



Defense Technical Information Center: Traditional Resources and 21st Century Innovation

2014 Depository Library Council Meeting and Federal Depository Library
Conference
U.S. Government Printing Office
1 May 2014

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U.S. Government Work (17 USC§105) Not Copyrighted in the U.S. *Preserving Knowledge • Connecting People • Inspiring Innovation*



Who are we?

Defense Technical Information Center (DTIC)

located in the

Andrew T. McNamara Headquarters Complex (HQC)

Fort Belvoir, Virginia near Washington, DC

A Defense Field Activity reporting to the Assistant Secretary of
Defense for Research & Engineering (ASD(R&E))





Did you know...

DTIC

- Is older than the Department of Defense?
- Came into being in 1945 – a year before ENIAC, the first general-purpose electronic computer, was unveiled?
- Developed one of the world's first online bibliographic databases and fielded its first Web site in 1994?
- Has a collection of more than 3 million DoD technical reports?
- Serves the Science & Technology (S&T) community, acquisition workforce, warfighters, and other Government agencies, including the Departments of Homeland Security, Justice and State, and National Aeronautics & Space Administration (NASA)?



What do we do?

Serve the DoD community as the largest central resource for DoD and government-funded scientific, technical, engineering, and business related information available today

Provide tools to facilitate discovery, dissemination, and collaboration

Balance the need for open access against DoD's need to control access to information products and networks

Manage the Information Analysis Centers (IACs)

Host Web Sites for major components of DoD



Why do we do it?

By regulation, DoDI 3200.12, “DoD Scientific and Technical Information Program (STIP)”, mandates that DoD research including that done in-house and/or by contractors and grantees should be part of the DTIC collection.

Mission to provide essential, technical research, development, testing & evaluation (RDT&E) information rapidly, accurately and reliably to support our DoD customers’ needs



Contributors to the Collection

Defense Agencies

DoD Laboratories

DoD Research & Engineering (R&E) Contractors

Federally Funded R&D Centers (FFRDC) Nonprofit organizations conducting long-term R&D efforts

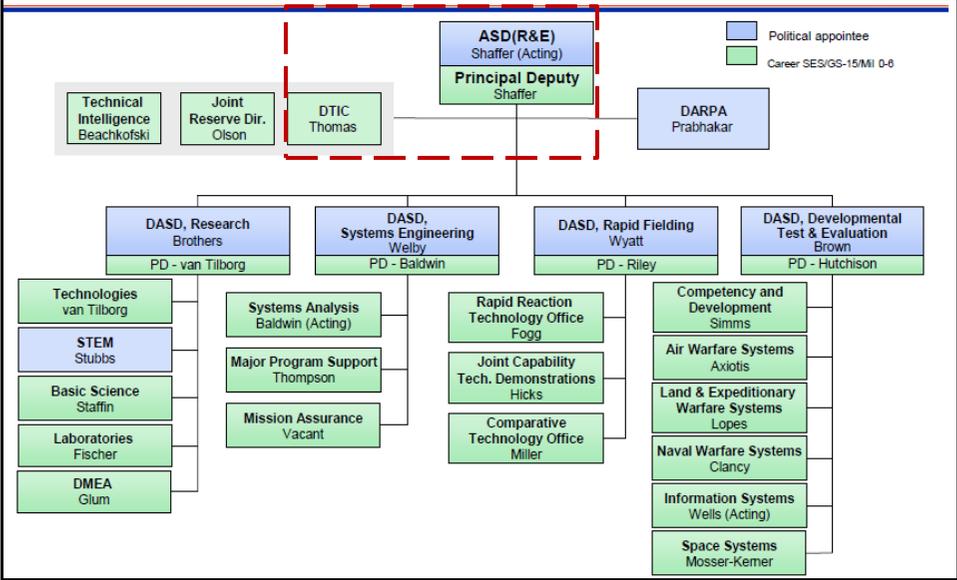
Universities/Military Service Schools

Small Business Innovation Research (SBIR) Awardees

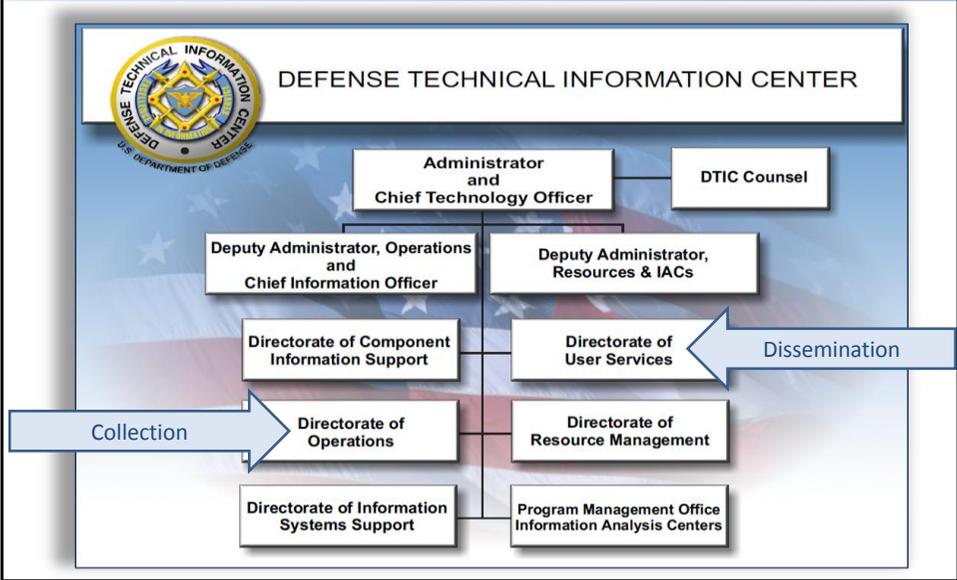
Other Federal Agencies and their Contractors

Foreign Governments under MoAs (Memorandum of Agreements)

DoD Field Activity for Assistant Secretary of Defense for Research and Engineering (ASD(R&E))



DTIC Organization Chart





DTIC Access Leads to Information, Connections and Collaboration

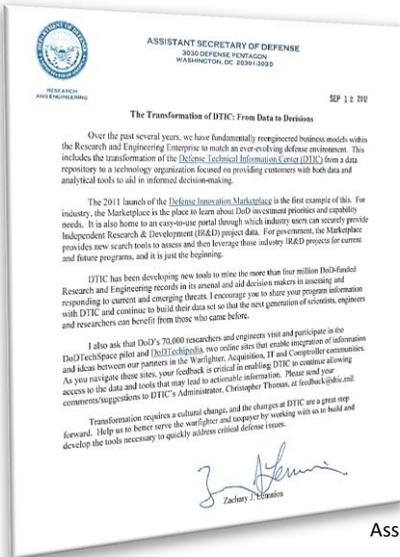
“The whole is greater than the sum of its parts.”

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DTIC Transformation



From Data to Decisions

Due to the ever-evolving defense environment, DTIC has transformed from a data repository to a technology organization focused on providing customers with both data and analytical tools to aid in informed decision making.

Letter dated 12 Sept 2012 by
The Honorable Zachary J. Lemnios,
Assistant Secretary of Defense for Research & Engineering



About DTIC

DTIC Mission

To provide essential, technical research, development, testing & evaluation (RDT&E) information rapidly, accurately and reliably to support our Department of Defense (DoD) customers' needs

DTIC Customers

Engineers, scientists, program managers, policy analysts, planners, librarians, information specialists, and more



DTIC's Key Role Since 1945

DTIC's Key Role in DoD S&T Information Program



- Manage S&T Information
- Maximize Resources
- Eliminate Duplication





Why Does DTIC Matter?



- Serves as centralized location for DoD funded scientific & technical (S&T) information
- Organizes and stores information permanently
- Leverages the multi-billion dollar investment in DoD research and engineering
- Prevents unnecessary or redundant research
- Provides support for research & development (R&D) activities
- Safeguards information with secure registration based on user authorization
- Gets digitized information to the right people at the right time



What Does DTIC Do?

- Acquires **information** and documents from the Research Development Test and Evaluation community (RDT&E)
- Develops **tools for collaboration** (secure wiki & professional networking sites)
- Preserves **scientific and technical (S&T) research** to avoid duplicative efforts
- Designs, executes, and hosts **Web pages/sites** for DoD components
- Performs **cataloging and indexing** of submitted documents
- Provides **training** for database searching, collaborative tools, and the DoD Scientific and Technical Information (STINFO) Manager Training Program
- Compiles **databases** and adds value with **secure registration**
- Manages the **Information Analysis Centers (IACs)**, providing specialized research and information services
- Provides customer outreach and **reference and research** support for users
- Provides and maintains **secure computer/server capabilities** to meet DoD needs





Navigating the DTIC Public Site: DTIC Online

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DTIC Online Public

<http://www.dtic.mil>

- Use for publicly accessible reports and resources
- Start here to register (if eligible) and link to controlled resources

<https://www.dtic.mil>
(Note: https)

Navigation Aids



**Access
Controlled
Resources:
Registration
required.**




DTIC Operating Status
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Customer Support

Defense Innovation Marketplace

R & E Gateway
DoD TechSpace

DoD Techpedia

Access Controlled Search

DoD Budget Tools

Information Analysis Centers (IACs)

DTIC News Wire



Reliance 21 Operating Principles: Bringing Together the DoD Science and Technology Enterprise

Reliance 21 is the overarching framework of the Department of Defense's (DoD) Science and Technology (S&T) joint planning...read more. Want to know more about Reliance 21.

1 2 **3** 4 5 6 7 8 9 10

Welcome to DTIC:

Provider of DoD Technical Information to Support the Warfighter

The Defense Technical Information Center (DTIC®) serves the DoD community as the largest central resource for DoD and government-funded scientific, technical, engineering, and business related information available today.

DTIC Strategic Plan 2011-2016

Quick Links

- ➔ Announcements
- ➔ DTIC Online Navigation Guide
- ➔ DTIC ToGo
- ➔ DTIC Transformation
- ➔ Enterprise Email Change
- ➔ Open Government
- ➔ R&E Gateway (Description)
- ➔ S&T Priorities for FY15 Budget - New
- ➔ Technical Reports
- ➔ Training

DEFENSE TECHNICAL INFORMATION CENTER
8725 John A. Kingman Road, Fort Belvoir, VA 22060-6218

No Fear Act | Privacy Act | Accessibility/Section 508 | FOIA | Contact Us | DTIC Online Help
Registration | DTIC A-Z | Submit Documents | Customer Support | S&T Resources
Announcements | Forms & Guides | IACs | Find It | About Us | USA.gov

DTIC A-Z



DTIC A-Z provides an alphabetical reference listing of all DTIC products, resources and services offered. Similar to a sitemap, here you will find links to all the information that can be found on DTIC Online.

- Navigates DTIC Online
- Indexes DTIC site, products, services, and support
- Easy to browse

DTIC A to Z

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

- About Us
- Acronyms
- Announcements
- Analytics
- ANSI/NISO Standard Z39.18, Scientific and Technical Reports - Preparation, Presentation, and Preservation
- Association for Information Science and Technology (ASIS&T)
- Ask a Librarian
- ASSIST Database (Military Standards and Specifications)
- AULIMP (Air University Library Index to Military Periodicals) **(Top of Page)**

B

- Briefing(s)
- Budget Data (DoD Congressional)
- Budget (Defense)
- Budget Tools
- (Top of Page)**

C

- Cataloging Guidelines **(PDF)**
- CENDI (Federal Scientific and Technical Information Managers Group)
- Collection - DTIC collection criteria
- Comptroller (DOD)
- Conferences
 - 2010 DTIC Conference Presentations
 - 2011 DTIC Conference
 - 2012 DTIC Conference
 - 2013 DTIC Conference
- Congressional Budget Data (DOD)
- Contributing documents or items to DTIC

DTIC® Guidelines for Determining Copy Rights

Purpose

Because R&D managers and STI information center staff are often uncertain about what to do with documents that come to them with copyright notices, these guidelines have been written to help managers and staff in determining Government rights in copyrighted works. However, they are not a substitute for professional legal advice. Because the copyright law is complex and situation-based, consult your agency legal counsel with specific copyright questions.

- 1) Is this a document authored by Government employees?
If yes, it is NOT COPYRIGHTED and the Government may reproduce and distribute the work.
- 2) Is this document a joint work by Government and non-Government authors?
If yes, the Government may reproduce and distribute works made jointly by non-Government parties and Government employees working within the scope of their Government jobs.
- 3) Is this a document produced by work done under Government contract?
If yes, the contractor usually owns the copyright and the Government has certain rights to the work. Generally the Government has unlimited or Government purpose rights and may reproduce and distribute the work.
- 4) Is this document the result of work done under a federally-funded grant?
If yes, the grantee usually owns the copyright and the Government has certain rights to the work. Generally the Government has unlimited or Government purpose rights and may reproduce and distribute the work.
- 5) Was this document received under an agreement, partnership or exchange?
If yes, the Government may have Government purpose rights in accordance with the agreement and may reproduce and distribute the work.
- 6) If none of the above apply, is your use a "fair use"?
If not, DO NOT reproduce or distribute without permission!

Definitions

PUBLIC RELEASE
"Public release" means information which is publicly disclosed and disseminated through open sources. The majority of public release information is copyrighted and available through newspapers, books, magazines, television, and the Internet. U.S. Government information that is publicly releasable has undergone appropriate security and policy reviews by agency Public Affairs Offices, and has been declared for open publication. Federal laws and agency policies govern the public release of U.S. Government information. Examples include Department of Defense Directive 5230.9, Clearance of DoD Information for Public Release, August 22, 2008 and DoD Instruction 5230.29, Security and Policy Review of DoD Information for Public Release, January 8, 2009.

U.S. GOVERNMENT WORKS
In the United States, works created by employees of the U.S. Government acting within the scope of their employment are excluded from domestic copyright protection under Title 17 USC § 105. Contractors and grantees are not considered Government employees; generally they hold copyright to works they produce for the Government.

Copyright Information

- Not all content found on government sites or in government information is free of copyright
- DTIC Guidelines:
 - DTIC Online →
 - DTIC A-Z → C →
 - Copyright

Quick Navigation Guide

Ask a Librarian	<p>Description: This digital, collaborative reference service is available 24 hours per day, 7 days per week. Questions are answered Monday – Friday, 8:30 a.m. – 5:00 p.m. Eastern Time.</p> <p>Find it: This service can be accessed from the banner on the DTIC homepage. http://www.dtic.mil/dtic/findit/askaLibrarian</p>
Corporate Source	<p>Description: The Corporate Source database lists the organizations that have provided information received by DTIC.</p> <p>Find it:</p> <ol style="list-style-type: none"> 1. Select search "Technical Reports" from the banner on the DTIC homepage. 2. Select the "Corporate Source" link in the right navigation menu. 3. Start your "Corporate Source Search". http://www.dtic.mil/dtic/search/tr/cs.html
Customer Support	<p>Description: The Customer Support area provides information on other DTIC informational needs.</p> <p>Find it: This area can be accessed using the banner on the DTIC home page. http://www.dtic.mil/dtic/customer/</p>
DTIC A to Z	<p>Description: DTIC A to Z is an alphabetical listing of subject headings to help locate information. If a resource cannot be located, please contact the DTIC Customer Support area.</p> <p>Find it: This service can be accessed using the banner on the DTIC home page. http://www.dtic.mil/dtic/findit/dticatoz.html</p>
DTIC Thesaurus	<p>Description: The thesaurus is an alphabetical listing of subject headings (descriptors) to index and catalog technical documents in the DTIC database for the purposes of reference and retrieval.</p> <p>Find it:</p> <ol style="list-style-type: none"> 1. Select search "Technical Reports" from the banner on the DTIC homepage. 2. Select the "Thesaurus" link in the right navigation menu. 3. Start your "DTIC Thesaurus Search". http://www.dtic.mil/dtic/search/tr/thesaurus.html

Quick Links

Open Government at DTIC **OPEN.GOV**

In January 2009, President Obama's first executive action was to sign the [Memorandum on Transparency and Open Government](#), which bridges the gap between the American people and their government.

Since its inception 65 years ago, DTIC has provided Americans with a broad range of scientific, technical, engineering and business related resources for academic research. This page serves to enhance our efforts to improve the exchange of public information by providing easy access to scientific and technical (S&T) resources as well as budgetary, social science, policy, and other multidisciplinary resources available in the DTIC collection and through the DTIC Online integrated search.

DoD Open Government

[Open Government @ DoD](#)

Recognition of DTIC's Open Government Initiatives

White House Innovations Gallery
22nd Annual Government Computer News (GCN) Award Winner

DTIC's Contribution to Data.gov

Corporate Source Authority System (CSAS)
DTIC Thesaurus

Public Technical Reports (Simple Search)

[Search Tips](#)

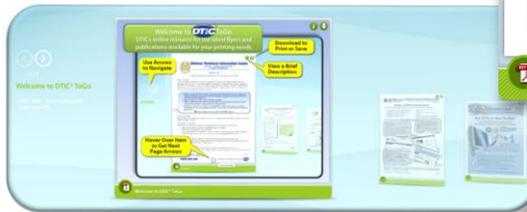
[Advanced Search](#)

Visit
DTIC ToGo @ www.dtic.mil
 for do-it-yourself printing of the
 latest DTIC handouts.

 **Next Page Hover Arrows**

 **More Information**

 **Print or Download**



A CONNECTED DoD = CHALLENGES SOLVED

- Discover Department of Defense (DoD) and Federally Funded Research, Development, Testing, and Evaluation with one search including documents, projects, experts, discussions and more
- Share, highlight, and interact using dynamic user-developed and community content
- Collaborate in a secure asynchronous virtual environment
- Leverage and increase group knowledge for innovation
- DTIC Register once, use often. No typing URLs, long multiple passwords, or tedious steps

DTIC REGISTRATION IS REQUIRED: <https://www.dtic.mil>

DTIC SEARCH combines traditional resources with dynamic user content. The new interface concurrently searches the most comprehensive text, conversations, and state-of-the-art technology with traditional DoD research project summaries and documents (technical reports and IAC documents). Report options include Slice, Explore and Referrals and enables paging and scheduling searches.

DTIC FINDERSPACE a professional Business Networking Tool adds interactive capabilities. Use this virtual collaborative environment to engage in dialogues, create content, coordinate projects and connect. Locate like-minded individuals. See the most current and group activities. Stay abreast of trends and items of mutual interest.

DoD TECHPEDIA, DoD's S&T (Science & Technology) wiki supports innovative solutions. Uncover the latest research updates or contribute and share your information. Launched in 2008, find five years of detail about technology challenges and solutions, opportunities, technical topics, institutions, and defense specific details. Link to Defense Communities for Defense only spaces and content.

WANT TO LEARN MORE ABOUT THESE RESOURCES?
 Watch for announcements about DTIC's webinars and other hands-on training opportunities. Our instructors focus on using these tools, searching DTIC and other resources, and submitting information to DTIC. Contact sp@dtic.mil for more information or to request a customized briefing.
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**DTIC Flyers
 for Your Organization**

Ask a Librarian

QuestionPoint is a Cooperative Virtual Reference service developed by OCLC (Online Computer Library Center) and the U.S. Library of Congress and is supported by institutions worldwide. This digital, collaborative reference service is available 24 hours per day, 7 days per week and allows libraries and information centers to expand reference services with shared resources and subject specialists around the world. Questions submitted by patrons via this Web-based digital reference service may be referred to the Global Network or to the consortium of Department of Defense (DoD) libraries for a response.

Find It Open All / Close

- Ask a Librarian
- DTIC A to Z
- Forms and Guides
- Free Online Reports
- Quick Navigation Guide

Name: _____
 *E-mail address: _____
 *Confirm e-mail address: _____
 Phone: _____
 *Question: _____
 *Reason for research: Select one _____
 *May we forward your question to another library? Yes No
 Asterisk (*) denotes required field. [Submit question](#) [Reset form](#)
 Patron login to check your questions and answers

DTIC reference focuses on DoD research, especially science and technology.

Service provided for eligible and registered users.

Full text can be downloaded but digitization can only be requested by registered users. Public purchases documents from NTIS.

S&T Resources/ R&E Gateway Contents

DTIC's Scientific and Technical Resources

The scope of DTIC's scientific and technical (S&T) collection covers all areas of defense research, including biological and medical science, environmental pollution and control, and behavioral and social science. The collection also contains Department of Defense (DoD) directives and instructions, budget information, conference and symposia proceedings, patents and patent applications, and other topics of interest to the defense community.

DTIC Online (Public) does not require registration and offers easy access to publicly accessible information.


**Controlled Access:
Government & Contractors**

DTIC Online (Public) does not require registration and offers easy access to publicly accessible information.

DoDTechSpace
A virtual collaboration environment for the community to engage in dialogue, create content, coordinate projects and connect with colleagues. It is a planning tool to coordinate, discuss, consolidate and track project data.

Search
Quickly discover public and access controlled DoD research projects and documents, as well as people, places and content from the DoDTechSpace community on your topic of interest. You can save time and money by finding current or past research data and discussions related to your project or people with the needed expertise.

DoDTechpedia
This collective will enable the sharing and updating of technology development information instantly by the community. Uncover the latest research updates or store and share your research data.

Analytics
Through this tool you can access S&T funding information. The data is displayed in charts and graphs that the user can manipulate and export. It also provides access to a wide range of business information on the DoD Labs. Open only to DoD personnel.

Budget Tools
Review and analyze DoD research and engineering funding data with quick links to nine Budget and Planning resource websites. Through these tools you have access to RDT&E data, programs, program elements, Procurement, Operations and Maintenance, Personnel, Program Objective Memorandum (POM), Budget Estimate Submission (BES), and Program Budget Review (PBR) budget cycles. These tools enable the Assistant Secretary of Defense for Research & Engineering (ASD(R&E)) resource managers to respond to changes proposed by Congress to the RDT&E budget. These tools also enable the Research, Development, Test and Evaluation (RDTE&E) community to follow, update and respond to requests related to the RDT&E budget cycle. In addition, they provide insight on the financial "mechanism" and facility investments made in DoD laboratories.

S&T Resources

- > S&T Links
- > Budget & Planning
- > DoD Congress
- > DoD Congress
- > Research and
- > (R&E)
- > Journals
- > NDA
- > OSTI Science
- > SciTech Core
- > Research in Prog
- > Biomedical
- > Defense Test
- > (DTIS)
- > Independent
- > Database
- > Unified Rese
- > Standards, Class
- > Department's
- > Classification
- > Technical Report
- > DTIC Search
- > Corporate
- > (S&T) Tools
- > Subject Cate

Why Controlled Access?

- Reports are provided to DTIC for secondary dissemination in accordance with release markings from the submitting agency
- Public release information is available to all through DTIC and other outlets (NTIS, science.gov, OCLC, .com search engines, etc.)
- Defense, among other agencies, has some information not releasable to public
- Reasons include proprietary, export control, etc.

DoD Congressional Budget



DoD Congressional Budget Data

This DTIC service for all DoD-related Congressional markup activities facilitates the timely analysis of Congressional budget decisions.

http://www.dtic.mil/congressional_budget/

DTIC promptly posts reports from the House and Senate committees that oversee DoD's operation and budget (6x/year)

Posted reports, available in PDF and Excel formats, are divided into 4 parts on DTIC website:

- (1) Research, Development, Test and Evaluation (RDT&E)
- (2) Procurement
- (3) Operation and Maintenance
- (4) Personnel

Accessible from public and access controlled sites

DTIC Online list messages notify registered users of updates



Congressional Budget Data

http://www.dtic.mil/congressional_budget

DoD Congressional Budget Data

Welcome to the Defense Technical Information Center (DTIC) sponsored DoD Congressional Budget Data website. From this site you can access DoD Congressional Budget data, in both PDF and Excel spreadsheet formats. DTIC's goal is to post the data from each report on this site after they are filed and made available on the [Thomas](#) (Library of Congress) website.

Disclaimer: The Congressional budget data contained on this site is based on the authoritative information found on Thomas, the Library of Congress Web site. DTIC scans the Congressional budget data and converts the information into Excel spreadsheets, which are easier to manipulate. The converted data is reviewed by DTIC to ensure accuracy; however some conversion errors can be overlooked. The scanning process is approximately 95% accurate. You can view the authoritative Congressional budget data at: <http://www.thomas.gov>.

Download: Select links in the table below to download PDFs or Excel spreadsheets of the associated sections of each report. Selecting the report link will allow you to download a PDF of the entire report.

FY2014 Reports	RDTE& PDF	RDTE& Spreadsheet	Procurement PDF	Procurement Spreadsheet	O&M PDF	O&M Spreadsheet	Personnel PDF	Personnel Spreadsheet
FY2014 HASC (House Report 113-102)	1.4MB	129K	158K	100K	188K	85K	102K	95K
FY2014 SASC (Senate Report 113-44)	1.1MB	131K	166K	125K	188K	113K	109K	152K
FY2014 HAC (House Report 113-113)	7.6MB	1.6MB	74K	1.8MB	95K	1MB	24K	892K
FY2014 SAC (Senate Report 113-85)	753K	151K	85K	211K	78K	120K	60K	81K
FY2014 Authorization Conference Report (House Report 113-66)	980K	142K	106K	130K	31K	162K	95K	146K
							1219K	67K
							1173K	64K

- Converts the President's budget plus each markup in Congress from PDF to Excel
- Usually posted within 2 business days
- Can be manipulated

[Accessibility: Section 508](#)



Comptroller

<http://comptroller.defense.gov>

UNDER SECRETARY OF DEFENSE (COMPTROLLER)

HOME ABOUT OUSD(C) FMR BUDGET MATERIALS BUDGET EXECUTION FINANCIAL MANAGEMENT

OFFICE OF THE UNDER SECRETARY OF DEFENSE (COMPTROLLER)

Welcome to the OUSD(C) Public Website

This website is designed to provide all of the information you need to understand the budget and financial management policy of the Department of Defense. In addition to budget numbers, justification materials, and performance measures you will also find information about the Department's ongoing effort to improve efficiency and accountability. As we continue to update and improve this website, we welcome your comments on how we can serve you better.

Under Secretary of Defense (Comptroller) and CFO



Honorable Robert F. Hale

As Under Secretary of Defense (Comptroller), Robert F. Hale is the principal advisor to Secretary of Defense Chuck Hagel on all budgetary and fiscal matters, including the development and execution of the Defense Department's annual budget of more than \$600 billion. As Chief Financial Officer, Mr. Hale also oversees the Department's financial policy, financial management systems, and business modernization efforts. [\(more\)](#)

[Biography](#) | [Speeches](#)

- Quick Links**
- Budget Materials
 - DoD Financial Accountability Message from U.S. Defense Secretary (SECDEF) Chuck Hagel
 - DoD Financial Management Regulation 7000.14-R (FMR)
 - DoD Agency Financial Report/Performance and Accountability Report
 - DoD Agency-Wide and Component Financial Statements
 - DoD Managers' Internal Control Program
 - DoD Reimbursable Rates
 - DoD Summary of Performance and Financial Information/Citizen's Report
 - Earnmarks
 - External Links
 - Financial Improvement and Audit Readiness (FIAR)
 - Financial Management Certification Program
 - FM Online (CAC Restricted)
 - Foreign Currency Fluctuation Report
 - Government-Wide Improper Payment Reporting

Research & Development Descriptive Summaries (RDDS)

Note: Since FY2011 for RDTE, and since FY2014 for Procurement, PDF documents are created from an XML file. These XML files are included as an attachment to most R-2/P-40 documents. To download the XML file: open the PDF file, find the attached file with the extension ".zzz" (paper clip icon), save this file to your local drive, change the extension from ".zzz" to ".zip", and open using WinZip.

Research and Development Descriptive Summaries (RDDS) furnish narrative information on Research, Development, Test and Evaluation (RDT&E) programs and Program Elements (PE Numbers) within the Department of Defense.



RDDs Record: Budget Project Narratives

1. [PDF] [Endurance Unmanned Aerial Vehicles](#)
 ... platform tipping and cueing of fused SIGINT, wide area and high-definition (HD) EO/IR motion imagery on a persistent lighter-than-air (LTA) airship. ...
 Service/Agency: Air Force
 Budget Activity: 7 - Operational Systems Development
 Program Element Number/Line Item: 0305205F
www.dtic.mil/descriptivesum/Y2012/AirForce/0305205F_7_PB_2012.pdf - 96k - [Text Version](#)

- Submitted with President's Budget
- Public release
- 12 pages
- Projects 5 years
- Useful to business community and planners
- PDF or text

UNCLASSIFIED

DATE: February 2011

APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE											
3600: Research, Development, Test & Evaluation, Air Force		PE 0305205F: Endurance Unmanned Aerial Vehicles											
BA 7: Operational Systems Development													
COST (\$ in Millions)		FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost	
Total Program Element		48.533	-	52.425	73.000	125.425	20.907	7.963	-	-	Continuing	Continuing	
675372: Integrated Sensor IS Structure		48.533	-	52.425	-	52.425	20.907	7.963	-	-	Continuing	Continuing	
676019: Blue Devil		-	-	-	73.000	73.000	-	-	-	-	Continuing	Continuing	

A. Mission Description and Budget Item Justification

This PE will focus USAF efforts on long endurance Remotely-Piloted Aircraft (RPAs), which allows days, months, or years of endurance as well as their associated sensors and communications suites. Efforts can include airships and more standard aircraft structures.

The Integrated Sensor IS Structure (ISIS) Program is developing a radar of unprecedented proportions that is fully integrated into a station keeping stratospheric airship. The ISIS will support the nation's need for persistent wide-area surveillance, tracking, and engagement of time-critical air and ground targets. Automated surveillance and tracking includes air targets to the radar horizon of 600 km and all ground targets to a range of 300 km. The radar aperture also provides track data and other communications directly to users in-theater. The system is expected to be launched from CONUS locations with a multi-year operational life. No support personnel or facilities are required in-theater. Efforts will include work on the ground station and the corresponding Processing, Exploitation, and Dissemination (PED) connectivity.

The Blue Devil II system is an Air Force led single ship technology and concept demonstration of multi-intelligence, cross-platform tipping and cueing of fused SIGINT, wide area and high-definition (HD) EO/IR motion imagery on a persistent lighter-than-air (LTA) airship. Blue Devil II will employ a payload integration infrastructure (PII) with a Command and Control (C2) and Processing, Exploitation, and Dissemination (PED) Ground Station. This effort directly supports multiple validated CENTCOM urgent needs, and contributes directly to force protection and counter Improved Explosive Device missions for coalition Forces.

Funds in both projects also cover activities to include studies and analysis to support both current program planning and execution and future program planning. This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

R&D Research/Funding Levels

DoD Financial Management Regulation Volume 2B, Chapter 5

0501 UNIFORM BUDGET AND FISCAL ACCOUNTING CLASSIFICATION

050201 RDTE & Budget Activities:

The RDTE&E budget activities are broad categories reflecting different types of RDTE&E efforts. The definitions are provided below.

Budget Activity 1. Basic Research. Basic research is systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind. It includes all scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs. It is farthest high payoff research that provides the basis for technological progress. Basic research may lead to: (a) subsequent applied research and advanced technology developments in Defense-related technologies, and (b) new and improved military functional capabilities in areas such as communications, detection, tracking, surveillance, propulsion, mobility, guidance and control, navigation, energy conversion, materials and structures, and personnel support. Program elements in this category involve pre-Milestone A efforts.

Budget Activity 2. Applied Research. Applied research is systematic study to understand the means to meet a recognized and specific national security requirement. It is a systematic application of knowledge to develop useful materials, devices, and systems or methods. It may include design, development, and improvement of prototypes and new processes to meet general mission area requirements. Applied research translates promising basic research into solutions for broadly defined military needs, short of system development. This type of effort may vary from systematic mission-directed research beyond that in Budget Activity 1 to sophisticated breadboard hardware, study, programming and planning efforts that establish the initial feasibility and practicality of proposed solutions to technological challenges. It includes studies, investigations, and non-system specific technology efforts. The dominant characteristic is that applied research is directed toward general military needs with a view toward developing and evaluating the feasibility and practicality of proposed solutions and determining their parameters. Applied Research precedes systems specific research. Program control of the Applied Research program element is normally exercised by general level of effort. Program elements in this category involve pre-Milestone B efforts, also known as Concept and Technology Development phase tasks, such as concept exploration efforts and paper studies of alternative concepts for meeting a mission need.

Budget Activity 3. Advanced Technology Development (ATD). This budget activity includes development of subsystems and components and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in a simulated environment. ATD includes concept and technology demonstrations of components and subsystems or system models. The models may be form, fit and function prototypes or scaled models that serve the same demonstration purpose. The results of this type of effort are proof of technological feasibility and assessment of subsystem and component operability and probability rather than the development of hardware for service use. Projects in this category have a direct relevance to identified military needs. Advanced Technology Development demonstrates the general military utility or cost reduction potential of technology when applied to different types of military equipment or techniques. Program elements in this category involve pre-Milestone B efforts, such as system concept demonstration, joint and Service-specific experiments or Technology Demonstrations. Projects in this category do not necessarily lead to subsequent development or procurement phases.

Budget Activity 4. Advanced Component Development and Prototypes (ACD&P). Efforts necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment are funded in this budget activity. The ACD&P phase includes system specific efforts that help expedite technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem military prior to integration in major and complex systems and may involve risk reduction activities. Program elements in this category involve efforts prior to Milestone B and are reported to an advanced component development activity and include technology demonstrations. Completion of Technology Readiness Levels 5 and 7 should be achieved for major programs. Program control is exercised at the program and project level. A logical progression of program phases and development and/or production funding must be evident in the FYDP.

Budget Activity 5. System Development and Demonstration (SDD). SDD programs have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting additional requirements prior to full-rate production. This activity is characterized by major line item projects and program control is exercised by review of individual programs and projects. Prototype performance is near or at planned operational system levels. Characteristics of this budget activity involve mature system development and demonstration to support Milestone C decisions, and conducting live fire test and evaluation (LFT&E) and initial operational test and evaluation (IOT&E) of production representative articles. A logical progression of program phases and development and production funding must be evident in the FYDP consistent with the Department's full funding policy.

Budget Activity 6. RDTE&E Management Support. This budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation. Test ranges, military construction, maintenance support of laboratories, operation and maintenance of test aircraft and ships, and studies and analyses in support of the RDTE&E program are funded in this budget activity. Costs of laboratory personnel, either in-house or contractor operated, would be assigned to appropriate projects or as a line item in the Basic Research, Applied Research, or Advanced Technology Development program areas, as appropriate. Military construction costs directly related to major development programs are included.

Budget Activity 7. Operational System Development. This budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year. All items are major line item projects that appear as RDTE&E Costs of Weapon System Elements in other programs. Program control is exercised by review of individual programs. Programs in this category include systems that have received Milestone C approval. A logical progression of program phases and development and production funding must be evident in the FYDP consistent with the Department's full funding policy.

- Referred to in DoD as BA1, BA2, etc.
- Funding is often tied to set level(s)
- Most used:
 - Basic Research
 - Applied Research

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- Special Equipment For User Testing**

... Threat Devices 2012 Georgia Tech Research Institut / Atlanta, GA C / CPFF
PEO STRI, Orlando, FL Jan 2012 Jun 2013 1 2,636,000 N ...

Service/Agency: Army
Budget Activity: 3 - Other Support Equipment
Program Element Number/Line Item: MA6700
Appropriation Number: 2035A
[web-stg.dtic.mil/procurement/Y2014/Army/P40_MA6700_BSA-90_BA-3_APP-2035A_PB_2014.pdf - 213k - Text Version](#)
- Container Family**

... 1) Container Family 1) Pallet Containers (PALCONS) 2011 Plastic Research Corp / Ontario, CA C / FFP MCSC, Quantico, VA Sep 2011 Sep 2011 ...

Service/Agency: Navy
Budget Activity: 6 - Engineer and Other Equipment
Program Element Number/Line Item: 6543
Appropriation Number: 1109N
[web-stg.dtic.mil/procurement/Y2014/Navy/P40_6543_BSA-3_BA-6_APP-1109N_PB_2014.pdf - 70k - Text Version](#)
- High Perf Computing Mod Fgm (HPCMF)**

... By exploiting continuous advances in high performance computing technology, the defense research, development, test and evaluation (RDTE&E) ...

Service/Agency: Army
Budget Activity: 2 - Communications and Electronics Equipment
Program Element Number/Line Item: B66501
Appropriation Number: 2035A
[web-stg.dtic.mil/procurement/Y2014/Army/P40_B66501_BSA-92_BA-2_APP-2035A_PB_2014.pdf - 63k - Text Version](#)
- EP-3 Series**

... Research and Development is funded with National Security Agency (NSA) Military Intelligence Program (MIP) funds. This ...

Service/Agency: Navy
Budget Activity: 5 - Modification of Aircraft
Program Element Number/Line Item: 0537
Appropriation Number: 1506N
[web-stg.dtic.mil/procurement/Y2014/Navy/P40_0537_BSA-1_BA-5_APP-1506N_PBAmmended_2014.pdf - 451k - Text Version](#)
- Power Plant Changes**

... are discovered, researched, and solutions engineered. The Component Improvement Program which is funded in Research Development Test & ...

Service/Agency: Navy
Budget Activity: 5 - Modification of Aircraft
Program Element Number/Line Item: 0570
Appropriation Number: 1506N



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RDTE/Procurement Search

This data, submitted on various dates, represents the approved President's Budget for all years.

Budget: All ▾

Program Element Title:

Program Element Number /Line Item:

Appropriation Number:

Budget Activity: All ▾

Budget Sub Activity (Procurement Only): All ▾

Fiscal Year: All ▾

Service/Agency: All ▾

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RDTE Budget Activities

2000 - 2004 [Budget Activity Definitions](#)

2005 - 2014 [Budget Activity Definitions](#)

Note: Since FY2011 for RDTE, and since FY2014 for Procurement, PDF documents are created from an XML file. These XML files are included as an attachment to most R-2 documents. To download the XML file: open the PDF file, find the attached file with the extension ".zzz" (paper clip icon), save this file to your local drive, change the extension from ".zzz" to ".zip", and open using WinZip.



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- Citations 1988 -



The Joint Forces Staff College Ike Skelton Library is a specialized military library, focusing on research in joint and multinational operations, military history and naval science, operational warfare, and operations other than war. Library staff members regularly scan the weekly news magazines, monthly and bimonthly journals such as *Military Review*, *Armed Forces Journal*, and quarterly publications, including NATO's *Nations and Partners for Peace*, *RUSI Journal*, and the *Naval War College Review*. Miscellaneous reports from RAND and the General Accounting Office are also indexed for SCAMPI. The resulting database serves as a guide to articles on military and naval art and science, operational warfare, joint planning, national and international politics, and other areas researched by JFSC faculty, staff, and students. The SCAMPI database covers the period from 1985 thru the present.

The [Defense Technical Information Center \(DTIC\)](#) hosts this web-based version of the SCAMPI. Several of the journals indexed in SCAMPI have independent Internet web sites. Please feel free to visit the individual journal home pages to see exactly what each publication journals indexed for SCAMPI is provided as a resource for SCAMPI searches.

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- Researched by Joint Forces Staff College
- 1985 -

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NDIA
National Defense Industrial Association

Conference Proceedings

2013 2012 2011 2010 2009 2008 2007 2006 2005 2004 2003

2013

- 2013 Armaments and Munitions Forum, 12 - 13 November 2013, Picatinny, NJ
- 18th Annual Expeditionary Warfare Conference, 29 - 31 October 2013, Portsmouth, VA
- 16th Annual System Engineering Conference, 29 - 31 October 2013, Arlington, VA
- 2013 Insensitive Munitions & Energetic Materials Technology Symposium, 7 - 10 October 2013, San Diego, CA
- 2013 Tri-Association (TRIAD) Small Business Advisory Panel, 26 September 2013, Springfield, VA
- 10th National Small Business Conference, 25 September 2013, Springfield, VA
- 2013 Ground Robotics Symposium, 17 September 2013, Springfield, VA
- The State of Integrated Air and Missile Defense, 11 July 2013, John Hopkins, MD
- National Logistics Forum, 13 - 14 June 2013, Arlington, VA
- 2013 SOFIC (Special Operations Forces Industry Conference), 14 - 16 May 2013, Tampa, FL
- Global Explosive Ordnance Disposal Conference and Exhibition, 1 - 2 May 2013, Fort Walton Beach, FL
- 14th Annual Science & Engineering Technology Conference/Defense Tech Exposition, 24 - 26 April 2013, Natick Harbor, MD
- Precision Strike Annual Review (PSAR-13), 19 - 20 March 2013, Springfield, VA
- 24th Annual SOL/LIC Symposium & Exhibition, 28 - 30 January 2013, Washington, DC

2012

- 2012 Homeland Security Symposium, 13 - 14 November 2012, Arlington, VA
- 12th Annual CMMI Technology Conference and User Group, 5 - 8 November 2012, Denver, CO

- National Defense Industrial Association (NDIA)
- Conference proceedings
- 90-day period before full public release (unclassified, unlimited events)

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<http://www.dtic.mil/whs/directives/index.html>

DoD Issuances

The Official Department of Defense Website for DoD Issuances

ANNOUNCEMENTS

Recent DoD issuance standards and templates updates include:

- Change 1 to DoD 5025.01 has been published. Major changes include: directives standard is now 10 pages; formal legal adjudication review not required. See 5025.01 online for all changes. "Processing DoD Issuances" and "Processing All and DABN/WHIS Issuances" have been updated.
- DoD Issuances training classes: Click here for more information and for class registration.
- Correction 3/31/2014: DoD 2000.13: see 1H of Enclosure 2.
- Effective 10/1/2013, legal objectionable reviews are optional, except for Federal Register issuances.
- 9/26/2013: There are online training modules available from stage 1A to 2D of the DoD Issuance Process.
- 8/19/2013: An updated version of the SD Form 106 is now available. Issuances that are in precoordination or legal objectionable review must use the new version. If your SD 106 has already been sent for signature, conversion isn't required.
- 8/16/2013: The office of the Secretary

NEW STANDARDS **FEDERAL REGISTER ISSUANCES** **Website Map** **LATION**

Effective November 30, 2012: Issuances sent for precoordination review must follow the standard format approved on 6/15/2012 (see standards tab). Effective 1/1/2013, all issuances sent to the Directives Division must follow that standard.

- DoD Directive Standards
- DoD Instruction Standards
- DoD Manual Standards
- Directive-Type Memo Standards
- Administrative Instruction Standards
- Standards for making changes to DoD Issuances

IMPORTANT LINKS **TOP 10 REQUESTED ISSUANCES** **SEARCHING FOR DOD ISSUANCES**

- Information on the Civilian Personnel Manual (DoD 1400.25-1)
- New SD Form 106, Aug 2013
- Information on Training Classes
- Offices with Access to DoD Directives Portal
- Search for Issuances that are cancelled, expired or no longer available in the Cancellation Database

Download the Adobe Acrobat Reader: [DOWNLOAD](#)

THE ISSUANCE PROCESS:
Requirements, Templates, and Instructions to assist Components in developing and coordinating DoD Issuances

WEBSITE UPDATES ON TWITTER

Current website updates can be found on our public Twitter feed. Updates include new issuance releases and cancellations, updates to IIC, changes to issuance process documents and training class information. A Twitter account is not necessary to view this information.

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- DoD Dictionary
- Capstone Concept for Joint Operations (CCJO)
- *JEL+ Access Controlled*

<http://www.dtic.mil/doctrine/>

S&T Resources: Security Classification Guides

- Access controlled for U.S. government and their contractors
- Index is key to finding the guides

Department of Defense (DoD) Index of Security Classification Guides

Department of Defense (DoD) Index of Security Classification Guides (SCGs) assists DOD component officials in determining whether their existing security classification guidance may be relevant to their systems, programs, plans, or projects. The Index is limited and marked as Distribution C: Distribution Authorized to U. S. Government Agencies and their Contractors.

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DTIC® has identified 25 broad subject fields and 251 groups to categorize the areas of scientific and technical interest. These fields and groups provide the structure for the subject grouping of technical reports in DTIC's collection and are used to define the areas of need-to-know in distributing these reports. Through this site, you will find the subject coverage for each subject category, as well as cross-references to related fields and groups.

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Subject Categorization Guide for Defense Science & Technology
 Alphabetical Index to the SCG, September 2009
 Numeric Index to the SCG, September 2009

13/10/01	systems
19/10	Ballistic missile submarines
19/10	Ballistic trajectories
19/10	Ballistics
19/01	Ballistite
06/05	Ballistocardiography
01/03/11	Balloon equipment
01/03/11	Balloons
01/03/11	Balloonsondes
19/40	Balloting (Interior ballistics)

01 Aviation Technology	
01/01	Aerodynamics
01/02	Military Aircraft Operations
01/03	Aircraft
01/03/01	Helicopters
01/03/02	Bombers
01/03/03	Attack and Fighter Aircraft
01/03/04	Patrol and Reconnaissance
01/03/05	Transport Aircraft
01/03/06	Training Aircraft
01/03/07	V/STOL
01/03/08	Gliders and Parachutes
01/03/09	Civilian Aircraft
01/03/10	Pilotless Aircraft
01/03/11	Lighter-than-air Aircraft
01/03/12	Research and Experimental
01/04	Flight Control and Instrumentation
01/05	Terminal Flight Facilities
01/06	Commercial and General Aviation

Hierarchical Structure

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01	Aerodynamics
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03	Aircraft
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0303	Attack and Fighter Aircraft
0304	Patrol and Reconnaissance Aircraft
0305	Transport Aircraft
0306	Training Aircraft
0307	V/STOL
0308	Gliders and Parachutes
0309	Civilian Aircraft
0310	Pilotless Aircraft
0311	Lighter-than-air Aircraft
0312	Research and Experimental Aircraft
04	Flight Control and Instrumentation

Accession Number : ADA587008

Title : Design of a Lighter Than Air Vehicle That Achieves Positive Buoyancy in Air Using a Vacuum

Descriptive Note : Master's thesis

Corporate Author : AIR FORCE INSTITUTE OF TECHNOLOGY WRIGHT-PATTERSON AFB OH GRADUATE SCHOOL

Personal Author(s) : Metlen, Trent T

Full Text : <http://www.dtic.mil/get-tr-doc/pdf?AD=ADA587008>

Report Date : Jun 2012

Pagination or Media Count : 188

Abstract : Three designs for a Lighter Than Air (LTA) structure that achieve positive buoyancy using a vacuum in proportion of structure weight to the weight of displaced air was termed Weight/Buoyant Force (W/B) where a W/B1 corr geometrically stiffening a sphere were investigated and their W/B evaluated. A thin shelled sphere of beryllium stiff High Modulus (UHM) carbon epoxy was predicted to give a W/B= 0.79. A geodesic sphere composed of a frame of a thin external membrane was evaluated using Finite Element Analysis. A W/B=0.57 was calculated for the frame. Zylon was used to reinforce a Mylar membrane, which resulted in a predicted structure W/B=0.94. These structure optimization routine in Matlab. A unique LTA vehicle concept composed of twin counter-rotating cylinders that maintain structural integrity with a vacuum was also investigated and found to be infeasible.

Descriptors : *AIRCRAFT, BUCKLING, GEODESICS, OPTIMIZATION, SPHERES, STRUCTURES, THESESES, VA

Subject Categories : Lighter-than-air Aircraft

Distribution Statement : APPROVED FOR PUBLIC RELEASE



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Acronyms

Use these specialized government and military-related acronym and abbreviation resources to identify terms, clarify jargon and otherwise become familiar with the language of science and technology. Resources are not intended to be comprehensive in scope.

[DoD Dictionary and the Joint Acronyms and Abbreviations](#)

[DTIC Acronyms](#)

[Glossary of Defense Acquisition Acronyms & Terms](#)

[Government Resources- Indiana University-Purdue University Indianapolis Abbreviations and Acronyms of the U.S. Government](#)

[Joint Staff Officers Guide G-1 Glossary of Terms and Definitions](#)

[MCTL List of Acronyms and Abbreviations](#)

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[Plan for Operationally Responsive Space, Appendix C: Acronym List](#)

[RAND Acronym List](#)

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Acronyms User Council

Links to several official and professional acronym lists

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STINFO Documents

ABCDEFGHIJKLMNOPQRSTUVWXYZ

Notwithstanding the "T" distribution indicated on these documents, all AFI instructions are approved for public release.

A

AFI 61-201, The Local Scientific and Technical Information Process. The instruction establishes the procedures, processes, and management guidelines for local STINFO Officers. Duties are listed, including Office of Primary Responsibility (OPR) ones. Attachments 1 and 2 are compliance checklists. This instruction is under revision.

AFI 61-202, United States Air Force Technical Publications Program. The instruction provides policy and assigns responsibilities for the preparation, processing, and distribution of Air Force technical publications generated in-house or by contract or grant. This instruction is under revision.

AFI 61-203, The Work Unit Information System.

- Customer Support**
- > Acronyms
 - > User Council
 - > Communications
 - > Training

- Resource of collected guidance
- Training descriptions

DoD STINFO Program Manager

The DoD STINFO Manager Training Program increases attendees' knowledge of the DoD STINFO program, provides instruction to the management and conduct of an organizational STINFO program, and facilitates more direct information exchange among those who oversee scientific and technical information programs (STIP). The Basic STINFO Manager Training Program course is three days, but selected modules can be taught in one- or two-day sessions.

STINFO Manager Overview

A one-day overview of the most significant material covered in the three-day class, this is intended as a refresher for experienced STINFO personnel or as an introduction for those new to the field.



DoD Information Analysis Centers (IACs)

Research data and analysis by subject matter experts available to DTIC users

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IAC: DoD Think Tanks



4 Hours of Research Free

Information Analysis Centers (IACs)
 Research and analysis organizations established by the DoD to support researchers, scientists, engineers, and program managers with expertise in all areas of Defense research and engineering.

With their broad footprint across DoD, IACs allow the Department to reduce duplication, building on previous research, development, and operational experience.

For the most up-to-date information:
<http://www.dtic.mil/dtic/iac/>



Cyber Security & Information Systems Information Analysis Center (CSIAC)

Technical Focus Areas:

1. Software Data & Analysis
2. Information Assurance (IA)
3. Modeling & Simulation (M&S)
4. Knowledge Management & Information Sharing



Cyber Security & Information Systems
 Information Analysis Center

<https://www.thecsiac.com/>



 **Defense Systems
Information Analysis Center (DSIAC)**

Technical Focus Areas:

1. Weapons Systems
2. Autonomous Systems
3. Survivability & Vulnerability
4. Reliability, Maintainability, Quality, Supportability, & Interoperability (RMQSI)
5. Advanced Materials
6. Military Sensing
7. Energetics
8. Directed Energy
9. Non-lethal Weapons



Defense Systems
Information Analysis Center

<https://dsiac.org/>



Site under
development

 **Homeland Defense & Security
Information Analysis Center (HDIAC)**

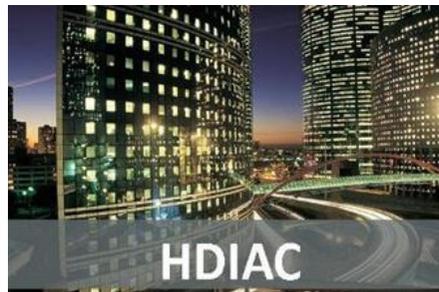
Technical Focus Areas:

1. Homeland Defense & Security
2. Critical Infrastructure Protection (CIP)
3. Weapons of Mass Destruction (WMD)
4. CBRN Defense
5. Biometrics
6. Medical
7. Cultural Studies
8. Alternative Energy



Homeland Defense & Security
Information Analysis Center

<https://www.hdiac.org/>



Site under
development

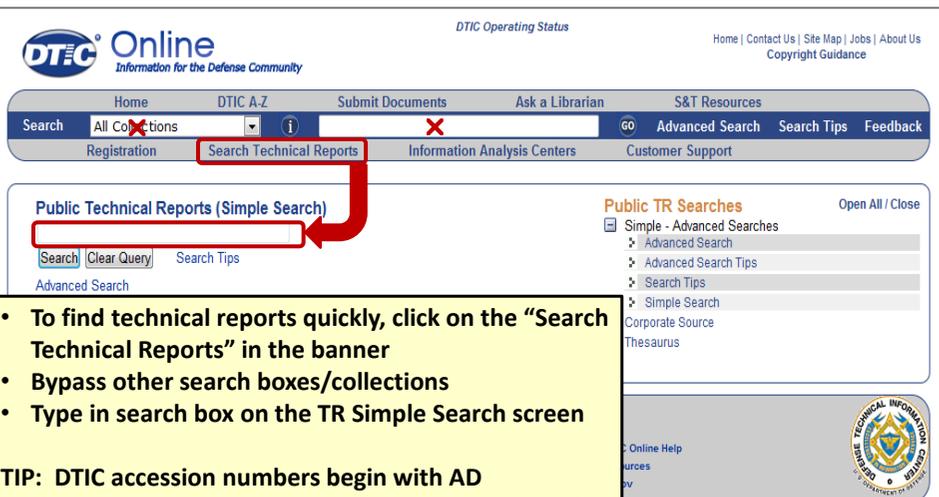


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Public Technical Reports (Simple Search)

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[Advanced Search](#)

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- Simple - Advanced Searches
 - Advanced Search
 - Advanced Search Tips
 - Search Tips
 - Simple Search
- Corporate Source
- Thesaurus

- To find technical reports quickly, click on the “Search Technical Reports” in the banner
- Bypass other search boxes/collections
- Type in search box on the TR Simple Search screen

TIP: DTIC accession numbers begin with AD

- If you have a number beginning with AD, try DTIC's TR search

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Information for the Defense Community

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DTIC News Wire

NRL Team Works with DTRA to Better Predict Deadly Diseases

U.S. Naval Research Laboratory (NRL) scientists have spent the past two years helping the Defense Threat Reduction Agency (DTRA) better predict pending epidemics and regional disease outbreaks. This objective is at the heart of two linked programs at DTRA. First, the 24 Month Challenge read more

1 2 3 4 5 6 7 8 9 10

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The Defense Technical Information Center (DTIC®) serves the DoD community as the largest central resource for DoD and government-funded scientific, technical, engineering, and business related information available today .

DTIC Strategic Plan 2011-2016

Quick Links

- S&T Priorities for FY15 Budget - New PDF
- Announcements
- DTIC Online Navigation Guide
- DTIC ToGo PDF
- DTIC Transformation PDF
- Enterprise Email Change
- Open Government
- Technical Reports
- Training

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8725 John J. Kingman Road, Fort Belvoir, VA 22060-6218

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DTIC Online: Current Collections

Search DTIC publicly available reports and other collections

- **AULIMP** – Subject index to significant articles, news items, and editorials from military and aeronautical periodicals , 1988 -
- **Biomedical Research Database (BRD)** – Developed from federally funded research, testing and training programs; updated annually (latest 2009).
- **Congressional Budget Data** –Detailed search and analysis capabilities across military departments/agencies for Research, Development, Test and Evaluation (RDT&E) data. DTIC’s PDF and Excel spreadsheet versions of these reports are available shortly after posting on Congress.gov (Library of Congress website; formerly Thomas).



DTIC Online: Current Collections

Search DTIC publicly available reports and other collections (cont.)

- **DoD laboratory community** or sites related to S&T Organizations.
- **DTIC Online** – DTIC Online: Public site (www.dtic.mil)
- **NDIA** – Presentations from NDIA-sponsored conferences
- **RDDs** – R-2 documents furnish narrative information on DoD Research, Development, Test and Evaluation (RDT&E) programs and Program elements (PE Numbers).



DTIC Online: Current Collections

Search DTIC publicly available reports and other collections (cont.)

- **SCAMPI** – Indexes articles on military and naval science, operational warfare, joint planning, national and international politics and other areas researched by Joint Forces Staff College, 1985 –
- **WHS (Washington Headquarters Service)** – DoD issuances (current and cancelled), Joint Staff and other U.S. Military (i.e., Army, Navy, Air Force) service publications, Administrative instructions, Directive-Type Memorandums and DoD Forms.



Search Tips

<http://www.dtic.mil/dtic/search/gtips.html>

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Search All Collections **Advanced Search** **Search Tip**

Registration Search Technical Reports Information Analysis Centers Customer Support

DTIC Search Tips

This document introduces basic search concepts, and describes advanced techniques that produce more efficient search results. **Search terms are highlighted** in the text version of the document to help you quickly find the most relevant text within documents. When only the citation is available for a document, the search terms will be highlighted in the "cached" citation.

Getting Started with DTIC Search

- [Advanced Search Tips](#)
- [Automatic "AND" Operator](#)
- [Capitalization](#)
- [Common Words](#)
- [Corporate Source Search](#)
- [Exclusion Words](#)
- [Fielded searching using "inmeta" Search Operator](#)
- [Phrase Searches](#)
- [Refining Your Search](#)
- [Search Tags](#)
- [Snippets](#)
- [Spelling](#)
- [Stemming](#)
- [Thesaurus Search](#)
- [Using "OR" Operator](#)

Public TR Searches

Or

- Simple - Advanced Searches
 - Advanced Search
 - Advanced Search Tips
 - Search Tips
 - Simple Search
- Corporate Source
- Thesaurus



Advanced Search: Fielded Searching

Fielded searches - using the "inmeta" Search Operator

You can search only for documents that include specified search data or search tags, enter the following:

The inmeta: search operator }
 The name of the search tag }
 "-" }
 The search term }
 For example, to find documents with "virus" in the title, enter:

[Top of Page](#)

Search Tags

To search using search tags type: `inmeta:[mnemonic tag name]~[search term]`
 Example: `inmeta:AN~ADA532575`

Search Tag	Mnemonic
Abstract	AB
Accession Number	AN
Author	AU
Citation Creation Date	CRD
Descriptors	DE
Report Date	RD
Title	TI

Available Fields



Advanced Search Resources: Corporate Source Search

Public TR Searches Open All / Close

- ☑ Simple - Advanced Searches
 - Advanced Search
 - Advanced Search Tips
 - Search Tips
 - Simple Search
- Corporate Source
- Thesaurus

↓

Corporate Source Search

The Corporate Source Search allows you to search for a Corporate Source Code, by entering part of a company or agency name, or for an individual Source Code, by entering the 6-digit number. The Source Code is used when searching in these databases for information authored or sponsored by these organizations. Each Corporate Author record displays the root (highest) element of the organization, the parent (next higher) element of the organization, any sub-organizations or former names, and the organization's Source Code.

Enter part of a Company or Agency name:

Or enter a Source Code on which to search:

- Corporate Source Authority System (CSAS) lists all organizations contributing reports or records information to DTIC
- 6-digit numeric **Source Code** is assigned to each
- Use Source Code to search for information authored or sponsored (funded) by the organization
- Each Corporate Author record shows:
 - root (highest element of the organization)
 - parent (next higher) element
 - sub-organizations or former names
 - organization's **Source Code**



Advanced Search Resources: Thesaurus Search

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- ☑ Simple - Advanced Searches
 - Advanced Search
 - Advanced Search Tips
 - Search Tips
 - Simple Search
- Corporate Source
- Thesaurus

↓

Thesaurus Search

The Thesaurus provides a broad multidisciplinary subject term vocabulary that aids in information search and retrieval. Subject terms, called Descriptors, are organized into hierarchies, where series of narrower terms are linked to broader terms.

Enter a descriptor:

- Provides a broad multidisciplinary subject term vocabulary
- Reduces the need to search multiple synonyms
- Subject terms, called **Descriptors**, are organized into hierarchies
- Narrower terms are linked to broader terms.



Advanced Search

Find results with **all** of the words 10 results

with the **exact phrase**

with **at least one** of the words

without the words

File Format return results of the file format any format

Occurrences Return results where my terms occur anywhere in the page

Domain return results from the site or domain e.g. dtic.mil, mil

Sort **Can view results by date or relevance; change on hits page**

Page-Specific Search

Links Find pages that link to the page

- Search integrates multiple collections
- Choose one or all

Search Results 1 - 10 of about 1130 for nanotechnology. Search took 0.16 seconds. [Sort by date](#) / [Sort by relevance](#)

[Next >](#)

- [Nanotechnology and the Environment: Report of a National Nanotechnology Initiative Workshop Held in Arlington, Virginia on 8-9 May 2003](#)
... Title : Nanotechnology and the Environment: Report of a National Nanotechnology Initiative Workshop Held in Arlington, Virginia on 8-9 May ...
www.dtic.mil/docs/citations/ADA572148 - 22k - 2007-01-01 - [Cached](#) [PDF](#)
- [Nanotechnology in Space Exploration: Report of the National Nanotechnology Initiative Workshop Held in Palo Alto, California on 24-26 August 2004](#)
... Title : Nanotechnology in Space Exploration: Report of the National Nanotechnology Initiative Workshop Held in Palo Alto, California on 24-26 ...
www.dtic.mil/docs/citations/ADA572145 - 24k - 2006-01-01 - [Cached](#) - [PDF](#)
- [Nanotechnology: A Policy Primer](#)
... Accession Number : ADA583703. Title : Nanotechnology: A Policy Primer.
Descriptive Note : Congressional rept. Corporate ...
www.dtic.mil/docs/citations/ADA583703 - 25k - 2013-06-24 - [Cached](#) - [PDF](#)
- [Nanobiotechnology: Report of the National Nanotechnology Initiative Workshop, October 9-11, 2003, Arlington, Virginia](#)
... Title : Nanobiotechnology Report of the National Nanotechnology Initiative Workshop, October 9-11, 2003, Arlington, Virginia ...
www.dtic.mil/docs/citations/ADA572152 - 24k - 2005-10-01 - [Cached](#) - [PDF](#)
- [Nanoelectronics, Nanophotonics, and Nanomagnetism: Report of the National Nanotechnology Initiative Workshop February](#)
... Title : Nanoelectronics, Nanophotonics, and Nanomagnetism: Report of the National Nanotechnology Initiative Workshop February 11-13, 2004 ...
www.dtic.mil/docs/citations/ADA580024 - 24k - 2004-02-01 - [Cached](#) - [PDF](#)
- [X-rays and Neutrons: Essential Tools for Nanoscience Research, Report of the National Nanotechnology Initiative Workshop, June 16-18, 2005, Washington, DC](#)
... Report of the National Nanotechnology Initiative Workshop, June 16-18, 2005, Washington, DC. Descriptive Note : Conference paper. ...
www.dtic.mil/docs/citations/ADA594185 - 23k - 2005-06-18 - [Cached](#) - [PDF](#)
- [The Future of the National Nanotechnology Initiative](#)
... Accession Number : ADA572112. Title : The Future of the National Nanotechnology Initiative. ... Descriptors : *NANOTECHNOLOGY. ...
www.dtic.mil/docs/citations/ADA572112 - 21k - 2003-11-07 - [Cached](#) - [PDF](#)
- [Instrumentation and Metrology for Nanotechnology](#)
... Title : Instrumentation and Metrology for Nanotechnology. ... Descriptors : *NANOTECHNOLOGY. INSTRUMENTATION, METROLOGY. ...
www.dtic.mil/docs/citations/ADA572139 - 22k - 2004-01-29 - [Cached](#) - [PDF](#)
- [A Nanotechnology Enhancement to Moore's Law](#)
... Accession Number : ADA571321. Title : A Nanotechnology Enhancement to Moore's Law. Descriptive Note : Journal article. ...
www.dtic.mil/docs/citations/ADA571321 - 25k - 2013-01-01 - [Cached](#) - [PDF](#)
- [Nanotechnology-Enabled Optical Molecular Imaging of Breast Cancer](#)
... Accession Number : ADA586328. Title : Nanotechnology-Enabled Optical Molecular Imaging of Breast Cancer. Descriptive Note : Annual rept. ...
www.dtic.mil/docs/citations/ADA586328 - 23k - 2012-07-01 - [Cached](#) - [PDF](#)

Related search keywords

[national nanotechnology initiative](#)

[report national nanotechnology initiative](#)

[nanotechnology initiative workshop](#)

[nanotechnology research](#)

[using liposomal nanotechnology](#)

[application nanotechnology](#)

[targeted nanotechnology initiative](#)

[research nanotechnology targeted release](#)

[nanotechnology applications](#)

[bio nanotechnology](#)

Easy way to focus/narrow



Citations Add Value

Full Text Link

Accession Number : ADA586328

Title : Nanotechnology-Enabled Optical Molecular Imaging of Breast Cancer

Descriptive Note : Annual rept. 15 Jun 2011-14 Jun 2012

Corporate Author : RICE UNIV HOUSTON TX

Personal Author(s) : Drezek, Rebekah

Full Text : <http://www.dtic.mil/get-tr-doc/pdf?AD=ADA586328>

Report Date : Jul 2012

Pagination or Media Count : 122

Abstract : This project focuses on development of nanotechnology-enabled optical molecular imaging technologies for applications in both breast cancer diagnosis and monitoring therapeutic response. The project consists of two major efforts: (1) optical instrumentation technology development and (2) development of complementary engineered nanomaterials for use in conjunction with the instrumentation created to provide molecular specificity. A particularly significant effort is underway to develop needle-compatible fiber optic probes to enable in vivo imaging of tumors with micron resolution in order to provide a new microscopic, high resolution imaging modality. These microscopic devices will complement the macroscopic, wide-field optical imaging devices being developed in this project.

Descriptors : *BREAST CANCER, *NANOTECHNOLOGY, *OPTICAL IMAGES, DIAGNOSIS(MEDICINE), FIBER OPTICS, HIGH RESOLUTION, HYPERSPECTRAL IMAGERY, IN VIVO ANALYSIS, NEOPLASMS, PROBES, THERAPY, TISSUES(BIOLOGY)

Subject Categories : Medicine and Medical Research
Optics

Distribution Statement : APPROVED FOR PUBLIC RELEASE

DTIC Fields and Groups

DTIC Controlled Vocabulary



Metadata Sources for Technical Reports

Report Cover

AD _____

Award Number: W81XWH-07-1-0428

TITLE : Nanotechnology-Enabled Optical Molecular Imaging of Breast Cancer

PRINCIPAL INVESTIGATOR : Rebekah Drezek, Ph.D.

CONTRACTING ORGANIZATION : Rice University
Houston, TX 77005

REPORT DATE : July 2012

TYPE OF REPORT : Annual

PREPARED FOR : U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT : Approved for Public Release;
Distribution Unlimited

The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision unless so designated by other documentation.

Standard Form 298 – Report Documentation Page

REPORT DOCUMENTATION PAGE		Form Approved GSA FPMR (41 CFR) 101-11.6	
1. REPORT NUMBER ADA586328		2. DATE COVERED 15 JUN 2011 to 14 JUN 2012	
3. AUTHOR(S) Drezek, Rebekah, Ph.D.		4. CONTRACT NUMBER	
5. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Rice University Houston, TX 77005		6. PROJECT NUMBER	
7. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Medical Research and Materiel Command Fort Detrick, Maryland 21702-5012		8. TASK NUMBER	
8. DISTRIBUTION/AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited		9. WORK UNIT NUMBER	
9. SUPPLEMENTARY NOTES		10. PERFORMING ORGANIZATION REPORT NUMBER	
10. ABSTRACT This project focuses on development of nanotechnology-enabled optical molecular imaging technologies for applications in both breast cancer diagnosis and monitoring therapeutic response. The project consists of two major efforts: (1) optical instrumentation technology development and (2) development of complementary engineered nanomaterials for use in conjunction with the instrumentation created to provide molecular specificity. A particularly significant effort is underway to develop needle-compatible fiber optic probes to enable in vivo imaging of tumors with micron resolution in order to provide a new microscopic, high resolution imaging modality. These microscopic devices will complement the macroscopic, wide-field optical imaging devices being developed in this project.		11. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUBJECT TERMS nanotechnology, molecular imaging, optical imaging		12. NUMBER OF PAGES 122	
12. SECURITY CLASSIFICATION OF REPORT U		13. NAME OF RESPONSIBLE PERSON LOCAL/DTIC	
13. REPORT NUMBER ADA586328		14. TELEPHONE NUMBER (include area code)	



Value Added: DTIC Collections

- Harvest from web
- Organize, add subject access, preserve, store, provide
- Collect for DoD
- Support researchers (registered users with established need)
- Provide answers



Online Reports

- Find documents using:
 - **DTIC Online** – Citations for all reports; free full-text (around a million documents) for many documents
 - **NTIS** (www.ntis.gov/search) – DTIC provides public documents to NTIS; online catalog 1964+ (older use 800-553-6847 or (703) 605-6000 or info@ntis.gov); can buy full text in different formats
 - **Science.gov** (www.science.gov) – searches DTIC & other agency databases; results, including full text in DTIC Online; set up alerts



Open Archives Initiative (OAI)

- DTIC Metadata is formatted to support OAI
- Facilitates discovery of DTIC TRs through search engines, crawlers/robots and harvesting
- OCLC has records; however, DTIC is NOT a lender of Technical Reports
- Free downloads for items in full text
- Must be registered with DTIC to request document scanning/digitization



Defense Innovation Marketplace

Connecting Industry and DoD

- Centralized resource to reinvigorate innovation
- Source for DoD Science and Technology (S&T) planning, acquisition resources, funding and financial information
- Supports Better Buying Power Initiatives



<http://www.defenseinnovationmarketplace.mil/>

Defense Innovation Marketplace

Resources for Industry
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Click on: Resources for Industry:

- DoD Information for Business and Program Planning
- Great for details about DoD and research related information

<http://www.defenseinnovationmarketplace.mil/>

Industry Resources

The Defense Innovation Marketplace is your one-stop source for Department of Defense (DoD) science and technology (SAT) planning, acquisition resources, funding and financial information. Please let us know what other Department materials would be useful to post on the Marketplace so that industry can join the DoD investments at comments@defenseinnovationmarketplace.mil

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Strategic Overview

US SAT Priorities

• Science and Technology Priorities for the FY 2019 Budget

• Science, Technology & Innovation for National Security

Featured Testimony and Remarks

- USDP Space Budget 2014
- ASD/CS&E Laboratories Testimony 2013

FY14 SAT Testimony

- Acting Assistant Secretary of Defense for Research and Engineering (USD/RS&E) FY14 SAT Testimony

SAT Emphasis Area Roadmaps

- Air Force

Service Priorities & Strategic Documents

Army Useful Links

- Army Equipment Modernization Plan Presentation at ASD/RS&E
- Army SAT Ground Overview

Here

- Naval Innovation in Challenging Times
- Naval Strategic Plan Overview

OSR SAT Meeting Presentations

- OSR SAT Meeting Presentations

Expeditious and Innovative Warfare

- Future Naval Capabilities Portfolio

DoD Laboratory Autonomy Research Pilot Initiative

Service Priorities & Strategic Documents (continued)

Air Force

- Air Force OIR 2013
- AF Capable Requirements Driving SAT

USMC

- 2013 Modern Day Marine Brief to Industry
- Marine Corps Vision & Strategy 2025

Other U.S. Government SAT Activities

- Department of State/NSC and NSAS/JCS

Joint Activities

- Air Sea Battle Collaboration
- Joint Defense Transportation Systems

Other DoD Agencies

- NASA-JSC Seeking Partners for use of Uncrewed Capabilities
- NASA Space & Missile Brief

OSR/RS&E

- DoD Space Policy Directive
- DoD Science & Engineering Activities

DoD Instruction

- Scientific and Engineering Integrity
- Provision of Mission Critical Functions to Address Trusted Business and Networks (TMFN)

Miscellaneous

- Active Multidisciplinary University Research Initiatives

DoD Financial Documents

- DoD's Computer Documents
- Defense Budget Priorities FY2014

Doing Business with DoD

All Resources by Organization

- Army
- Navy
- Air Force
- USMC

Rapid Innovation Fund

- 2013-2014 Rapid Innovation Fund Information

Small Business Resources

- DoD Small Business Links
- Small Business Administration Clusters

Tech Transition

- CTTSO Technology Transition
- Doing Business with CTTSO

Acquisition Resources

- Performance of the Defense Acquisition System
- Use of High-Power Incentive Firm Contracts

Requests For Information/Proposals (RFI/RFQ)

- Autonomous Mine Detection System Presentations
- OSR SAT Meeting Presentations
- Defense Radio Craft RFP

Here

- Navy and Marine Corps Long-Range Science and Technology (NSM) (Phase I) 2013-14
- High Power Radio Frequency Technologies for Naval Applications RFI (Phase I) 2013-14
- HQ AFOSI FY14 Prioritized Gap List

Other DoD

- Defense Middle/Counter Industry (DCMI) (Phase I) 2013-14
- OSD/CS&E Agency BAA Solicitation (Phase I) 2013-14

Special Initiatives

- Joint Service Human Systems (JSHS) Events
- Intelligence Working Group Complex Engineering

DoD Research and Technology Funding Opportunities

- Federal Business Opportunities
- DoD Research and Technology Opportunities

Army

- Army Hacking the Border Information for Industry
- Army Technology Opportunities

Here

- Navy Technology Opportunities
- Naval Research Laboratory Contracting Database

Air Force

- Air Force Technology Opportunities
- Air Force Office of Scientific Research

Other DoD Agencies

- Operation Warfare Program (OWP) (Phase I) 2013-14

DoD Awarded Contracts

- Awarded Defense Contracts

DoD Licensable Patents

- DoD Licensable Patents: Available create patents that can be licensed for commercial products and manufacturing processes.

Federal Voting Assistance Program: <http://www.fvap.gov>

- Forms
- News
- Dates
- Personalized for the user
- Quick Links
 - Absentee voting request form
 - Voting Assistance Guide
 - Downloadable election materials
- Federal and state information

The screenshot shows the FVAP.gov website interface. At the top, there are navigation tabs for 'Home', 'Military Voter', 'Overseas Citizen Voter', 'Voting Assistance Officer', 'Election Official', and 'General Information'. A search bar is located on the right. The main content area includes a 'Voters Start Here' section with a 'Select a State' dropdown, a 'Help a Voter' section with links to 'Voting Assistance Officers' and 'Election Officials', and a '2008-09 Voting Assistance Guide' video player. Below this are sections for 'Upcoming Election Dates' listing events for May 6, May 13, and May 29, 'Quick Links' with a 'Contact FVAP' button, and 'Latest FVAP News' with a 'View All FVAP News' link. A footer banner reads: 'Voting Absentee is easy using FVAP's online assistants. Be absent but accounted for.'

Defense Prisoner of War/Missing Personnel Office

- More than 83,000 Americans are missing:
 - World War II
 - Korean War
 - Cold War
 - Vietnam War
 - 1991 Gulf War
- Hundreds of Defense Department men and women -- both military and civilian -- work in organizations around the world as part of DoD's personnel recovery activities and personnel accounting communities
- News and updates on found personnel & family related activities.

<http://www.dtic.mil/dpmo>

Minerva <http://minerva.dtic.mil>

- Department of Defense (DoD)-sponsored, university-based social science research initiative
 - Launched by the Secretary of Defense in 2008
 - Focuses on areas of strategic importance to U.S. national security policy
- Goal: Improve DoD's basic **understanding of the social, cultural, behavioral, and political forces** that shape regions of the world of strategic importance to the U.S.



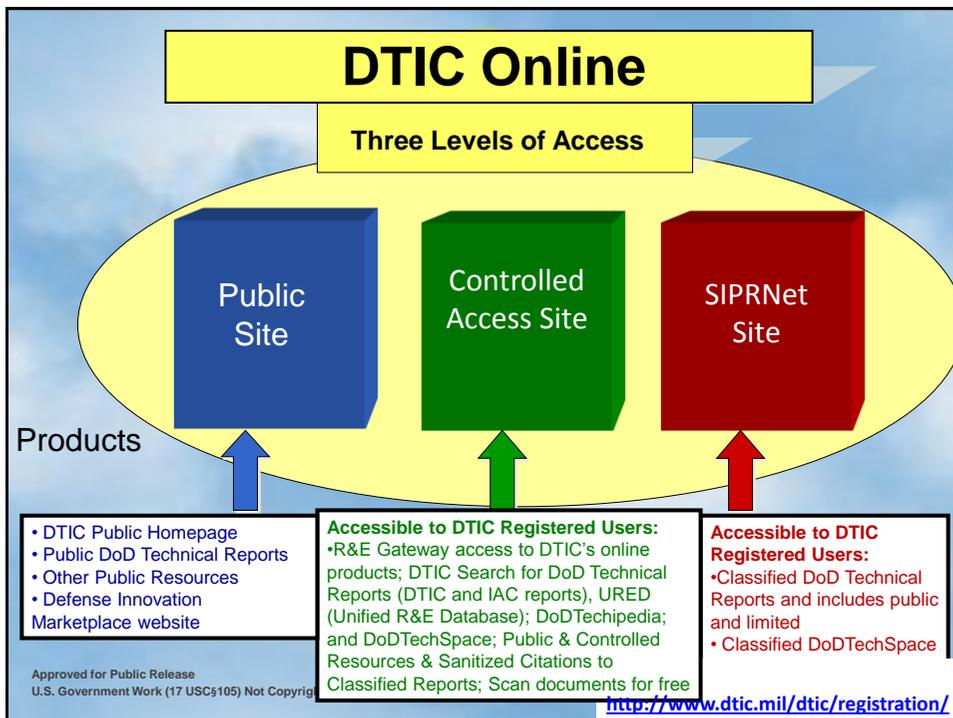
Submitting to DTIC: Document Types

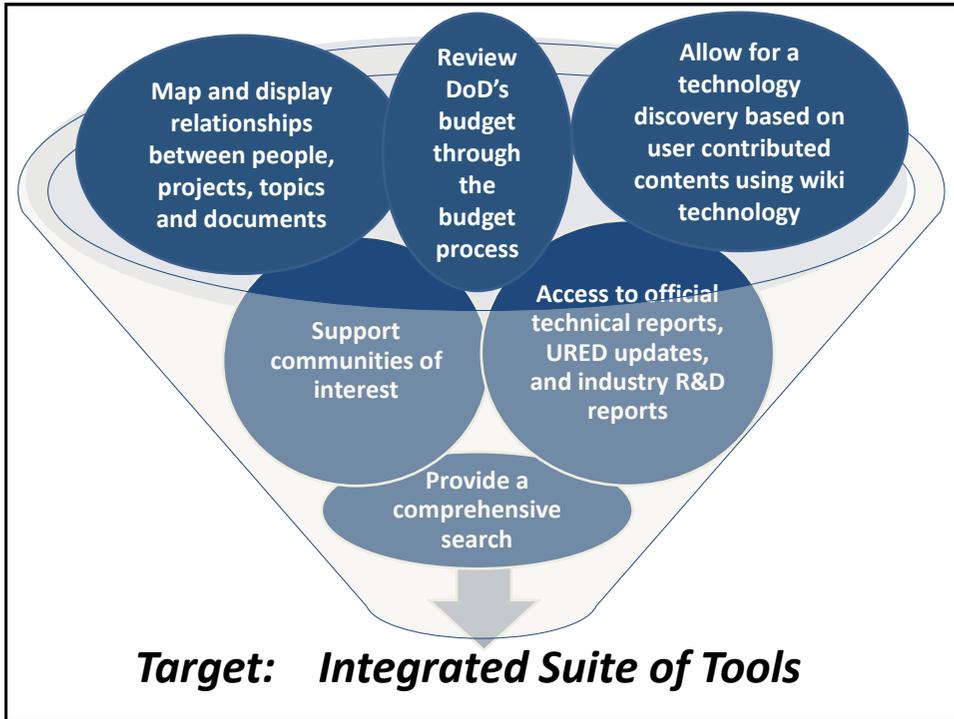
Examples of Accepted Document Types:

- Acquisition Life Cycle Documents
- Annual Reports from the DoD Labs
- Command History
- Conference Proceedings & Papers
- Congressional Research Service (CRS) Reports
- Government Accounting Office (GAO) Reports & Testimonies
- Dissertations & Theses
- Federally Funded Research & Development Center (FFRDC) Reports
- Journal Articles & Reprints (DoD-supported)
- Lessons Learned (DoD-related)
- Patents & Patent Applications (DoD-related)
- Research, Development, Test and Evaluation (RDT&E) Reports
- Security Classification Guides
- Studies & Analyses (DoD-related)
- Technical Publications (Papers; Interim & Final Reports; Reviews and Surveys)
- Training Courses (DoD-related) <http://www.dtic.mil/dtic/submit/pdfad/index.html>

Selection Content Criteria

<http://www.dtic.mil/dtic/submit/whattosubmit/criteria/index.html>






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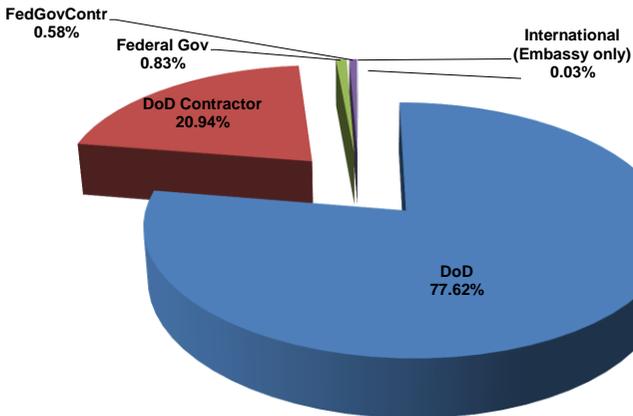
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- Use your Common Access Card (CAC) for automatic access to unclassified, unlimited sites
 - Move seamlessly to other access controlled DTIC sites

- Federal Employees** – Now faster and easier!
- Enter your information online, which will be securely verified against the Office of Personnel Management (OPM) employment database.
 - SF-50 (Notification of Personnel Action) no longer required for proof of federal employment when verified
 - Password/ID

- Contractors**
- Use CAC or follow directions for contractor registration with Password/ID




DTIC's Active Users



As of October, 2013

■ DoD ■ DoDContr ■ FedGov ■ FedGovContr ■ International (Embassy Only, according to U.S. Agreements)



Stay Informed about DTIC Services and Products

Maintain DTIC registration for access to
DTIC services and announcements

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Preserving Knowledge • Connecting People • Inspiring Innovation

2014 Training Webinars

**Boot Camp
hands-on training
sessions and Webinars
on DTIC resources for
registered users;
customized sessions
upon request**



DTIC BOOT CAMP:
S&T RESOURCES FOR THE DoD COMMUNITY

Put DTIC in Your Toolkit!
A half-day workshop conducted by
the Defense Technical Information Center

R&E Gateway
POWERED by DTIC™

- Avoid redundant research
- Save valuable time and resources
- Obtain the most timely and relevant information
- Collaborate and share knowledge with colleagues

DODTECHSPACE: A virtual environment to create, organize, and share information; find, connect and interact with colleagues.

DTIC SEARCH: Enables quick discovery of DoD research projects and documents, as well as people, places and content from the DoD TechSpace community.

DODTECHPEDIA: Offers a secure online encyclopedia to create, store and share science and technology information.

For more information email: tsabba@dtic.mil

Preserving Knowledge • Connecting People • Inspiring Innovation



DTIC on Facebook: DTIC Job Opportunities



Defense Technical Information Center (DTIC) shared a link.
September 25

DTIC is pleased to announce its launch of the Research & Engineering (R&E) Gateway (<http://dtic.mil/dtic/stresources/index.html#R&E>), a secure, access controlled site designed by DoD for the defense scientific & technical enterprise.

 R&E Gateway <small>POWERED by DTIC</small>	<p>S&T Resources stinet.dtic.mil</p> <p>Scientific and technical (S&T) reports conveying results of Defense-sponsored research, development, test and evaluation (RDT&E) efforts on a wide</p>
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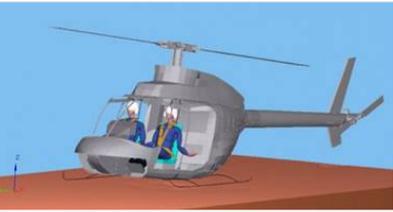
Defense Technical Information Center (DTIC) shared a link.
September 13

Information Analysis Centers (IAC) are research and analysis organizations chartered by the DoD and operated by the Defense Technical Information Center (DTIC). Recently, the director of the IACs, Christopher Zember, was interviewed about ... See More

[On DoD: Information Analysis](#)

November 13

Highlighted in the 11 Nov 2013 Armed with Science Top Tech is DESCENT, a software technology developed by the U.S. Army Research Laboratory (ARL) to improve sustainability and help pilots live through crashes. To read more on ARL's research visit DTIC.mil to search the technical reports collection.



Top Tech: DESCENT
go.usa.gov

Top Technology is an Armed with Science series that highlights the latest and greatest federal laboratory inventions, technology and achievements. Want to suggest an invention? Email us at science@dma.mil

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Cult Tapinak, Michael Meisberger, Klad Klad and 2 others like this.



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