



S&T in Support of the Navy and US Marine Corps

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The Office of Naval Research

The S&T Provider for the Navy and Marine Corps



- 4,000+ People
- 23 Locations
- \$2.1B / year
- >1,000 Partners



Discover



Develop



Deliver

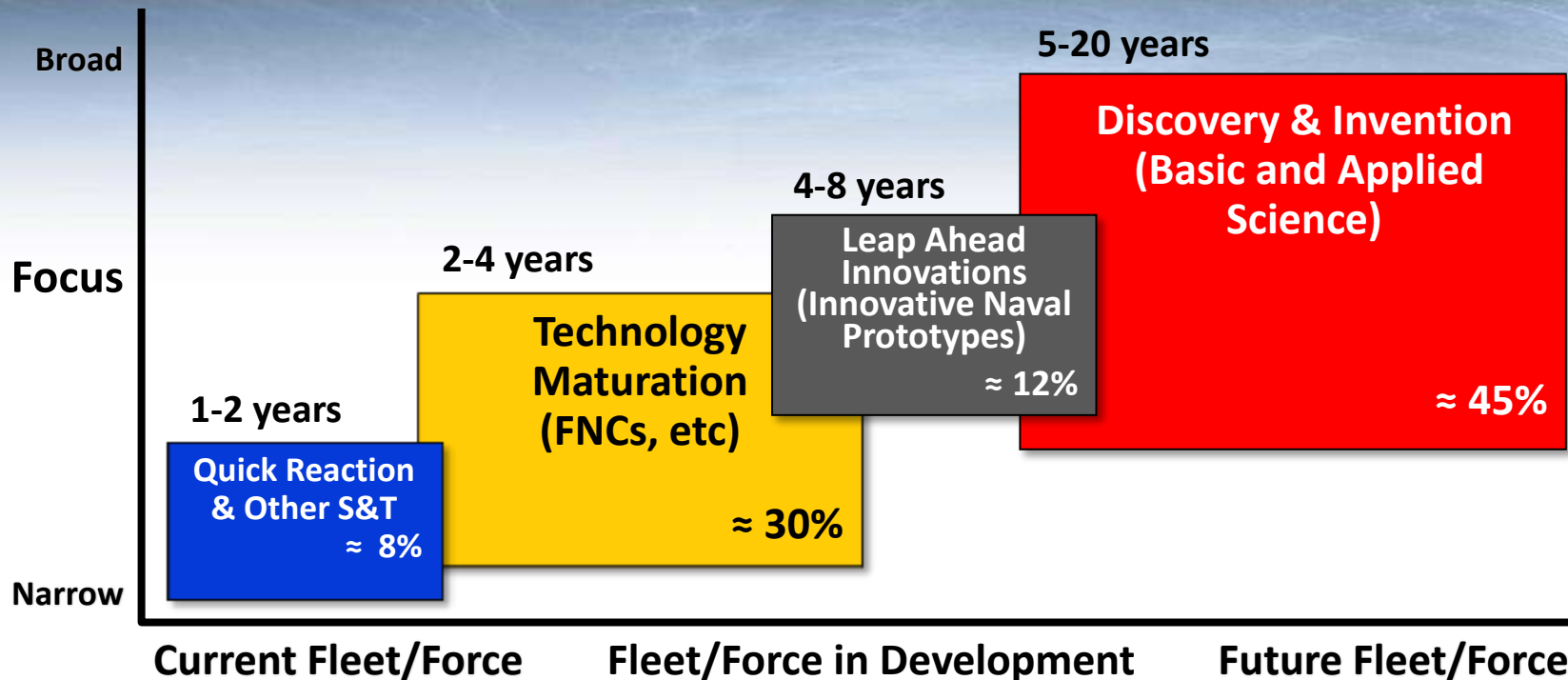


*Technological
Advantage*

Distribution
Statement
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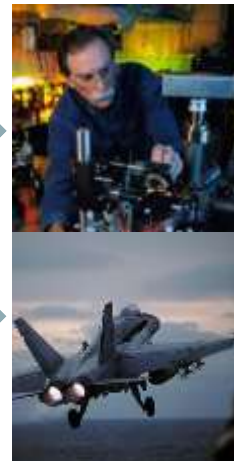
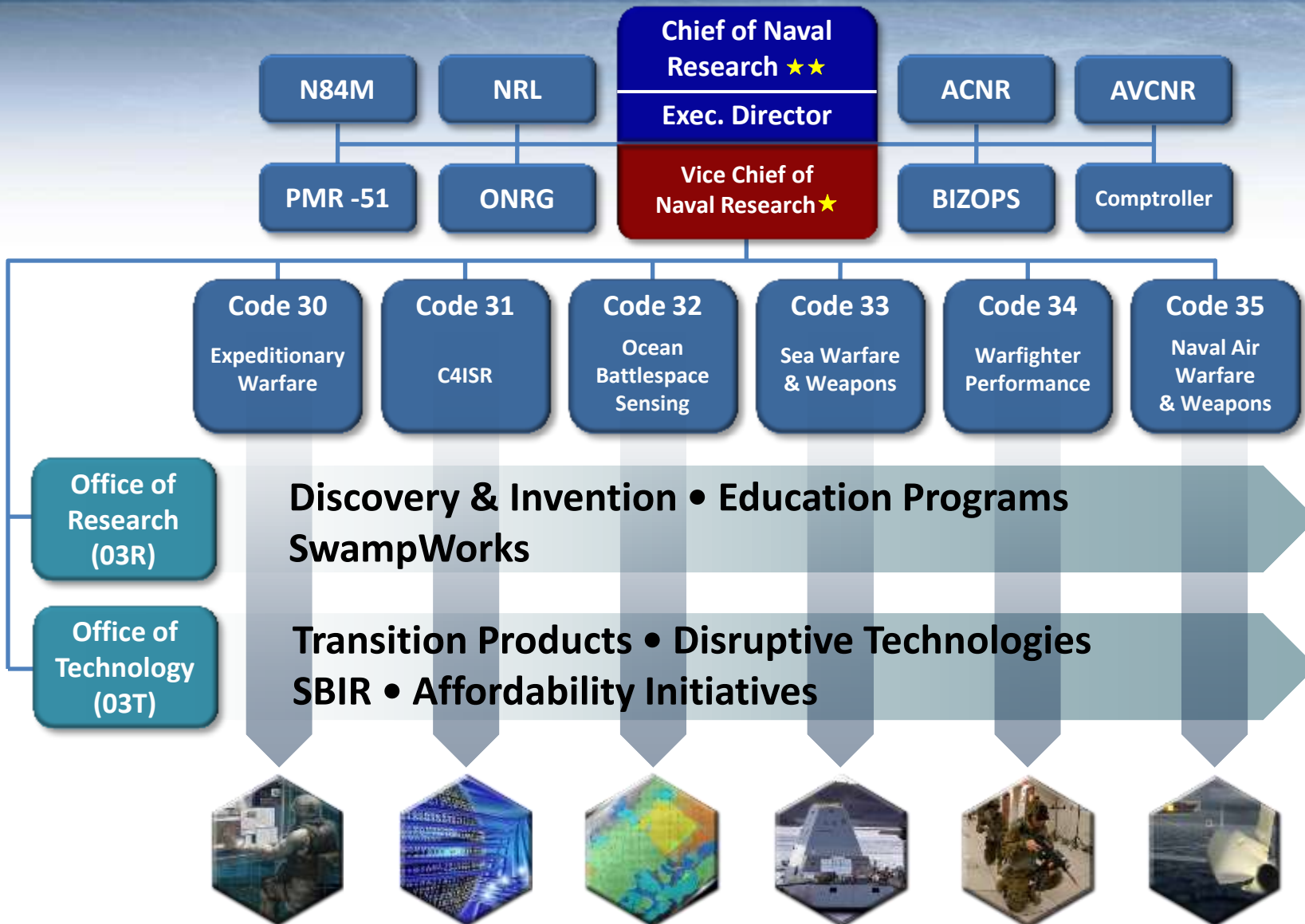


Warfighting Capabilities Enabled by S&T Investments





ONR Organization



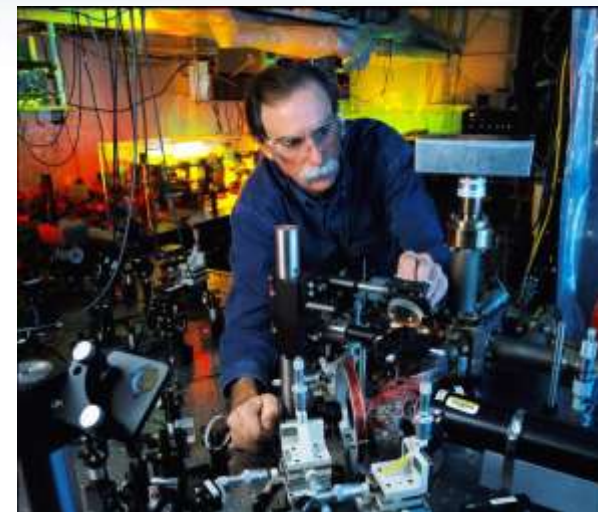
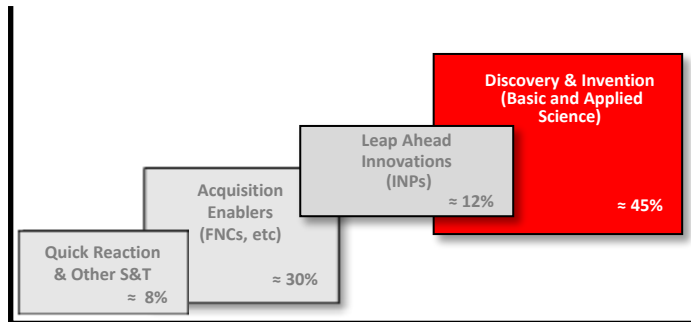




Discovery & Invention

Discovery & Invention S&T is the essential foundation required for advanced technology

- Focused on 5-20 years out
- Basic Research and early Applied Research
- All research maps to the Naval S&T Strategic Plan; the projects are the building blocks for Future Naval Capabilities (FNCs) and Innovative Naval Prototypes (INPs)



Dr. David Wineland won the 2012 Nobel Prize in Physics for his work in quantum computing.

Creativity Thrives in Discovery and Invention



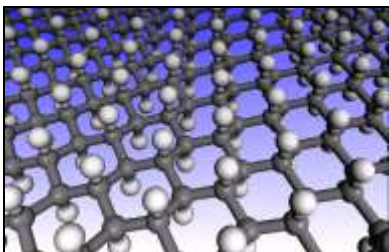
Discovery & Invention S&T: Yesterday, Today and Tomorrow



Yesterday: GPS – The origin of GPS began in 1960 when the Navy launched the *Transit* satellite constellation for submarine navigation. Today's GPS systems are possible because of ONR sponsored research in precision timekeeping. ONR funding currently sustains the atomic clock industrial base in U.S.



Today: Wide Bandgap Semiconductors – ONR funded basic research in the early 90's on Silicon Carbide & Gallium Nitride components led to the development of the wide bandgap semiconductors. This led to today's improvement in the E-2D aircraft, the S- Band Air & Missile Defense Radar (AMDR-S) and the NULKA offboard decoy

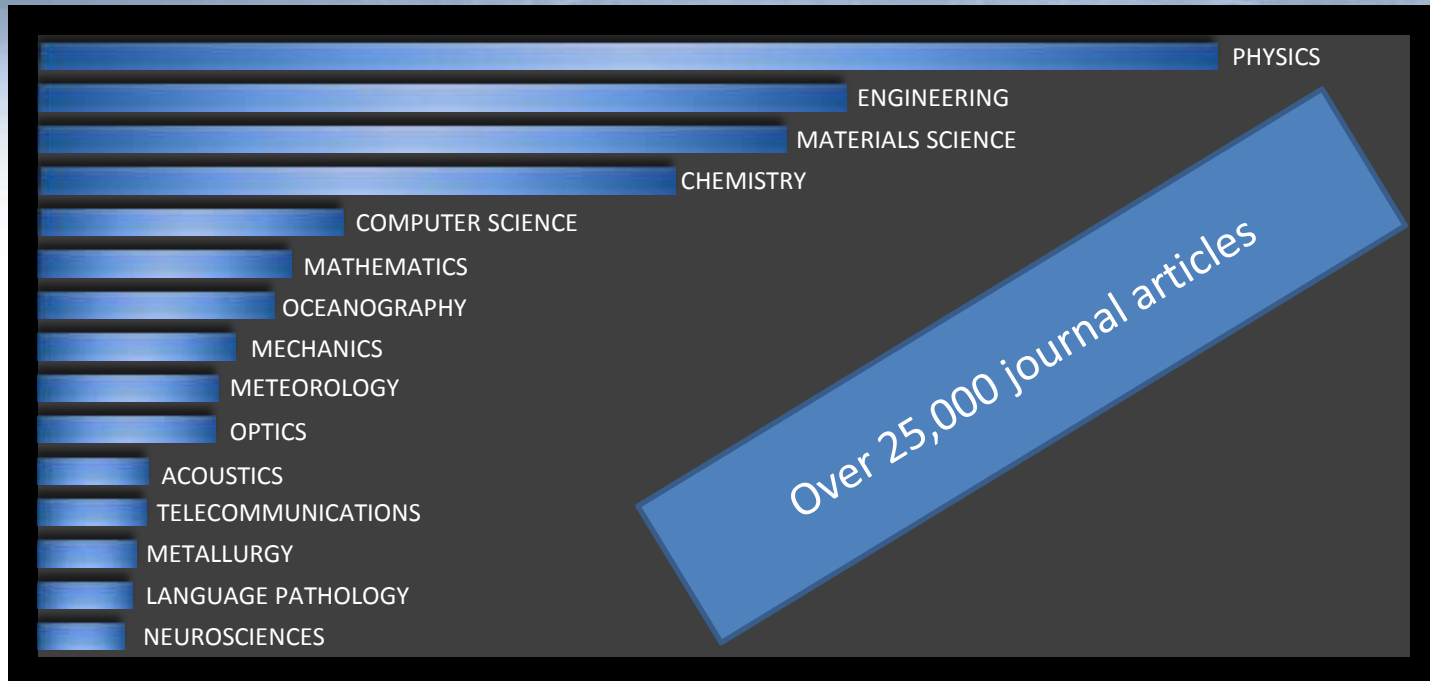


Tomorrow: Graphene-Graphane – A 2D carbon, Graphene/Graphane could lead to higher capability, lower size, weight and power electronics for Navy and Marine Corps systems.

Basic Research is the Foundation of the Navy's Newest Technologies

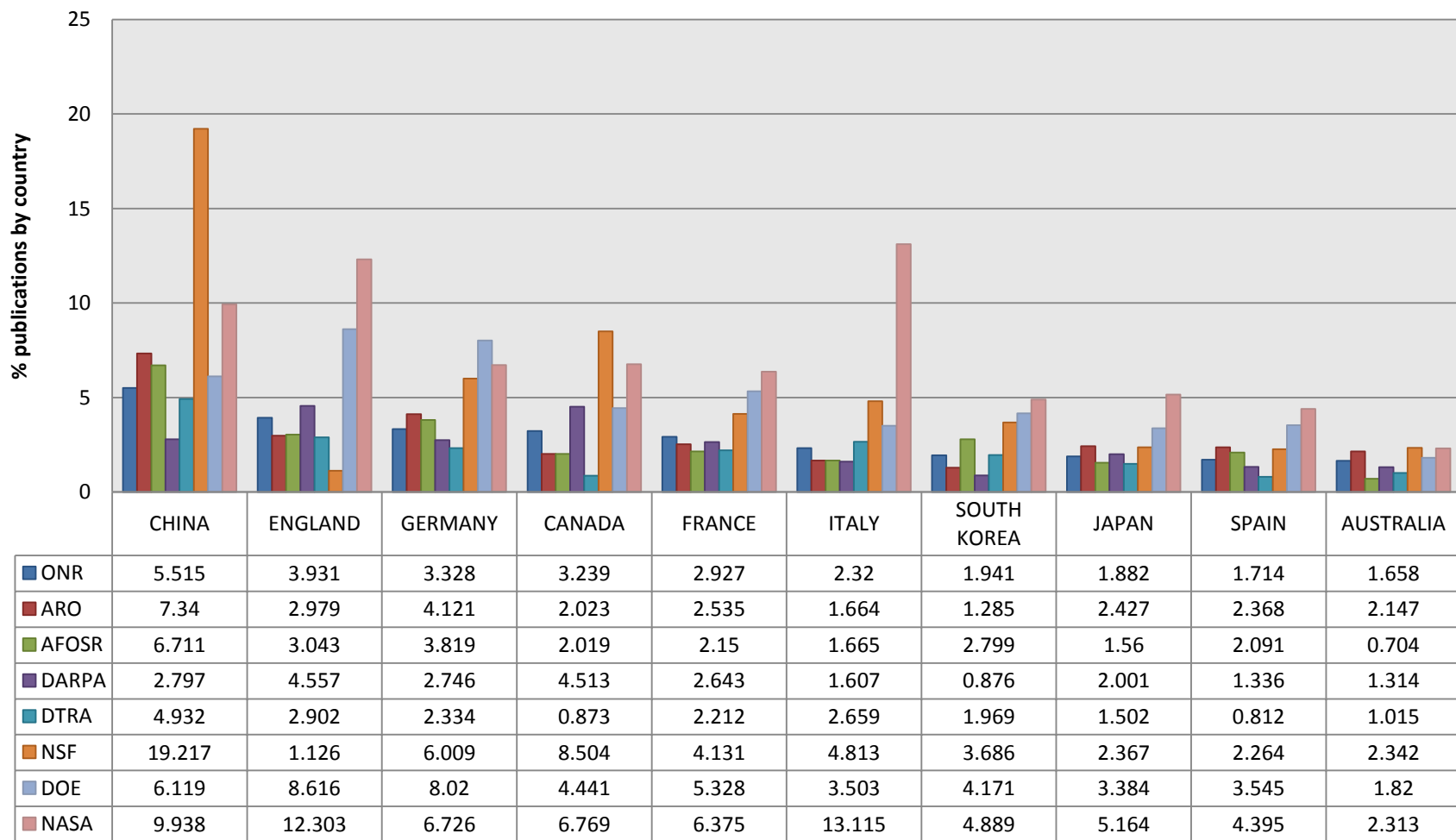


Top Research Areas: ONR Publications 2009-2014





Agency global research portfolio





Impact to scientific community: Highly cited publications

2. Fluid Mech (1973), vol. 57, part 1, pp. 785-796
Printed in Great Britain

Chorin, Alexandre Joel. "Numerical study of slightly viscous flow." *Journal of Fluid Mechanics* 57.04 (1973): 785-796.

786



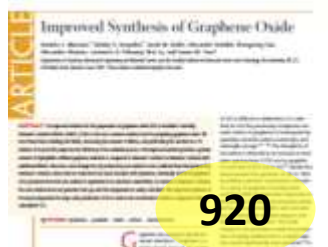
513

Ci, Lijie, et al. "Atomic layers of hybridized boron nitride and graphene domains." *Nature materials* 9.5 (2010): 430-435.



906

Martin, John H. "Glacial-interglacial CO2 change: The iron hypothesis." *Paleoceanography* 5.1 (1990): 1-13.



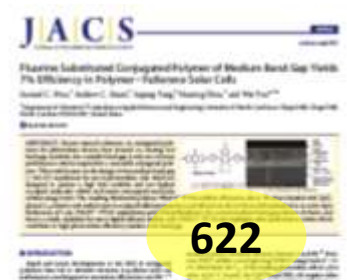
920

Marcano, Daniela C., et al. "Improved synthesis of graphene oxide." *ACS nano* 4.8 (2010): 4806-4814.



1853

Wright, John, et al. "Robust face recognition via sparse representation." *Pattern Analysis and Machine Intelligence, IEEE Transactions on* 31.2 (2009): 210-227



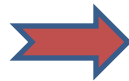
622

Price, Samuel C., et al. "Fluorine substituted conjugated polymer of medium band gap yields 7% efficiency in polymer- fullerene solar cells." *Journal of the American Chemical Society* 133.12 (2011): 4625-4631.

From Basic Science to the Fleet!

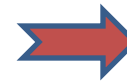
Basic Research

- **Cavitation Erosion Resistant Coating and Matrix Materials**
- **Hydro-Elasticity Effects of Composite Materials**
- **Large-Eddy Simulation of Crashback loads**



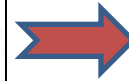
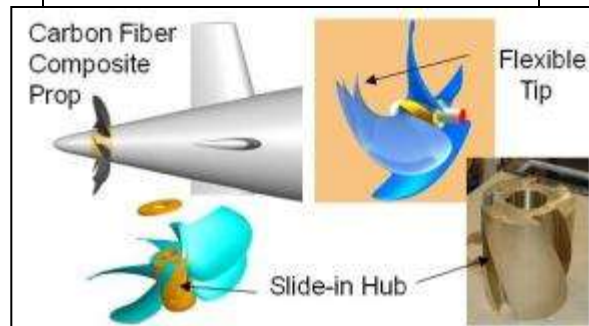
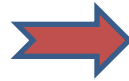
FNC

Pitch-adapting composite submarine propeller for enhanced performance with reduced weight, less maintenance and substantial acquisition and life cycle cost savings



Acquisition POR

- **SEA 073R Advanced Submarine Systems Development**
- **PEO SUB Virginia and Follow-on class submarines**



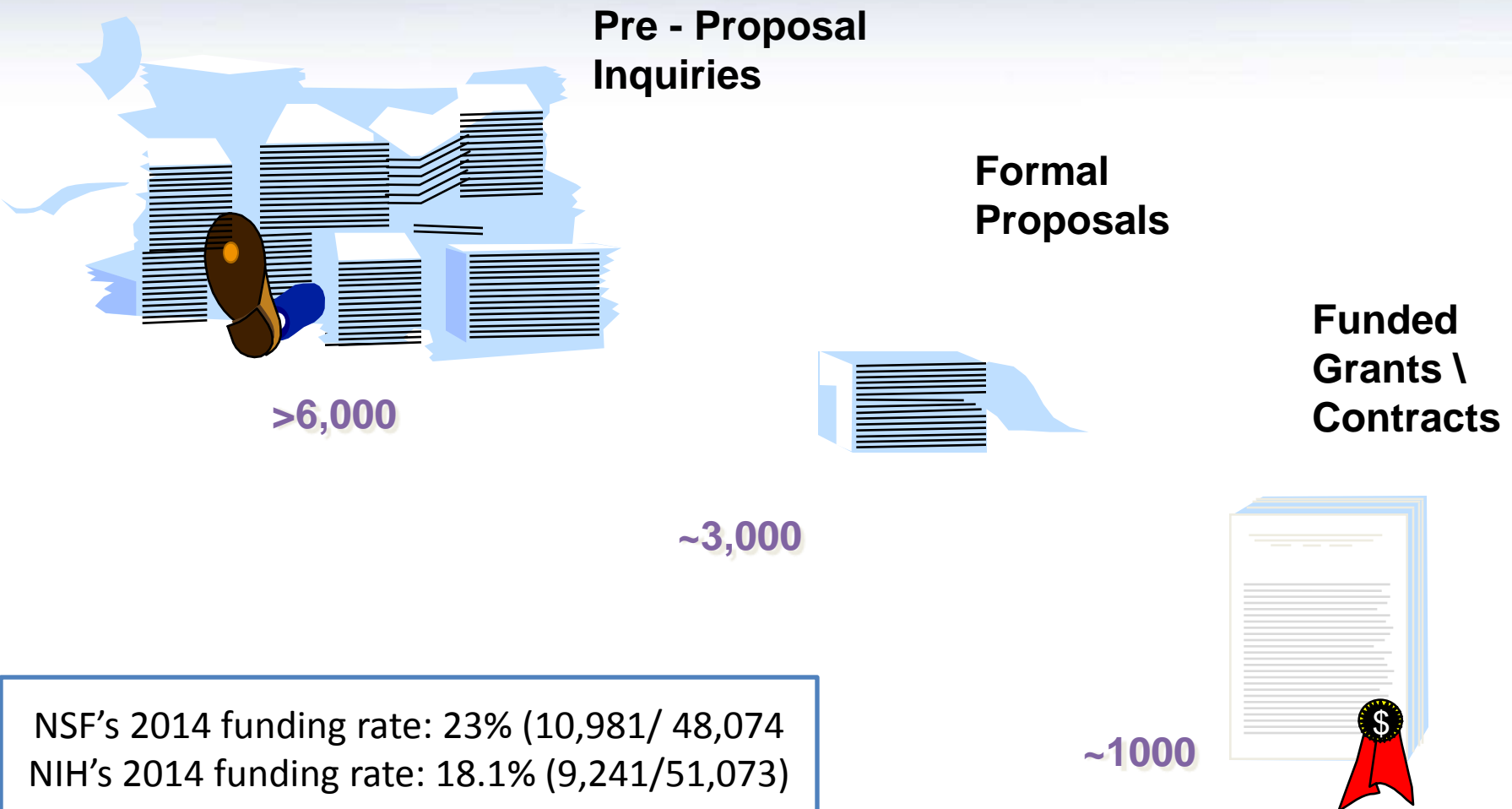
Academia

ONR's Unique Mission

Industry



Basic Research Proposal Success





Discovery & Invention University Research Programs

University Research Programs fund promising new research, stimulate innovation, and attract outstanding researchers to naval-relevant research projects

- The **Multidisciplinary University Research Initiative (MURI)** involves teams of researchers investigating high priority topics and opportunities that intersect more than one traditional technical discipline
- The **Defense University Research Instrumentation Program (DURIP)** supports university research infrastructure essential to high-quality naval-relevant research
- The **Presidential Early Career Award for Scientists & Engineers (PECASE)** recognizes and honors extraordinary achievements of young professionals at the outset of their independent research careers in S&T
- The **National Security Science & Engineering Faculty Fellowship (NSSEFF)** provides extensive, long-term financial support to distinguished university faculty and staff scientists and engineers to conduct unclassified, basic research on topics of interest to DoD

**Director of
Discovery & Invention**
(Dr. Joan Cleveland)

**University Research
Programs**
(Dr. Ellen Livingston)

- MURI
- DURIP
- PECASE
- NSSEFF

Enterprise Research
Programs

Laboratory Research
Programs



Discovery & Invention Enterprise Research Programs

Director of Discovery & Invention

University Research
Programs

Enterprise Research Programs *(Dr. Reginald Williams)*

- BRC
- ARC
- YIP
- Peer Review
- ROPO

Laboratory Research
Programs

Enterprise Research Programs develop scientific and fundamental knowledge, provide the basis for future Naval systems, and maintain the health of the defense scientist and engineer workforce

- The **Basic Research Challenge (BRC)** competitively selects and funds promising research programs in new areas not addressed by the current basic research program
- The **Applied Research Challenge (ARC)** stimulates new applied research projects in areas not currently addressed by the departmental core applied research programs and explores feasibility of basic research with high risk and significant potential naval payoffs
- The **Young Investigator Program (YIP)** supports academic science and engineering faculty who been on tenure track within the last five years and show exceptional promise for doing creative research



2014 YIP recipient Dr. Laura L.
Colgin, University of Texas, Austin

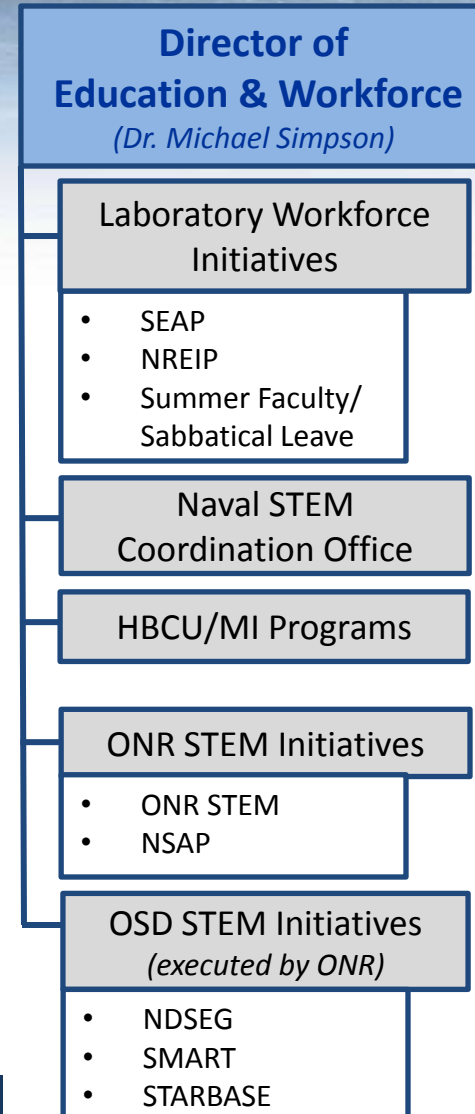


Education & Workforce

The Education & Workforce portfolio raises awareness of naval career opportunities, attracts and nurtures the future talent pool, and fosters the continued development of the current naval science, technology, engineering, and mathematics (STEM) workforce

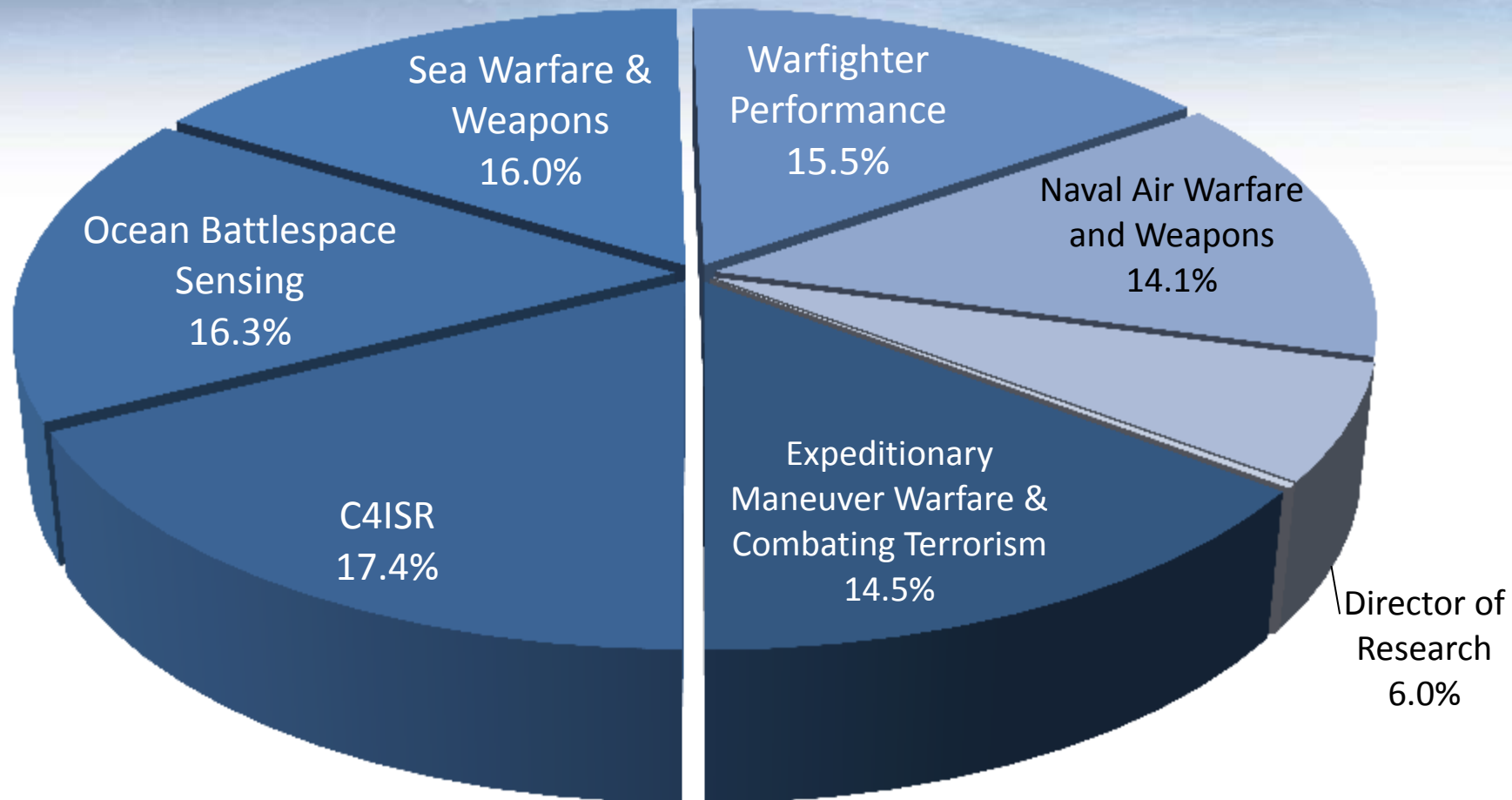
- Develop the workforce and capabilities needed today and in the future
- Emphasize Total Force approach to workforce development
- Align DON STEM portfolio with Federal and Office of the Secretary of Defense (OSD) directives in order to foster a highly competent and diverse DON STEM talent pipeline

Promote and Develop STEM Workforce & Capabilities





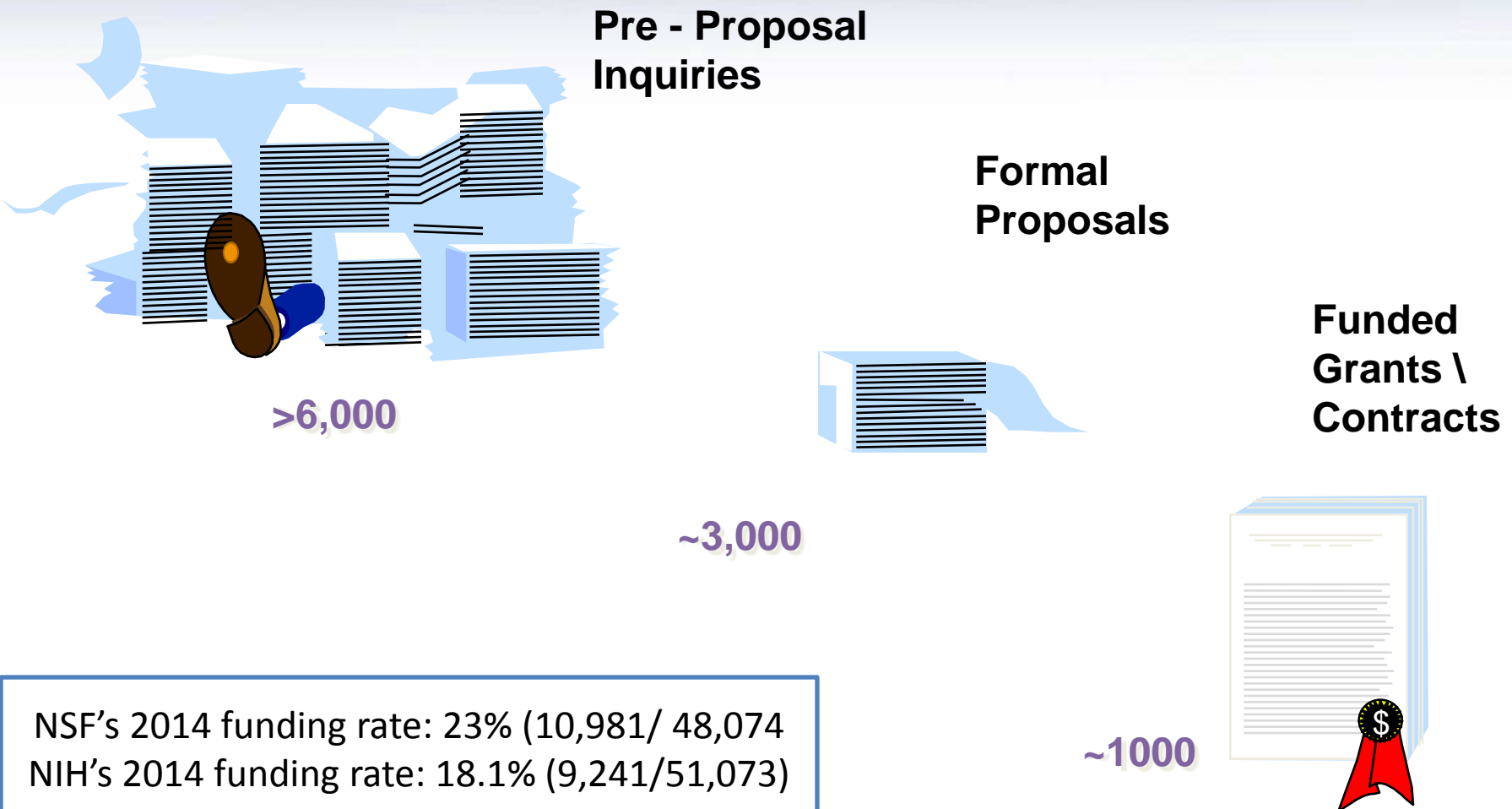
D&I Funding



**Total D&I Funding:
\$753.2M**



Basic Research Proposal Success



NSF's 2014 funding rate: 23% (10,981/ 48,074)
NIH's 2014 funding rate: 18.1% (9,241/51,073)



Sample of Activity with Florida Universities

University	# of Awards	Value of Awards (\$K)
Florida Atlantic University	7	1,841
Florida International University	2	650
Florida State University	14	11,137
The University of Central Florida	13	7,399
University of Florida	19	7,833
University OF South Florida	3	2,162



Finding Research Opportunities at ONR

<http://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities.aspx>

Who should I talk to?



Technology Locator

Glossary

Careers

Events

Search

ONR Global ▶

Marine Corps Warfighting Lab ▶

Naval Research Laboratory ▶

Naval Research Advisory Committee ▶

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Contracts & Grants

Education & Outreach

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Contracts & Grants

Solicitations

Broad Agency Announcements

Requests for Information

Requests for Proposals

Requests for Quotes

Special Notices

SeaPort-e

Submit a Proposal

Manage Your Contract

Manage Your Grant

Solicitations

- **Broad Agency Announcements (BAAs):** A BAA announces an agency's research interests including criteria for selecting proposals and soliciting the participation of all offerors capable of satisfying the government's needs. [See current BAAs](#)
- **Requests for Information (RFIs):** An RFI is used when a government agency does not presently intend to award a contract, but wants to obtain price, delivery, other market information or capabilities for planning purposes. Responses to these notices are not offers and cannot be accepted by the government to form a binding contract. [See current RFIs](#)
- **Requests for Proposals (RFPs):** An RFP is used in negotiated acquisitions to communicate government requirements to prospective contractors and to solicit proposals. [See current RFPs](#)
- **Requests for Quotes (RFQs):** An RFQ is a solicitation that provides in exacting detail a list or description of all relevant parameters of the requirement. RFQs are best suited to commercial products and services. [See current RFQs](#)
- **Special Notices:** These notices provide information about Industry Days, other events and other information that, while not captured in one of the other funding announcements, may be relevant to a given opportunity. [See current Special Notices](#)
- **Multiple-Award Task Order Contracts (MATOCs):** MATOCs were previously used by ONR for acquiring support services. As of Oct. 1, 2009, ONR now uses SeaPort-e for acquiring support services.
- **SeaPort-e:** This portal is the Nav's electronic platform for acquiring support services in 22 functional areas including



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