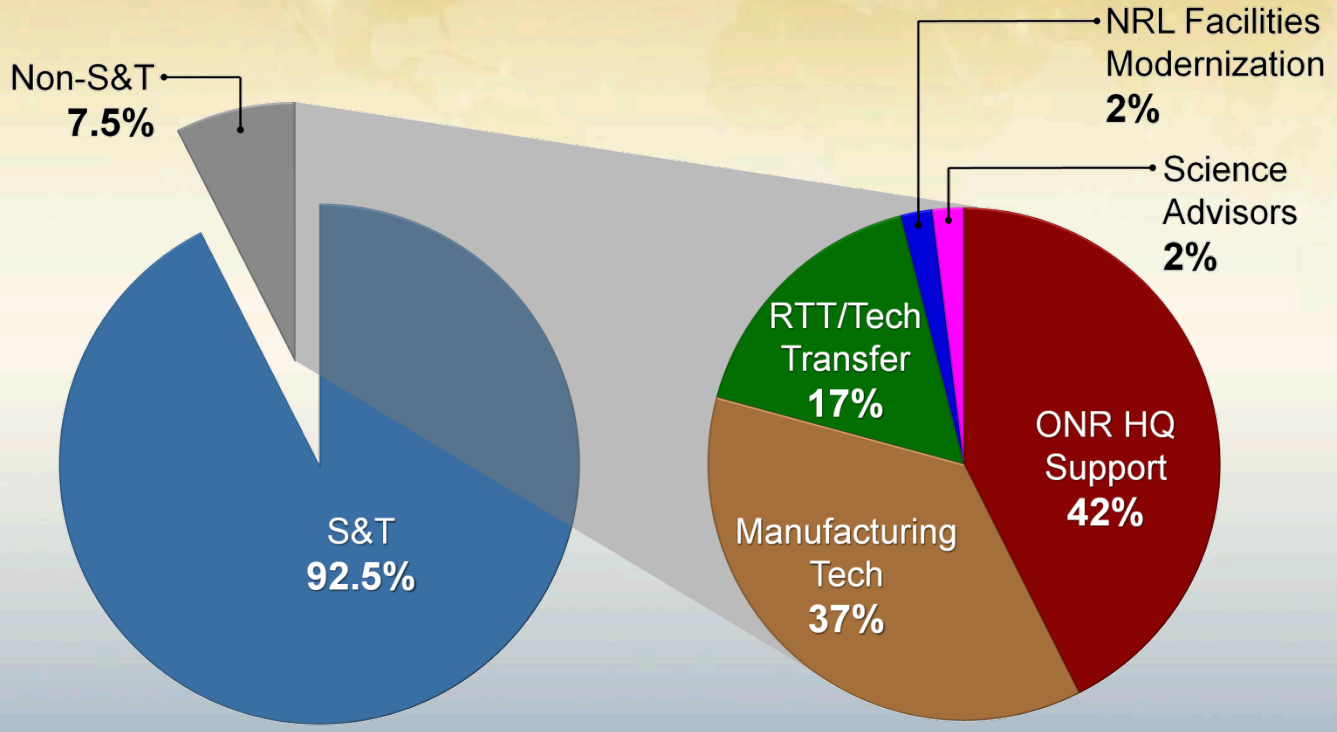
Quick Reaction S&T
- Tech Solutions
- Experimentation
- All MCWL, %JNLW 6.3
- % Code 30 6.3
- RTT, UUNS Response

Acquisition Enablers
- Future Naval Capabilities
- Warfighter Protection
- Capable Manpower
- % LO/CLO
- % Code 30 6.3 /JNLW 6.3

Leap-ahead Innovations
- Innovative Naval Prototypes
- % SwampWorks

Discovery & Invention
- Basic & Early Applied Research
- National Naval Responsibilities
- Education Outreach HBCU/MI

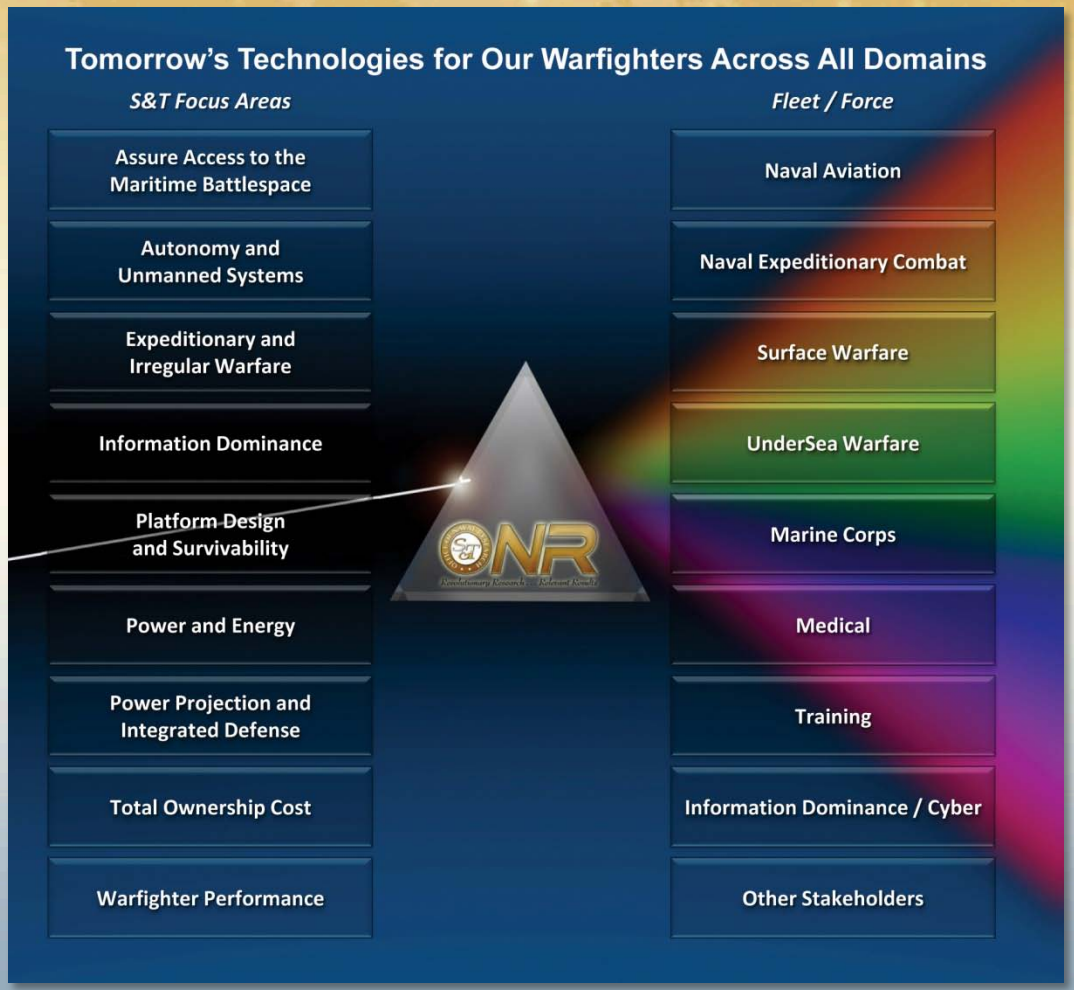
S&T and Non-S&T Investments



ONR Investment Portfolio

ONR Non-S&T Funding

Naval S&T Focus Areas



STEM is a critical enabler across all Focus Areas

16

Naval S&T Strategic Plan

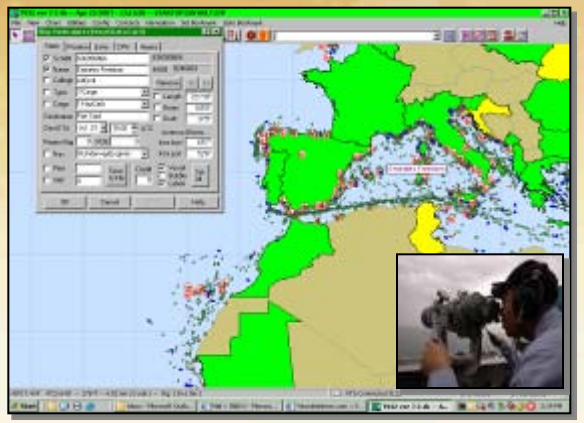
- Addresses DON top down guidance, considers global S&T trends, accounts for future security environments, and includes close and continuous engagement with Enterprises and Stakeholders
- Aligns with articulated long term Naval needs and missions
- Balances broad strategic research topics, high risk disruptive/game changing technologies, prioritized nearer term acquisition enablers via FNCs, and quick reaction efforts
- Communicates the way ahead to decision makers and our partners in industry and academia
- Reduces risk and provides options for acquisition
- S&T Investments over time provide the foundation for the essential capabilities that ensure the continued technological superiority of our Naval Forces

Naval S&T Strategic Plan located at:

www.onr.navy.mil/en/About-ONR/science-technology-strategic-plan.aspx

Quick Reaction S&T

- Ship Identification
- Solid State Lighting
- HCO Trainer
- Food Service Software
- Automated Weather Prediction system

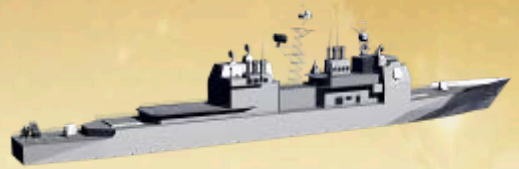


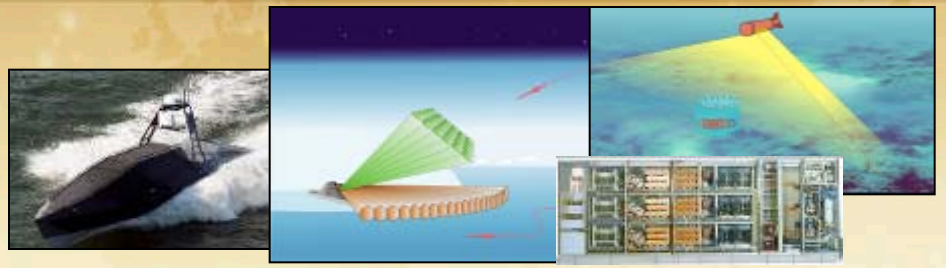
- **Rapid solutions to problems identified by deckplate Sailors and Marines**
- **1 year turnaround time**
- **Video: www.youtube.com/usnavyresearch**
- **Requests submitted online www.onr.navy.mil/techsolutions**

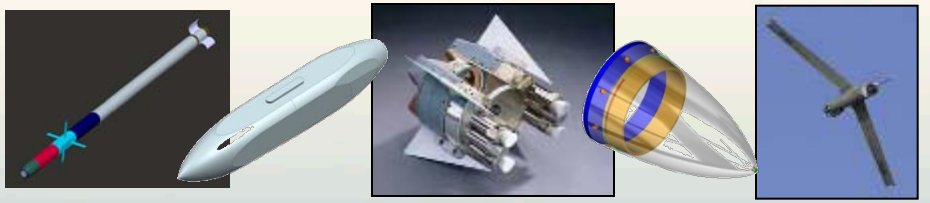
Future Naval Capabilities

(3-5 Year) Component Technologies

Revolutionary Research . . . Relevant Results







Secure Networks

Future Naval Capability Program

Revolutionary Research . . . Relevant Results

Initiated in FY02

- Focus S&T Critical Mass on Highest Priority capabilities
- Facilitate Flexible, Responsive, and Consistent Prioritization
- Ensure focused Transition to Acquisition and Naval Forces

Align Requirements, Acquisition, Fleet, and S&T Community

The FNC program is composed of Enabling Capabilities (ECs) that develop and deliver quantifiable products (i.e., prototype systems, knowledge products, and technology improvements) in response to validated requirements (Naval S&T Gaps), approved by Pillar IPTs and the Technology Oversight Group (TOG), for insertion into acquisition programs of record, after meeting agreed upon exit criteria, within five years.

Impact of S&T Investment Increased

Technology Oversight Group

Revolutionary Research . . . Relevant Results

- **Co-Chairs: N8 / MCCDC** ★★★
- **Permanent Members: PMD ASN (RDA), DCOM USFF, N091/CNR, N2/N6**
- **Equity Members: N1, N093, Deputy CNOs and Deputy Commandants**

N8F – Executive Secretary

TOG Working Group

- 0-6/GS-15 Level Representatives of Each TOG Member
- Interacts with IPTs and makes recommendations to TOG

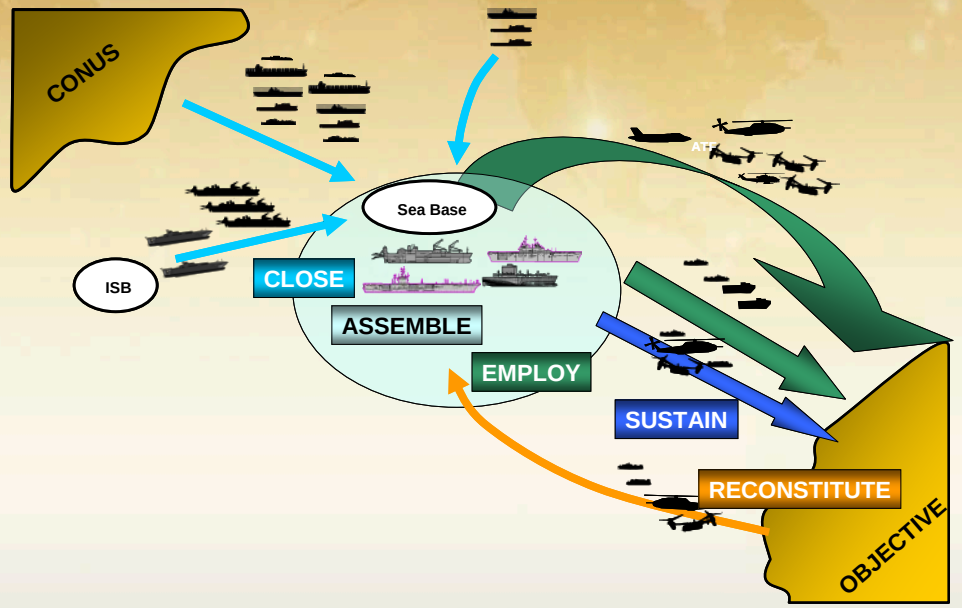
FNC IPTs

Sea Shield	Sea Strike	Naval Expeditionary Maneuver Warfare	Sea Basing	Power & Energy
*17 ECs, $347M	*10 ECs, $197M	*9 ECs, $78M	*4 ECs, $89M	*4ECs, $64M
• OPNAV N86 • MCCDC • USFF N803 • PEO LMW • ONR 32	• OPNAV N87 • HQMC Aviation • USFF N8 • PEO U&W • ONR 35	• OPNAV N85B • HQMC PP&O • USFF N8 • MCSC • ONR 30	• OPNAV N85B • Dep. CG MCCDC • USFF N804 • PEO Ships • ONR 33	• OPNAV N45 • USMC HQ E20 • USFF N8 • NAVSEA 05 • ONR 03T

FORCEnet	Enterprise & Platform Enablers	Force Health Protection	Capable Manpower
*15 ECs, $331M	*12 ECs, $204M	*6 ECs, $71M	*8 ECs,$98M
• OPNAV N6F • Dir HQMC C4 • NETWARCOM • SPAWAR 05 • ONR 31	• OPNAV N8F • HQMC I&L • USFF N433 • NAVSEA 05 • ONR 33	• OPNAV N931 • TMO, USMC • FFC N02H • NMSC • ONR 34	• N15 • USMC Training/Ed. • USFF N1D • NAVAIR TSD • ONR 34

* FY11-15

Example S&T Gap



Gap No. FY13-XX: At Sea Arrival and Assembly, Adaptive Force Packaging.

Operational Need: The joint sea base requires the capability to rapidly receive and assemble forces vessel-to-vessel at sea without reliance on land bases within the Joint Operating Area.

Metrics:

- Assemble an expeditionary brigade-sized force within 72 hours through SS4.
- Ship-to-ship lift of TEUs and equipment (<=30 STONs, 5 moves/hr, SS4) among selected military and commercial shipping.
- Interface and transfer tracked and wheeled equipment, personnel, and logistics
  - between military and commercial shipping and with sea based platforms and surface connectors through SS4.
  - Including ramps with 80 STON capacity.
- Selective offload through SS4.

Technology Transition Programs

DoN Program	Purpose				
	Proposal Accepted Form	Project Duration	Project Funding	Approx. # Projects Funded per Year	Proposals Due to ONR
Rapid Technology Transition (RTT)	Rapidly transition technology into DoN programs of record (PoRs) to meet emergent/urgent Naval Needs.				
	CTOs	Up to 2 years	Up to $2M	15	January
Technology Insertion Program for Savings (TIPS)	Rapidly transition technology from any source into PoRs to significantly reduce operations and support cots.				
	CTOs	Up to 2 years	Up to $2M	6	January
Rapid Development & Deployment (RDD)	Rapidly develops and fields prototype solutions to meet validated urgent operational Naval needs.				
	CNO N8 or CG, MCCDC	Up to 1 year	As required	2	Rolling submission

Navy SBIR/STTR: Delivering R&D To the Warfighter

Revolutionary Research . . . Relevant Results

- **Two main goals of Navy SBIR/STTR Program**:
  - Use small business to develop innovative R&D addressing Navy needs
  - Commercialize that technology into a Navy Platform or Weapon System

- **~$395M in FY2010 funds** - 1,200+ Phase I and II awards
  - Quarterly solicitations (3 SBIR, 1 STTR)
  - 6-month Phase I award typically $150K
  - 2-year Phase II award typically $1M

- **Acquisition driven, technology pull**
  - 283 SBIR/STTR Topics in FY10, over 80% address a specific need from a PEO/PM/FNC (i.e. military application) – list of PEO SBIR POCs found at www.navysbir.com
  - Topics and awards based on PEO/PM/FNC R&D priorities and SBIR/STTR funding
  - Many contracts awarded/monitored by lab employees with Acquisition Office POC involved
  - Dedicated outreach to industry and government through annual Navy Opportunity Forum, seen at www.navyopportunityforum.com
  - Unique concept-based search engine at www.navysbirsearch.com supports efficient mining of Navy SBIR/STTR inventory, other DoD resources

Navy SBIR/STTR: Transitioning Innovation

Revolutionary Research . . . Relevant Results

- **Transition Assistance Program (TAP)**
  - Available to all Navy Phase II companies, provides Business Consultant who helps with DoD customer marketing and Phase III strategies
  - TAP-linked *Navy Opportunity Forum (June 6-8, 2011)* provides annual look at mature Phase II projects, previewed in depth at www.VirtualAcquisitionShowcase.com
- **Commercialization Pilot Program (CPP)**
  - Congressional mandate to align DoD R&D capability with priority warfighter needs
  - 1% of SBIR funds used by Navy for internal transition help to SBIR/STTR firms (no funding to firms)
- **Phase II.5**
  - Provides SBIR funding, above normal < $1M Phase II levels, to firms with high Phase III and insertion potential

Why is Navy SBIR Successful with Phase III Awards?

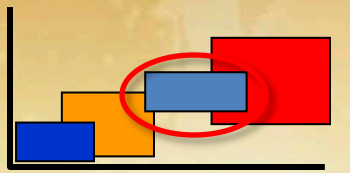
- Strong SYSCOM SBIR Offices provide assistance all along the way
- PEO involvement/pull key, as they control much Phase III funding
- Navy engagement with Prime contractors, since they control technology insertion decisions
- Navy SBIR/STTR FY2010 Phase III investment = $565M, more than all other DoD agencies combined

Innovative Naval Prototypes

(5-10 Year) Disruptive Technologies

Revolutionary Research . . . Relevant Results

- **High Risk / High Payoff**
- **Innovative and game-changing**
- **Approved by Corporate Board**
- **Delivers prototype**

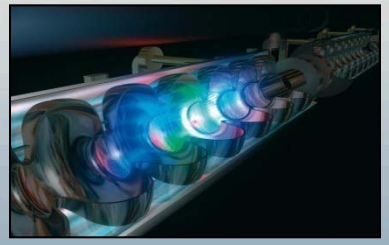


Tactical Satellite

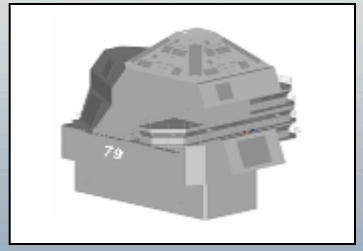
EM Railgun

Persistent Littoral Undersea Surveillance

Sea Base Enablers



Free Electron Laser



Integrated Topside

Large Displacement UUV

AACUS

INP Programs

- **Determined by DoN guidance, INPs are funded at ~10% of ONR Total Obligation Authority**
- **Purpose:**
  - Explore high-risk, game-changing technologies and to advance the capabilities of the warfighter
  - Reduce the acquisition risk of disruptive technologies and capabilities
  - Deliver “The Next Big Thing”
- **Approved by VCNO, ASN (RDA) and ACMC**
- **FY10 Innovative Naval Prototypes:**
  - Tactical Satellite (TACSAT)
- **Current Innovative Naval Prototypes:**
  - Persistent Littoral Undersea Surveillance (PLUS)
  - Sea Base Enablers (SBE)
  - Electromagentic Railgun (EMRG)
  - Free Electron Laser (FEL)
  - Integrated Topside (INTOP)
- **FY12 Innovative Naval Prototypes:**
  - Autonomous Aerial Cargo Utility System (AACUS)
  - Large Displacement Underwater Unmanned Vehicle (LDUUV)

Free Electron Laser

Electromagnetic Railgun

INP Business Process

Revolutionary Research . . . Relevant Results

Solicit Ideas from Innovation Community

Ideas Evaluated by Technical Community

Ideas Receive Advocacy from Warfighter Community

Enterprises
SYSCOMS
PEOs
Fleet/Force
Flag/SES

DoN Leadership Prioritizes & Decides *

** CNO Futures Group*
DoN S&T Corporate Board

Tactical Satellite (TACSAT)

Revolutionary Research . . . Relevant Results

Why TACSAT: TACSAT developed payloads to fly on microsatellites demonstrating new technologies to help close existing OPNAV N8 Naval Warfighting gaps. The program does so by using quick and responsive access to space, substantially lowering costs, and providing easy access to the tactical commander

Partnerships: NRL, OPNAV N2 and N6, SPAWAR, DoD's Operationally Responsive Space Office and Office of Force Transformation, STRATCOM, NRO, JHU Applied Physics Laboratory

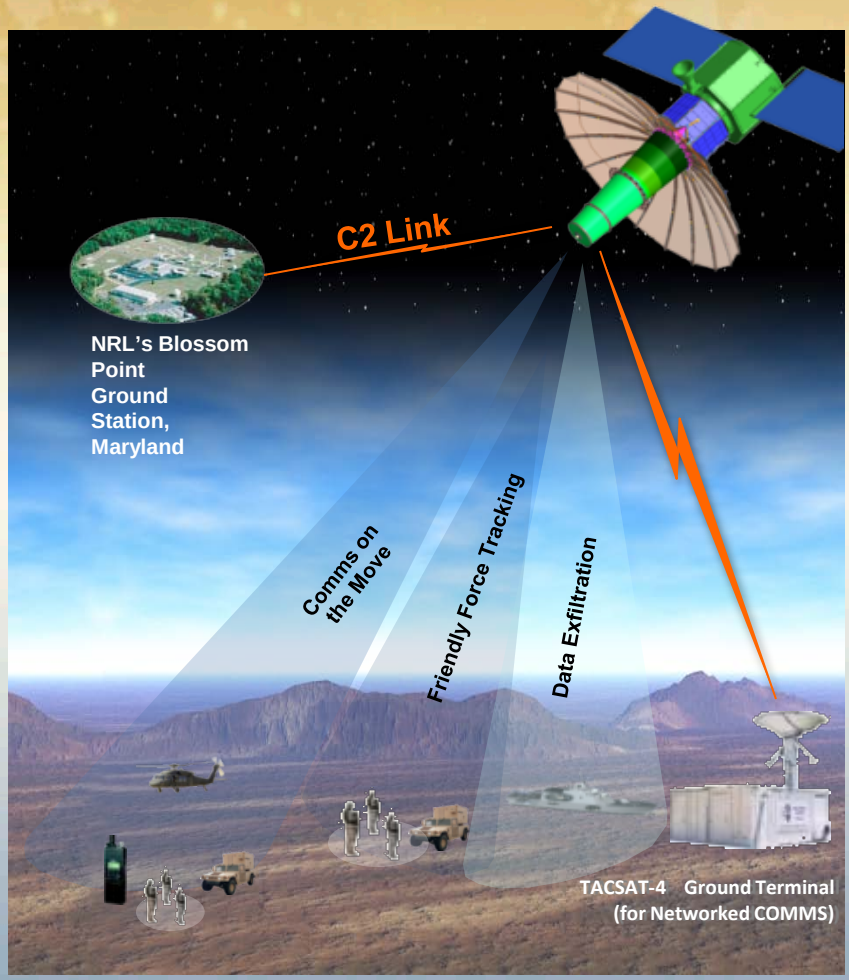
Why is TACSAT Hard: TACSAT is using unconventional and innovative commercial off the shelf technologies, and providing unprecedented access via SIPRNET through a newly developed Virtual Mission Operations Center

Accomplishments:

- Ocean Data Telemetry Microsatellite Link (ODTM) was launched on TACSAT 3 and STPSat-2 to provide world-wide data exfiltration.
- Ship tracking, cross platform precision geolocation, specific emitter identification, and AIS on TACSAT 2
- Maritime Hyperspectral Imaging of the Coastal Oceans (HICO) and the Remote Atmospheric and Ionospheric Detection System (RAIDS) payloads were installed on the International Space Station

Upcoming Major Milestones:

- TACSAT-4 Spacecraft to be launched May 2011 from Kodiak Alaska to provide Comms on the Move, Friendly Force Tracking, and Data Exfiltration
- Trident Warrior 11 Exercise
- Joint Military Utility Assessment



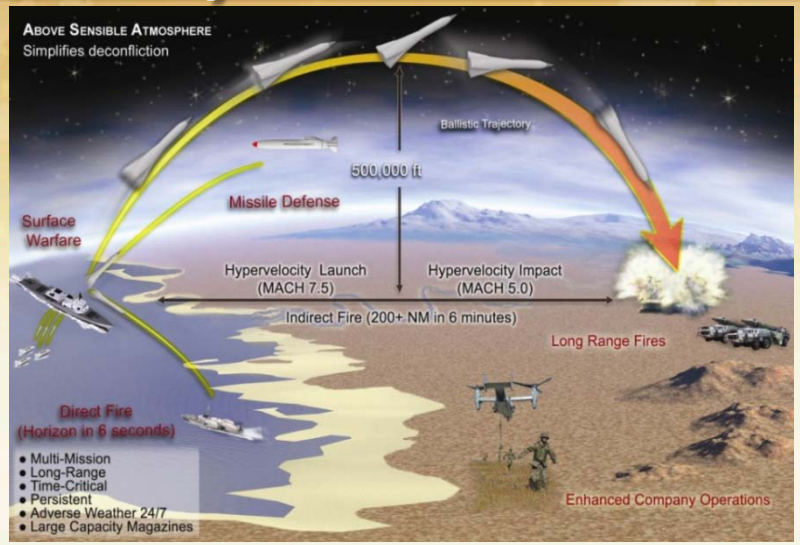
Electromagnetic Railgun (EMRG)

Revolutionary Research . . . Relevant Results

Why EMRG: EMRG is a revolutionary long range gun with multi-mission potential including ballistic and cruise missile defense, long range land attack, and anti-surface warfare against small boats and ships. It uses electricity instead of gun propellant s enabling MACH 7 launch velocities and 200+ NM ranges

Partnerships: NSWC, PEO Ships, IWS, MCCDC, NRL, Charles Draper Labs, Sandia National Lab, Lawrence Livermore Labs, BAE Systems, Boeing, General Atomics

Why is EMRG Hard: EMRG requires development of composite barrels with extended barrel life, advanced pulsed power, high speed low drag projectile, and system thermal management



Accomplishments:

- World record 32 MJ launch energy
- Developed extended rail bore life enabling over 100 shots from 1 set of rails with multiple configurations
- Improved pulsed power design to deliver multiple shot versus single shot capability
- Conducted open range projectile sabot discard tests
- Evaluated EMRG utility in support of Special Forces and Surface Warfare

Upcoming Major Milestones:

- Demonstrate structural integrity of industry developed launchers at multiple energy levels
- Quantify acceleration load limits of critical projectile components
- Demonstrate repetitive shot-rate capability
- Increase understanding of bore life physics to improve overall performance

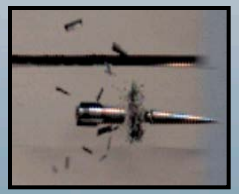
Recent Progress

BAE Half-Length Advanced Composite Prototype

32MJ Muzzle Energy World Record

General Atomics Med-Cal Blitzer (IRAD)

Actively Cooled Rep-Rate Pulsed Power Module



Projectile Pellet Dispense Demo

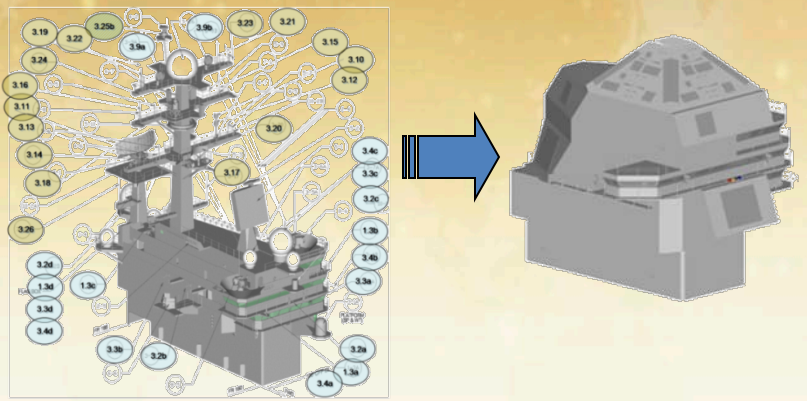
Integrated Topside (INTOP)

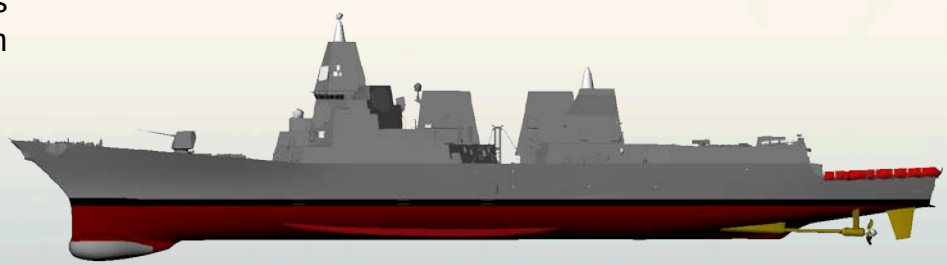
Revolutionary Research . . . Relevant Results

Why INTOP: INTOP will develop a scalable family of multi-function apertures and electronics that provides a leap ahead capability to utilize the electromagnetic spectrum for electronic warfare, radar, communications and SIGINT on multiple classes of ships and other Navy platforms

Partnerships: NSWC, PEOs IWS, C4I, Subs, Ships, Carriers, NRL, SSC, Northrop Grumman, Raytheon, Lockheed Martin

Why is InTop Hard: INTOP requires adoption of shared RF resources across sensor, weapon & communication domains and the ability to perform dynamic resource and spectrum allocation in real time





Accomplishments:

- Completed Navy-Industry open RF architecture study
- Established Indefinite Delivery Indefinite Quantity 5-year $800M contract with 18 awardees
- Completed 6 EW/IO/Comms studies
- Awarded Submarine SATCOM contract for design with build option to Lockheed Martin
- Awarded contracts for EW/IO/COMMs ADM design with build option to Northrop Grumman & Raytheon

Upcoming Major Milestones:

- Complete Submarine SATCOM design to include prototype and award build option
- Complete EW/IO/COMMs ADM design and down select for build option to single contractor
- Issue RFP and award contract to continue Resource Allocation Manager development
- Hold Flag-level summit for prototype selection and transition path development

Large Displacement UUV (LDUUV)

Revolutionary Research . . . Relevant Results

Why LD UUV: Develop fully autonomous long endurance land-launched UUVs capable of operating near shore, extend and multiply the current Navy platform's capability

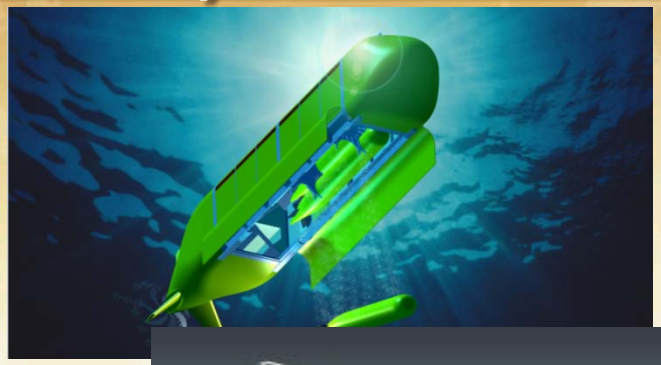
- Ability to extend the reach of the Navy into the denied littorals
- Significant endurance

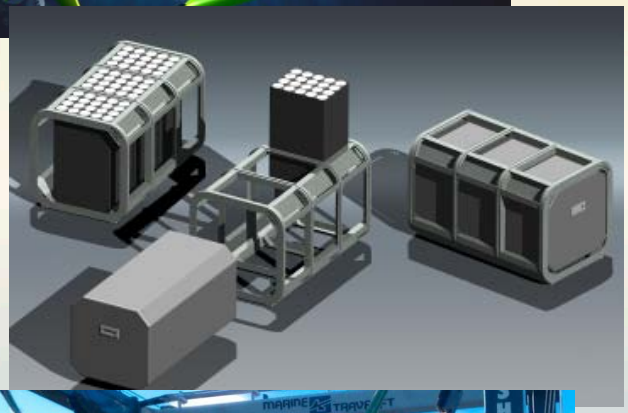
Partnerships: NRL, NUWC, PSU ARL, N2 and N6, OPNAV and PEO LMW to develop a technology that meets the Navy's needs and quickly transition to fleet operations

Why is LDUUV Hard: LDUUV will operate in complex littoral environments that change significantly over relatively short periods of time

Solution Attributes:

- Development of advanced air independent UUV energy systems to provide months of operations
- Focus on technologies that enable full autonomy in a cluttered littoral environment
- Conduct pier to pier fully autonomous operations to demonstrate increased mission flexibility
- Defined interfaces and standards will allow for cost effective quick insertions of payload and autonomy capability
- Leverage technologies from Navy Enterprises

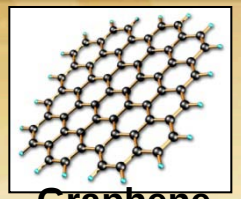




Basic Research

Seed corn for disruptive technologies

- Diverse portfolio
- Fosters innovation
- Long-term
- Investment in people
  *60+ Nobel laureates



Graphene

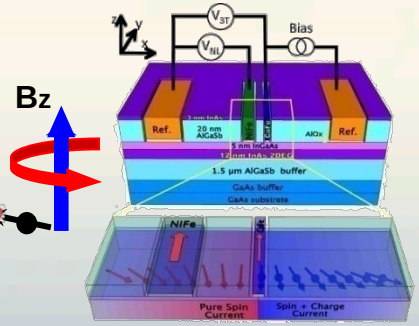
1st U.S. Intel satellite

Semiconductors
GaAs, GaN, SiC

EW

GRAB

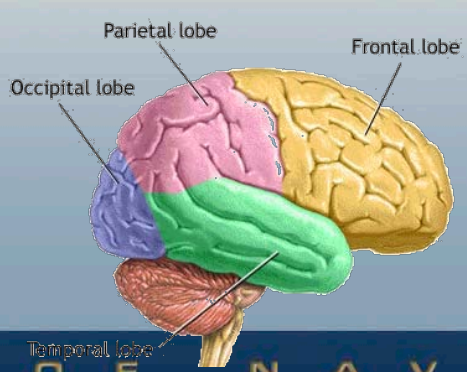
Spintronics



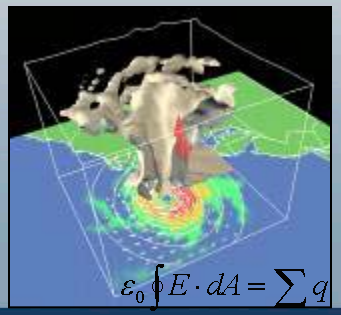
Bz

Arctic Research

GPS



Weather Modeling



Laser Cooling

Discovery and Invention Vision

Revolutionary Research . . . Relevant Results

KNOWLEDGE

Develop Naval-relevant fundamental knowledge

- Expand the boundaries in traditional Naval interest research areas
- Examine new research directions for future Naval needs
- Encourage risk-taking to seek scientific breakthroughs

TRANSITIONS

Provide the basis for future Navy and Marine Corps systems

- Ensure research relevancy to Naval S&T strategy
- Transition promising Basic Research to applications
- Use knowledge (even failures) to reduce risk in acquisition

PEOPLE

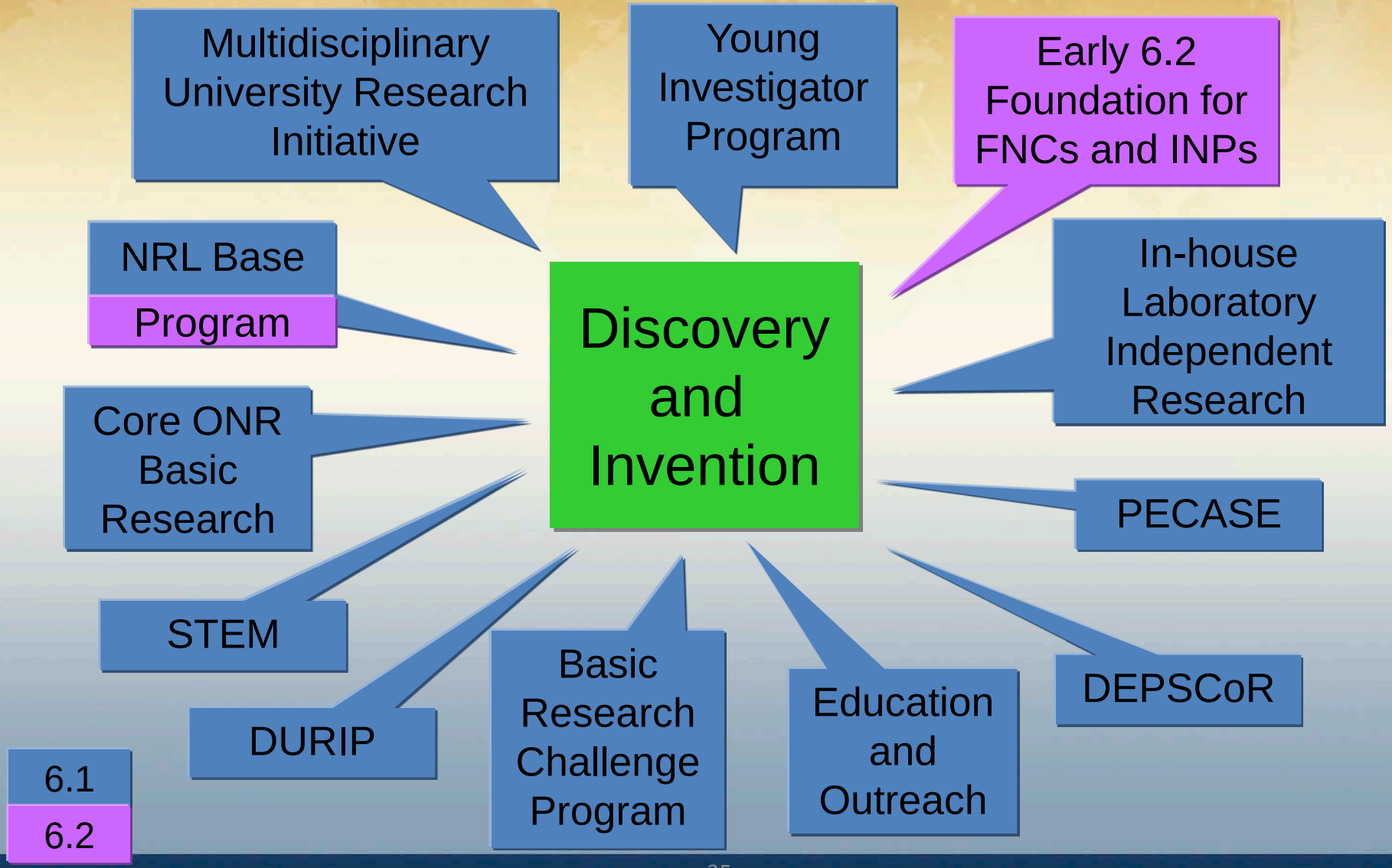
Maintain the health of the Defense Scientist and Engineer workforce

Develop and nurture future generation of DoD researchers and engineers

Ensure continued U.S. advantage in intellectual capital

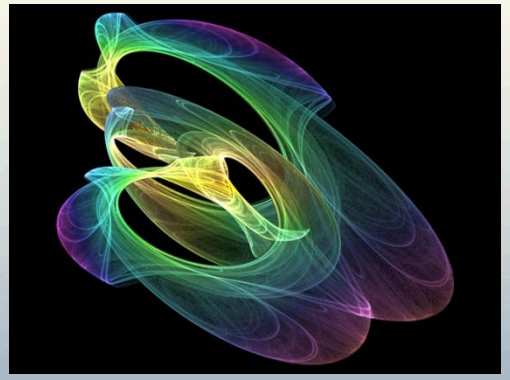
Maintain unique/essential research infrastructure

Discovery and Invention Program Content

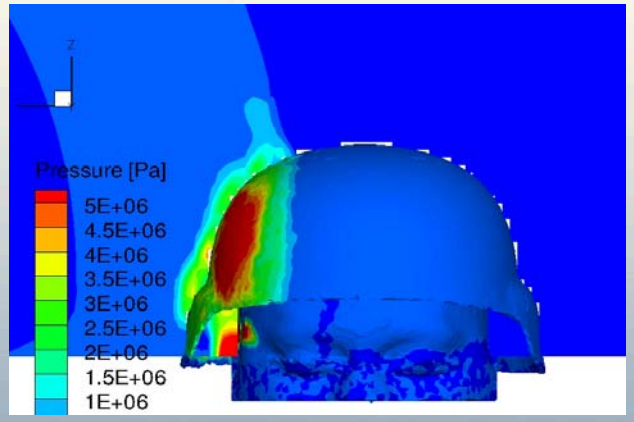


Basic Research Challenge Program

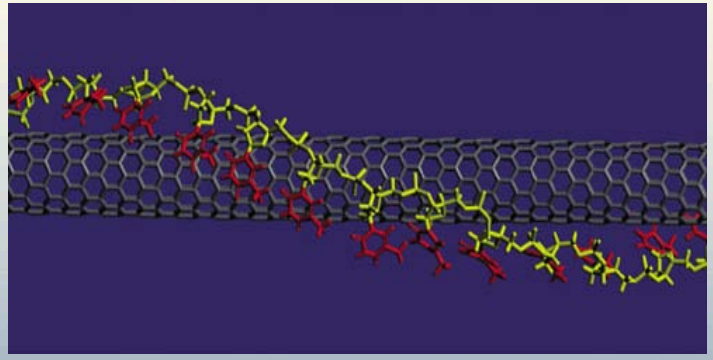
Competitively funds promising Basic Research programs in new areas not currently addressed by the Basic Research program. Stimulates new, high-risk Basic Research projects in multi-disciplinary and Departmental collaborative efforts.



Irreducible Uncertainty *



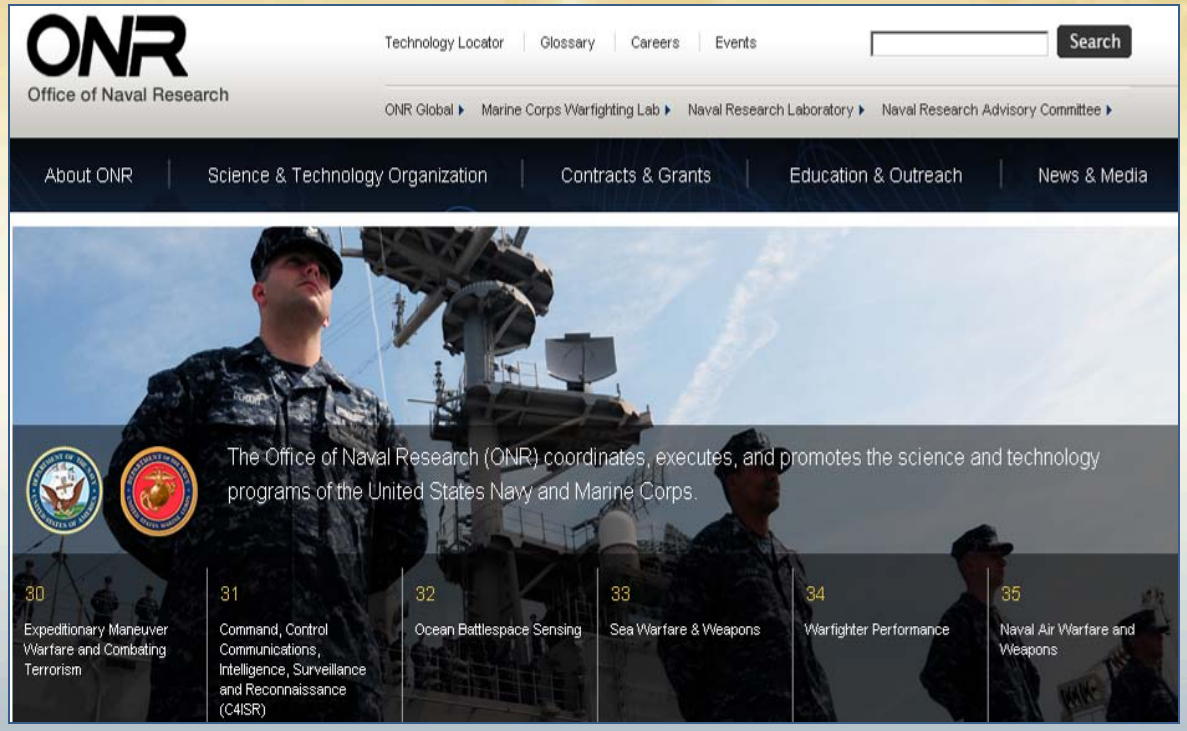
Elastomeric Polymer by Design *



DNA-Based Nanoelectronic Fabrication *

* FY09 BRC Program Selections

Where to Find Us Online



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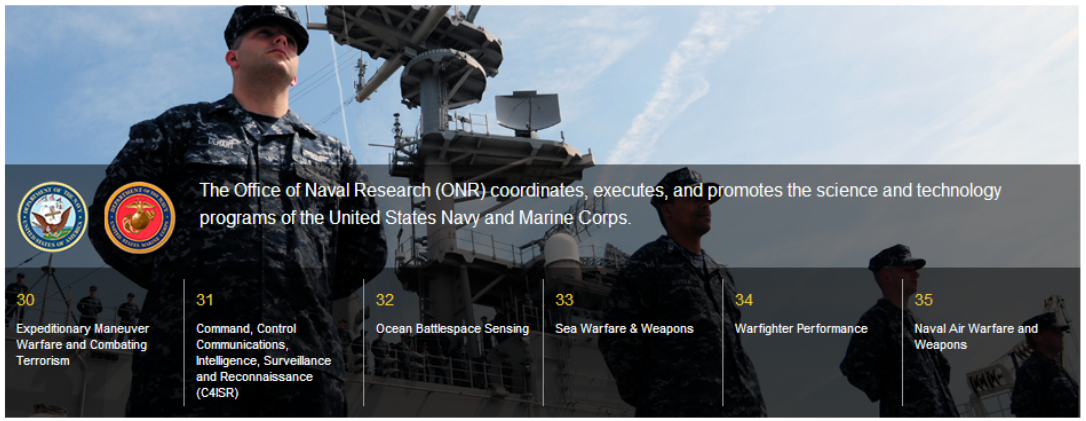

Directorates

ONR's directorates balance a robust science and technology (S&T) portfolio, allocating funds to meet the warfighter's requirements.

- 03I Innovation
- 03R Research (Discovery & Invention)
- 03T Transition

Chief of Naval Research Spotlight

Challenge Winners Named
On Feb. 28, the Office of Naval Research announced 10 finalists for its Chief of Naval Research (CNR) Challenge. Winners, like Professor Moeness Amin of Villanova University (left), will receive a $100,000 research grant for basic research which could significantly contribute to building future naval forces.

"ONR program officers reviewed the entries and selected 10 very promising ideas from nearly 100 white papers," said Rear Adm. Nevin Carr, chief of naval research. "As always, final selection was tough, but the winners were ultimately chosen based on potential and how well the idea supports the needs of the Navy."

Quick Links

Get shortcuts to commonly requested topics below:

- ONR Wins Website of the Year
- Explore research funding opportunities
- Learn how to submit a proposal
- Follow ONR on Facebook

Done | Local intranet | 100%