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Assessing the Impact of DoD-Funded Assistance Projects on the Availability of New Warfighting Capabilities

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Abstract

The Department of Defense (DoD) spends billions of dollars annually on efforts intended to advance warfighting capabilities. This funding takes the form of “procurements” and “assistance.” Procurements, or government contracts, refer to the U.S. government (USG) acquiring property or services for the direct benefit-of or use-by the USG. “Assistance” refers to the transfer of a thing of value to the USG to carry out a public purpose or stimulation. Assistance includes grants, loans, and cooperative agreements; and since 2010, the DoD has outlaid nearly \$1 trillion in assistance awards. Grants and cooperative agreements pertaining to research and development (R&D) account for the majority of DoD assistance. Although assistance represents a significant and critical component of DoD resourcing for innovation, limited scholarship exists to assess the nature and effectiveness of such funding. In this paper, we leverage public data from USASpending to analyze defense-funded assistance awards from fiscal year (FY) 2018 through FY 2023. We explore the distribution of R&D-focused grants and cooperative agreements to better understand the nature of DoD-funded projects, as well as the pool of entities in receipt of the funding. Comparing these results to findings from our earlier research, which focused on procurement-funded DoD innovation initiatives, revealed that the pool of entities in receipt of assistance awards has remained comparatively stable. However, analyzing aspects of assistance data that contain information about the purpose of the funding, we found a disconnect between the military’s stated priorities and direction of funds. We also identified significant duplication in efforts, along with a lack of synergy between projects funded via assistance, and DoD procurement. We offer a series of recommendations for the DoD to better coordinate its funding strategies to more effectively develop and deliver advancements in warfighting capabilities.

Introduction

The Department of Defense (DoD) spends billions of dollars annually to stimulate research and development (R&D). As the United States contends with dynamic security threats on multiple fronts, one important purpose for DoD-funded R&D is to improve military warfighting capabilities. Whereas our previous research focused primarily on assessing the extent to which DoD procurement initiatives resulted in new capabilities reaching the warfighter, a significant portion of DoD funding for R&D is directed through grants, cooperative agreements, and other forms of Federal Financial Assistance (“assistance”). In this paper, we sought to better understand how the DoD directs assistance funding in general and the ways in which it contributes to military innovation.

Procurements vs. Assistance

There are two forms of federal spending: “procurements” and “Federal Financial Assistance” (“assistance”). Procurements, or government contracts, refer to the U.S.



government (USG) acquiring property or services for its direct benefit or use. Assistance refers to the transfer of a thing of value—most commonly, money—by the USG to “eligible recipients to support or stimulate a public purpose” (Grants.gov, n.d-a).

Analyzing Defense-Funded Assistance

The USG is required to publicize detailed information about federal spending at the unclassified level, and the official source for aggregating assistance funding is USASpending.gov (“USASpending”).¹ To analyze DoD assistance, we downloaded assistance award data in bulk from USASpending and filtered the data for assistance awards funded by the DoD from fiscal year (FY) 2018 through FY2023 (“analysis period”). Figure 1 shows total DoD assistance outlays annually. **From FY2018–FY2023, the DoD obligated more than \$51.7 billion in assistance, and DoD assistance funding grew approximately 54% over that period.**

Fiscal Year	Total DoD Assistance Funding
2018	\$6,617,043,955
2019	\$7,618,583,833
2020	\$9,222,099,811
2021	\$8,298,107,140
2022	\$9,832,531,017
2023	\$10,187,578,149
Total	\$51,775,943,906

Figure 1. DoD Assistance Funding, FY2018–FY2023

Types of Assistance

There are several forms of assistance, and USASpending classifies each assistance award by type. As shown in Figure 2, cooperative agreements and grants account for the majority of assistance funding.

Assistance Award Type	DoD Obligations, FY2018-FY2023
COOPERATIVE AGREEMENT	\$31,866,684,634
PROJECT GRANT	\$16,710,079,461
OTHER REIMBURSABLE, CONTINGENT, INTANGIBLE, OR INDIRECT FINANCIAL ASSISTANCE	\$2,695,948,421
BLOCK GRANT	\$353,110,170
DIRECT PAYMENT FOR SPECIFIED USE, AS A SUBSIDY OR OTHER NON-REIMBURSABLE DIRECT FINANCIAL AID	\$92,503,121
FORMULA GRANT	\$57,618,100

Figure 2. DoD-Funded Assistance by Award Type, FY2018–FY2023

¹ Given the nature of publicly-available USG spending data, we did not have access to information about assistance funding in the classified realm.



Who Receives DoD-Funded Assistance?

Each assistance award is assigned a unique identifying number known as a Federal Award Identification Number (FAIN), and USASpending contains a mandatory field for the FAIN. A FAIN is considered the primary unique identifier for an assistance award.

Because an entity can win multiple assistance awards, there are significantly more unique FAINs than unique awardees. To determine how many entities received DoD-funded assistance during our analysis period, we filtered each FAIN by its associated Unique Entity Identifier (UEI) and calculated the total number of unique UEIs, as shown in Figure 3. **The number of unique entities in the assistance realm grew 16% from FY2018 to FY2023.**

Fiscal Year	Count, Unique FAINs	Count, Unique Awardees
2018	11,233	1774
2019	12,230	1836
2020	12,963	1945
2021	13,748	1963
2022	14,483	2041
2023	14,996	2061

Figure 3. Total DoD Assistance Awardees Annually

Assistance award data from USASpending also contains a field for business type, so we then grouped UEIs by their USASpending-assigned business type. Figure 4 provides a breakdown of the \$51.7 billion in DoD-funded assistance by business type, and Figure 5 provides a breakdown of assistance awardees by business type in each year.²

Business Type	Total Obligations, FY2018-FY2023	Count, Unique Entities
STATE GOVERNMENT	\$15,168,587,623	277
PUBLIC/STATE CONTROLLED INSTITUTION OF HIGHER EDUCATION	\$13,784,597,987	495
NONPROFIT WITH 501C3 IRS STATUS	\$6,694,894,445	763
PRIVATE INSTITUTION OF HIGHER EDUCATION	\$5,858,347,288	277
FOR-PROFIT ORGANIZATION OTHER THAN SMALL BUSINESS	\$3,823,262,941	459
FOR-PROFIT ORGANIZATION SMALL BUSINESS	\$3,201,860,378	435
SPECIAL DISTRICT GOVERNMENT	\$1,002,121,654	65
INDEPENDENT SCHOOL DISTRICT	\$626,138,337	124
NONPROFIT WITHOUT 501C3 IRS STATUS	\$581,343,367	54
NON-DOMESTIC ENTITY	\$331,550,619	359
COUNTY GOVERNMENT	\$316,950,471	77
CITY OR TOWNSHIP GOVERNMENT	\$238,334,936	88
INDIAN/NATIVE AMERICAN TRIBAL	\$78,267,550	42

² Negative obligations can occur for a variety of reasons, including accidental overpayments that result in entities returning funds and/or administrative errors when data is uploaded into USASpending.



GOVERNMENT/ORGANIZATION		
REGIONAL ORGANIZATION	\$37,921,171	16
INDIVIDUAL	\$31,599,154	4
HISTORICALLY BLACK COLLEGE OR UNIVERSITY	\$763,270	3
PUBLIC/INDIAN HOUSING AUTHORITY	\$242,606	3
UNDISCLOSED	-\$839,892	4

Figure 4. DoD Assistance Funding, by Business Type, FY2018–FY2023

Business Type	Count of Unique Entities, FY2018	Count of Unique Entities, FY2019	Count of Unique Entities, FY2020	Count of Unique Entities, FY2021	Count of Unique Entities, FY2022	Count of Unique Entities, FY2023
CITY OR TOWNSHIP GOVERNMENT	31	28	33	39	34	35
COUNTY GOVERNMENT	31	31	32	36	25	34
FOR-PROFIT ORGANIZATION OTHER THAN SMALL BUSINESS	128	149	190	219	251	261
FOR-PROFIT ORGANIZATION SMALL BUSINESS	157	187	209	200	196	213
HISTORICALLY BLACK COLLEGE OR UNIVERSITY	0	0	0	0	0	3
INDEPENDENT SCHOOL DISTRICT	50	60	58	60	44	56
INDIAN/NATIVE AMERICAN TRIBAL GOVERNMENT/ORGANIZATION	17	26	23	28	27	26
INDIVIDUAL	4	1	2	1	2	2
NON-DOMESTIC ENTITY	247	216	188	164	157	141
NONPROFIT WITH 501C3 IRS STATUS	380	404	440	450	483	448
NONPROFIT WITHOUT 501C3 IRS STATUS	21	24	31	34	34	35
PRIVATE INSTITUTION OF HIGHER EDUCATION	169	165	169	167	196	197
PUBLIC/INDIAN HOUSING AUTHORITY	0	0	0	1	2	2
PUBLIC/STATE CONTROLLED INSTITUTION OF HIGHER EDUCATION	321	327	331	334	352	370
REGIONAL ORGANIZATION	5	4	10	6	9	2



SPECIAL DISTRICT GOVERNMENT	20	23	25	34	30	35
STATE GOVERNMENT	192	190	204	189	198	199
UNDISCLOSED	1	1	0	1	1	2

Figure 5. DoD Assistance Funding, by Entity Type, Annually

Next, for each year, we calculated the number of distinct awardees by business type with no prior defense revenue (no prior direct or indirect defense-funded procurement contracts or assistance awards).³ As shown in Figure 6, **33% of “For Profit Organizations, Other Than Small Businesses” and 38% of “For Profit Small Businesses” that received DoD assistance funding between FY2018–FY2023 had no prior defense business.** The presence of entities new to the DoD indicates that expansion in assistance awardees is not solely the result of entrenched defense contractors expanding their market share via assistance awards.

Business Type	Count, Unique Entities	Entities New to DoD	% of Entities New to DoD
FOR-PROFIT ORGANIZATION OTHER THAN SMALL BUSINESS	459	151	33%
FOR-PROFIT ORGANIZATION SMALL BUSINESS	435	164	38%

Figure 6. New Entrants, “For-Profit Other than Small” & “For-Profit Small” Businesses- FY2018–FY2023

DoD Assistance Awardees Buck DIB Trends

Growth in assistance entities, and the fact that assistance programs attracted new entrants into the defense market, contrast the trends in the overall defense industrial base (DIB). In our 2020 research, we found that the number of unique entities working with the DoD shrank 36% from FY2010 to FY2019 (Bresler & Bresler, 2020). The share of new entrants into the defense market annually consolidated at an even greater rate: In 2010, 19% of entities working with the DoD had no prior defense business, compared to just 9% in 2019. Additional research is required to better understand what factors contributed to the growth in DoD assistance entities, particularly among for-profit companies with no ties to the defense market. It is important to determine if the growth was simply a byproduct of the significant expansion in overall DoD assistance spending or if it is the result of a concerted strategy.

Research Limitation: Assistance Entities as USG Intermediaries

Several of the entity types in the assistance realm—including the various government entities, institutes of higher education, and nonprofits with and without 501C3 IRS statuses—typically function as intermediaries between the USG and the ultimate recipients of assistance funding. In other words, these entities are the prime awardees and allocate a portion of the award funding to their administrative/overhead costs. However, they distribute the majority of the funding to sub-awardees via sub-assistance awards. We will refer to these types of entities as “allocators.” Whereas this paper leveraged publicly-available data at the prime level, in future research we recommend incorporating sub-assistance award/awardee data from USASpending.

³ We joined data from the Federal Procurement Data System (FPDS), which contains data related to procurement awards.



Doing so will enable a clearer, more specific understanding of the types of projects funded by DoD assistance.

Federal Assistance Programs

Assistance is directed through Federal financial assistance programs (“assistance programs”). SAM.gov maintains a catalog of assistance programs, which provides detailed descriptions of all distinct assistance programs. Each assistance program also has a corresponding Catalog of Federal Domestic Assistance (CFDA) identifier (ID), and USASpending data contains a field for CFDA. For all DoD-funded assistance awards during the analysis period, we linked the CFDA field from USASpending to the detailed descriptions of each assistance program from SAM.gov. We determined that the DoD obligated funding through 90 assistance programs from FY2018–FY2023, listed in Figure 7.

Assistance for R&D

Financial assistance is extremely broad, encompassing the “transfer of anything of value, most often money, from a federal agency to a non-federal entity” (Grants.gov, n.d-b). Accordingly, the 90 DoD-funded assistance programs were wide ranging and included many programs unrelated to R&D (e.g., “Air Force Academy Athletic Programs,” “Troops to Teachers Grant Program,” and “Youth Conservation Services”).

Because we were specifically interested in understanding how DoD assistance funding contributes to military R&D and innovation, we needed to isolate DoD assistance award data associated with R&D for further analysis. To do so, we reviewed the CFDA IDs associated with the 90 DoD-funded assistance programs and included all assistance programs that referenced “research” and/or “research and development” in the program name and/or CFDA ID. For the remaining assistance programs, we reviewed award details associated with their CFDA IDs to better understand the nature of their programs, and we included programs that appeared to relate to R&D and/or innovation. **We shortlisted 22 of the 90 DoD-funded assistance programs for further analysis on the basis that they pertained to R&D.** These programs (“DoD R&D Assistance Programs”) are highlighted in blue in Figure 7.⁴

Assistance Program	Assistance Program	Assistance program
NATIONAL GUARD MILITARY OPERATIONS AND MAINTENANCE PROJECTS	COLLABORATIVE RESEARCH AND DEVELOPMENT - CONSTRUCTION PRODUCTIVITY ADVANCEMENT RESEARCH CPAR PROGRAM	MILITARY HEALTH SERVICES RESEARCH
MILITARY MEDICAL RESEARCH AND DEVELOPMENT	ECONOMIC ADJUSTMENT ASSISTANCE FOR STATE GOVERNMENTS	SCIENCE, TECHNOLOGY, BUSINESS AND/OR EDUCATION OUTREACH
BASIC AND APPLIED SCIENTIFIC RESEARCH	READINESS AND ENVIRONMENTAL PROTECTION INTEGRATION PROGRAM - DOD REPI PROGRAM	TRANSPORTATION - DASH 102X AND WMATA 7M SHUTTLES - DASH 102X ROUTE AND WMATA 7M ROUTE
AIR FORCE DEFENSE RESEARCH SCIENCES PROGRAM	PAST CONFLICT ACCOUNTING - DEFENSE POW/MIA ACCOUNTING AGENCY DPAA PAST CONFLICT ACCOUNTING GRANTS AND COOPERATIVE AGREEMENTS PROGRAM DPAA GCAP	COMMUNITY ECONOMIC ADJUSTMENT ASSISTANCE FOR REDUCTIONS IN DEFENSE INDUSTRY EMPLOYMENT
BASIC SCIENTIFIC RESEARCH	THE LANGUAGE FLAGSHIP GRANTS TO INSTITUTIONS OF HIGHER EDUCATION -	INTERNSHIPS, TRAINING AND WORKSHOPS FOR THE OFFICE OF AIR

⁴ Determining which DoD assistance programs to analyze on the basis of their relationship to R&D was inherently subjective, and we recognize that not all readers may agree with the programs we selected.



	THE LANGUAGE FLAGSHIP	AND RADIATION
RESEARCH AND TECHNOLOGY DEVELOPMENT	AIR FORCE ACADEMY ATHLETIC PROGRAMS	SPACE TECHNOLOGY - STMD, SPACE TECH
COMMERCIAL TECHNOLOGIES FOR MAINTENANCE ACTIVITIES PROGRAM - CTMA	SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS EDUCATION, OUTREACH AND WORKFORCE PROGRAM	NATIONAL GUARD MILITARY CONSTRUCTION 12.400
BASIC, APPLIED, AND ADVANCED RESEARCH IN SCIENCE AND ENGINEERING	DEPARTMENT OF DEFENSE APPROPRIATION ACT OF 2003	COMMUNITY ECONOMIC ADJUSTMENT ASSISTANCE FOR REDUCTIONS IN DEFENSE SPENDING
UNIFORMED SERVICES UNIVERSITY MEDICAL RESEARCH PROJECTS - UNIFORMED SERVICES UNIVERSITY USU	COMMUNITY ECONOMIC ADJUSTMENT ASSISTANCE FOR REALIGNMENT OR CLOSURE OF A MILITARY INSTALLATION	ARMY NATIONAL GUARD ARMY COMPATIBLE USE BUFFER PROGRAM - NGB ACUB
DEFENSE PRODUCTION ACT TITLE III - DPA TITLE III	RESEARCH AND TECHNICAL ASSISTANCE	FLOOD PLAIN MANAGEMENT SERVICES
MILITARY CONSTRUCTION, NATIONAL GUARD	HIGHWAY PLANNING AND CONSTRUCTION - FEDERAL-AID HIGHWAY PROGRAM, FEDERAL LANDS HIGHWAY PROGRAM	RESEARCH GRANTS
RESEARCH ON CHEMICAL AND BIOLOGICAL DEFENSE	FISHER HOUSE FOUNDATION	LANGUAGE GRANT PROGRAM - STARTALK
NATIONAL GUARD CHALLENGE PROGRAM - NATIONAL GUARD YOUTH CHALLENGE PROGRAM	RESEARCH AND DEVELOPMENT - MEDICAL AND PROSTHETIC RESEARCH AND DEVELOPMENT	DREDGED MATERIAL CONTAINMENT AREA - DITCHING WITHIN THE DREDGED MATERIAL CONTAINMENT AREA
COMMUNITY INVESTMENT	DOD, NDEP, DOTC-STEM EDUCATION OUTREACH IMPLEMENTATION	AGRICULTURAL RESEARCH BASIC AND APPLIED RESEARCH - EXTRAMURAL RESEARCH
SCIENTIFIC RESEARCH - COMBATING WEAPONS OF MASS DESTRUCTION	PACIFIC CENTER DISASTER PROGRAM - PDC DISASTER AWARE COOPERATIVE AGREEMENT	PLANNING ASSISTANCE TO STATES
CONSERVATION AND REHABILITATION OF NATURAL RESOURCES ON MILITARY INSTALLATIONS - SIKES ACT	TROOPS TO TEACHERS GRANT PROGRAM - TROOPS TO TEACHERS PROGRAM	NAVY COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS, INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE - C4ISR
SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS EDUCATIONAL PROGRAM: SCIENCE, MATHEMATICS AND RESEARCH FOR TRANSFORMATION - SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS STEM	COMMUNITY ECONOMIC ADJUSTMENT ASSISTANCE FOR RESPONDING TO THREATS TO THE RESILIENCE OF A MILITARY INSTALLATION - COMMUNITY ECONOMIC ADJUSTMENT ASSISTANCE FOR MILITARY INSTALLATION RESILIENCE	UPPER SAN PEDRO PARTNERSHIP SUPPORT - UPPER SAN PEDRO PARTNERSHIP
CIVIL AIR PATROL PROGRAM	YOUTH CONSERVATION SERVICES	AIR FORCE MEDICAL RESEARCH AND DEVELOPMENT
CONGRESSIONALLY DIRECTED ASSISTANCE - ANNUAL CONGRESSIONALLY DIRECTED ASSISTANCE	COMMUNITY ECONOMIC ADJUSTMENT ASSISTANCE FOR ESTABLISHMENT OR EXPANSION OF A MILITARY INSTALLATION	FAIR HOUSING ASSISTANCE PROGRAM - FHAP
COMPETITIVE GRANTS: PROMOTING K-12 STUDENT ACHIEVEMENT AT MILITARY-CONNECTED SCHOOLS - THE DEPARTMENT OF DEFENSE EDUCATION ACTIVITY DODEA EDUCATIONAL PARTNERSHIP GRANT PROGRAM.	PEST MANAGEMENT AND VECTOR CONTROL RESEARCH - DEPLOYED WARFIGHTER PROTECTION PROGRAM	WATER USE AND DATA RESEARCH - WUDR
DEPARTMENT OF DEFENSE HIV/AIDS PREVENTION PROGRAM - DHAPP	MARINE CORPS SYSTEMS COMMAND FEDERAL ASSISTANCE PROGRAM	DONATIONS/LOANS OF OBSOLETE DOD PROPERTY



PROCUREMENT TECHNICAL ASSISTANCE FOR BUSINESS FIRMS - APEX ACCELERATOR PROGRAM/PROCUREMENT TECHNICAL ASSISTANCE PROGRAM PTAP	EASE 3.0 - EFFECTIVE ABSENTEE SYSTEMS FOR ELECTIONS 2.0	ORGANIZATION OF AMERICAN STATES PROGRAMS
STATE MEMORANDUM OF AGREEMENT PROGRAM FOR THE REIMBURSEMENT OF TECHNICAL SERVICES - DSMOA	MATHEMATICAL SCIENCES GRANTS - MSP	ESTUARY HABITAT RESTORATION PROGRAM
COMMUNITY ECONOMIC ADJUSTMENT ASSISTANCE FOR COMPATIBLE USE AND JOINT LAND USE STUDIES	DOD MENTOR-PROTEGE PROGRAM - DOD MP PROGRAM	FORT HUACHUCA SENTINEL LANDSCAPES FOR MILITARY TRAINING - SENTINEL LANDSCAPES
NATIONAL DEFENSE EDUCATION PROGRAM - STEM EDUCATION, OUTREACH, AND WORKFORCE DEVELOPMENT INITIATIVES	PARTNERSHIP AGREEMENTS	DISSERTATION YEAR FELLOWSHIP - CMH DISSERTATION FELLOWSHIP
NAVAL MEDICAL RESEARCH AND DEVELOPMENT	COMMUNITY ECONOMIC ADJUSTMENT ASSISTANCE FOR ADVANCE PLANNING AND ECONOMIC DIVERSIFICATION	NATIVE AMERICAN CONSULTATION TO IDENTIFY SACRED SITES AND TRADITIONAL CULTURAL PROPERTIES
LEGACY RESOURCE MANAGEMENT PROGRAM - DOD LEGACY PROGRAM	CENTERS FOR ACADEMIC EXCELLENCE	WILDLIFE SERVICES
ENGLISH FOR HERITAGE LANGUAGE SPEAKERS GRANTS TO U.S. INSTITUTIONS OF HIGHER EDUCATION - NATIONAL SECURITY EDUCATION PROGRAM NSEP	STARBASE PROGRAM - STARBASE	WATER CONSERVATION FIELD SERVICES - WATER CONSERVATION FIELD SERVICES PROGRAM WCFSP
TRAINING AND SUPPORT COMBATING WEAPONS OF MASS DESTRUCTION	PAST CONFLICT ACCOUNTING - VIETNAM - COOPERATIVE PROGRAM WITH VIETNAM TO ACCOUNT FOR VIETNAMESE PERSONNEL MISSING IN ACTION.	ROTC LANGUAGE AND CULTURE TRAINING GRANTS - ROTC PROJECT GO GLOBAL OFFICERS
ELECTRONIC ABSENTEE SYSTEMS FOR ELECTIONS	EMERGENCY REHABILITATION OF FLOOD CONTROL WORKS OR FEDERALLY AUTHORIZED COASTAL PROTECTION WORKS	AQUATIC PLANT CONTROL

Figure 7. Federal Assistance Programs in Receipt of DoD Funding, FY2018–FY2023. Programs highlighted in blue correspond to “DoD R&D Assistance Programs.”

DoD-Funded Assistance for R&D

As shown in Figure 8, DoD R&D assistance programs received more than half of all DoD assistance funding, and assistance funding for R&D nearly doubled from FY2018–FY2023.

Fiscal Year	Total DoD Assistance Funding	Total DoD R&D Assistance Funding
2018	\$6,617,043,955	\$3,805,222,335
2019	\$7,618,583,833	\$4,521,258,181
2020	\$9,222,099,811	\$5,576,549,778
2021	\$8,298,107,140	\$5,093,791,396
2022	\$9,832,531,017	\$6,213,365,287
2023	\$10,187,578,149	\$6,106,604,741
Total	\$51,775,943,906	\$31,316,791,717

Figure 8. Total DoD Assistance Funding vs. DoD R&D Assistance Funding, Annually



DoD R&D Assistance Entities

Calculating the number of unique entities that received DoD R&D assistance funding (“DoD R&D entities”) in each year, we found that the number of DoD R&D entities grew 14.4% during our analysis period, as shown in Figure 9.

Fiscal Year	Count, R&D FAINs	Count, Unique R&D Assistance Awardees
2018	9376	1375
2019	10,264	1421
2020	10,793	1485
2021	11,068	1491
2022	11,613	1586
2023	12,045	1574

Figure 9. Entities in Receipt of DoD R&D Assistance, Annually

Allocators & Sub-Assistance

Next, we filtered DoD R&D assistance funding by business type. As shown in Figure 10, allocators received most DoD R&D assistance funding, highlighting the military’s dependence on universities, consortia, and other intermediaries to facilitate R&D.

Business Type	Total R&D Assistance Obligations, FY2018-FY2023	Count, Unique Entities
PUBLIC/STATE CONTROLLED INSTITUTION OF HIGHER EDUCATION	\$13,774,126,849	491
NONPROFIT WITH 501C3 IRS STATUS	\$6,442,893,490	622
PRIVATE INSTITUTION OF HIGHER EDUCATION	\$5,056,159,376	238
FOR-PROFIT ORGANIZATION OTHER THAN SMALL BUSINESS	\$3,863,162,448	437
FOR-PROFIT ORGANIZATION SMALL BUSINESS	\$955,849,603	424
NONPROFIT WITHOUT 501C3 IRS STATUS	\$650,042,132	45
NON-DOMESTIC ENTITY	\$301,404,213	381
STATE GOVERNMENT	\$172,685,437	33
COUNTY GOVERNMENT	\$55,385,104	13
CITY OR TOWNSHIP GOVERNMENT	\$19,652,451	16
INDIVIDUAL	\$10,751,158	4
INDEPENDENT SCHOOL DISTRICT	\$6,539,447	10
REGIONAL ORGANIZATION	\$3,443,539	4
INDIAN/NATIVE AMERICAN TRIBAL GOVERNMENT/ORGANIZATION	\$2,403,977	2
OTHER 5 OTHER ENTITY TYPES	\$2,292,491	13

Figure 10. DoD R&D Assistance Funding by Business Type, FY2018–FY2023



Sub-Award Analysis: HQ00242020007

Although we did not comprehensively analyze sub-assistance in this paper, we joined the sub-assistance data from USASpending for the largest DoD R&D assistance award in the data set.⁵ The prime recipient was the National Center for Manufacturing Sciences, Inc. (NCMS). NCMS, a nonprofit with 501C3 IRS status, is a member-based, cross-industry technology development consortium that lists a range of technology focus areas on its website, including 3D Printing, Robotics, and Cyber Security (National Center for Manufacturing Sciences, 2023). From the initial award action in March 2020 to the most recent publicly-available award action in September 2023, total award obligations for this award exceeded \$1.4 billion. Based on the sub-assistance data we pulled, NCMS allocated more than \$1.2 billion—approximately 84% of the total award funding—to sub-awardees across 530 sub-awards. Sub-awardees included nonprofits, universities, small/disadvantaged businesses, large for-profit companies like Siemens, Booz Allen, and Boeing; and other entity types. Each sub-award contained an award description that offered insight into the purpose of the sub-award.

The magnitude of this subaward data reinforces the need to incorporate it into future research to better understand the types of projects funded through DoD R&D assistance and capture better insights on the types of entities involved in this work. Follow-on research should also aim to establish a clearer picture of the role of the allocator in general. For instance, why do allocators exist, and how have their functions and strategies evolved, given that a significant share of R&D now occurs in the commercial realm? How do they market their opportunities to stakeholders outside of the traditional defense/USG market to ensure they do not favor entrenched entities that understand the system over those with the most promising R&D?

R&D For-Profit Companies

Approximately 15% of DoD R&D assistance funding was awarded to “For Profit Organizations, Other Than Small Businesses” and “For Profit Small Businesses” (collectively, “R&D for-profit companies”). Calculating the share of for-profit R&D companies with no prior DoD funding, we found that 32% of “For Profit Organizations, Other Than Small Businesses” and 38% of “For Profit Small Businesses” were new to the DoD, as shown in Figure 11.

Business Type	Count, Unique R&D Entities	Entities New to DoD	% of Entities New to DoD
FOR-PROFIT ORGANIZATION OTHER THAN SMALL BUSINESS	437	138	32%
FOR-PROFIT ORGANIZATION SMALL BUSINESS	424	161	38%

Figure 11. New DoD Entrants, “For-Profit Other than Small” & “For-Profit Small” Businesses- FY2018–FY2023- DoD R&D Assistance

We then calculated the number of R&D for-profit companies with no prior USG funding versus those that were new to the defense market but had directly or indirectly received funding from non-DoD agencies. **Approximately 84% of R&D for-profit companies with no prior defense funding had prior USG funding from non-DoD sources, whereas ~16% had no prior USG funding whatsoever.**

⁵ The FAIN for this award is HQ00242020007.



Our earlier research revealed that the military writ large—including procurement-funded DoD innovation initiatives—struggles to attract new entrants. From FY2010–FY2019, more than 90% of Phase I Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) funding was awarded to entrenched DoD suppliers (Bresler & Bresler, 2020).

Anti-competitive solicitation practices and arcane requirements are among the key reasons it is nearly impossible for new entrants to break into the DIB making (Bresler & Bresler, 2021). Although further research is required to better understand how they conduct their outreach and engagement, **our preliminary analysis suggests that DoD R&D assistance programs may make it easier for non-entrenched companies to participate. As the DoD implements new policies and programs aimed at preserving and expanding the DIB, DoD leaders should study assistance programs to identify possible best practices.**

Exploring R&D Assistance Awards: Trelliscope

To enhance our analysis of DoD R&D assistance, we leveraged Trelliscope, an open-source tool for managing, sorting, and visualizing data (Trelliscope, n.d). We built two Trelliscopes: one containing data associated with 26,569 unique R&D assistance awards during the analysis period (“Award Trelliscope;” [Trelliscope: DoD R&D Assistance Awards, FY2018-FY2023](#),”) and another containing data related to 2,733 unique entities that received R&D assistance awards during the analysis period (“Awardee Trelliscope;” [Trelliscope: DoD R&D Assistance Awardees, FY2018-FY2023](#)). Figure 12 provides screenshots of both Trelliscopes.

Functionally, Trelliscope is an interactive dashboard that allows users to sort and filter data based on any of the underlying fields. The panel on the left side of the screen contains fields from the data that users can explore. Additionally, users can easily add, remove, and/or reorder visible fields from the left panel. In the case of the Award Trelliscope, the panels to the right represent distinct R&D assistance awards, and the data contained in each panel highlights key aspects of the award, such as its corresponding assistance program, award description, and dollar value. In the case of the Awardee Trelliscope, each panel to the right represents a distinct entity that received DoD R&D assistance funding. The default view populates each panel with pertinent information, including the entity type, entity name (coded as “Company”), and the date of the entity’s first award.

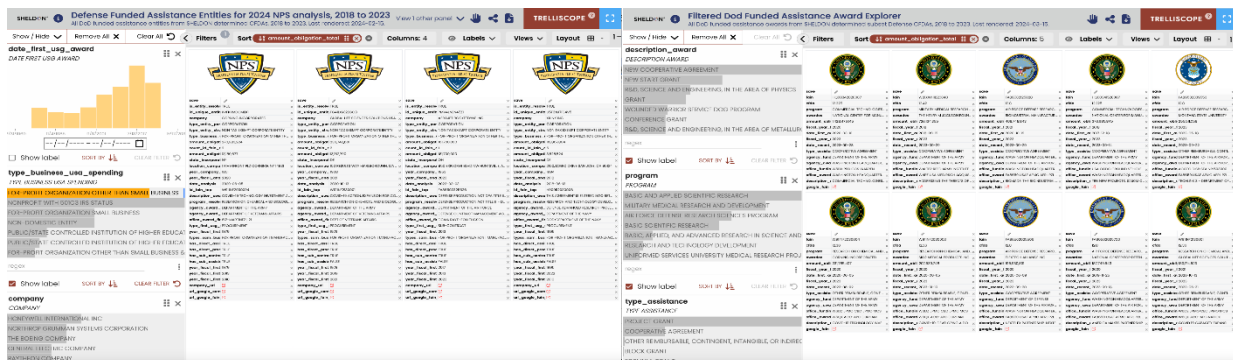


Figure 12. DoD R&D Award Trelliscope; DoD R&D Awardee Trelliscope

Research Limitation & Future Research

Exploring the Award Trelliscope, we noticed that some awards contained no useful text in the “award description” field. For instance, 89 awards contained only “NEW COOPERATIVE AGREEMENT” in the description field. Hundreds more contained only “GRANT,” “CONFERENCE GRANT,” “NEW START GRANT,” “NEW REP GRANT,” “NEW START,” or



other terms that offered no meaningful information about the purpose of the grant. Furthermore, as previously mentioned, allocators received a significant share of assistance awards. For many of these awards, the award description at the prime level included information about the administrative function(s) that the entity performed, rather than details about specific R&D projects funded at the sub-award level.

This research relied on text from the award descriptions for textual analysis, so the absence of useful information for a subset of awards was limiting. In addition to incorporating subaward data into future research, the Defense Technical Information Center (DTIC) maintains a library of publicly-available reports, abstracts, peer-reviewed publications, and other information about completed R&D/Science and Technology (S&T) projects funded by the DoD, which can often be linked back to the FAIN that funded the work. We recommend joining this information into future research to enable a more comprehensive understanding of DoD assistance projects.

How is DoD R&D Assistance Directed?

To establish a general picture of the types of projects funded via DoD R&D assistance, we calculated the total share of DoD R&D assistance funding directed into each DoD R&D assistance program during the analysis period. As shown in Figure 13, **“Military Medical Research and Development” received the largest share of funding, accounting for a staggering 25% of all DoD R&D assistance funding. Collectively, nearly one-third of all DoD R&D assistance funding was directed into assistance programs that referenced medical research** (“medical R&D assistance,” “medical R&D programs”).

Assistance Program	Total Obligations, FY2018-FY2023	% of Total R&D Assistance, FY2018-FY2023
MILITARY MEDICAL RESEARCH AND DEVELOPMENT	\$7,830,757,467	25%
BASIC AND APPLIED SCIENTIFIC RESEARCH	\$4,942,674,131	16%
AIR FORCE DEFENSE RESEARCH SCIENCES PROGRAM	\$4,459,941,512	14%
BASIC SCIENTIFIC RESEARCH	\$2,945,811,852	9%
RESEARCH AND TECHNOLOGY DEVELOPMENT	\$2,540,187,284	8%
COMMERCIAL TECHNOLOGIES FOR MAINTENANCE ACTIVITIES PROGRAM - CTMA	\$1,807,161,990	6%
BASIC, APPLIED, AND ADVANCED RESEARCH IN SCIENCE AND ENGINEERING	\$1,713,739,897	5%
UNIFORMED SERVICES UNIVERSITY MEDICAL RESEARCH PROJECTS - UNIFORMED SERVICES UNIVERSITY USU	\$1,658,592,440	5%
DEFENSE PRODUCTION ACT TITLE III - DPA TITLE III	\$1,417,559,803	5%
RESEARCH ON CHEMICAL AND BIOLOGICAL DEFENSE	\$1,188,918,975	4%
SCIENTIFIC RESEARCH - COMBATING WEAPONS OF MASS DESTRUCTION	\$467,826,228	1%
NAVAL MEDICAL RESEARCH AND DEVELOPMENT	\$141,774,087	0.4527%
COLLABORATIVE RESEARCH AND DEVELOPMENT - CONSTRUCTION PRODUCTIVITY ADVANCEMENT RESEARCH CPAR PROGRAM	\$100,510,633	0.3209%
RESEARCH AND TECHNICAL ASSISTANCE	\$60,114,662	0.1920%
RESEARCH AND DEVELOPMENT - MEDICAL AND PROSTHETIC RESEARCH AND DEVELOPMENT	\$32,150,848	0.1027%
MILITARY HEALTH SERVICES RESEARCH	\$4,903,267	0.0157%
SPACE TECHNOLOGY - STMD, SPACE TECH	\$1,632,518	0.0052%
RESEARCH GRANTS	\$1,134,664	0.0036%
AGRICULTURAL RESEARCH BASIC AND APPLIED RESEARCH -	\$512,365	0.0016%



EXTRAMURAL RESEARCH		
NAVY COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS, INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE - C4ISR	\$371,580	0.0012%
AIR FORCE MEDICAL RESEARCH AND DEVELOPMENT	\$300,000	0.0010%
WATER USE AND DATA RESEARCH - WUDR	\$215,517	0.0007%

Figure 13. DoD R&D Assistance Funding, by Assistance Program. Programs highlighted in red correspond to medical R&D programs.

Deep Dive: DoD Assistance for Medical Research

Medical research is important to the DoD for myriad reasons, from the threats posed by chemical and biological warfare to managing the unique needs of soldiers during and after battle. By analyzing text in the award description field, we determined that \$493.1 million in DoD R&D awards referenced “traumatic brain injury” or “TBI,” and \$113.7 million referenced “post traumatic stress disorder” or “PTSD.” Exploring the Award Trelliscope, we found that DoD medical R&D assistance also included funding to mitigate the effects of radiation exposure, develop new diagnostic platforms suited for the battlefield, restore sensory and nerve function after trauma, and other projects with an explicit link to military priorities.

However, as we explored details of the awards associated with the medical R&D assistance programs, we noticed that a significant share corresponded to broad medical topics. For instance, as shown in Figure 14, **1,803 R&D assistance awards referenced “cancer” in the description field. These awards corresponded to more than \$1.9 billion in funding—over 6% of all DoD R&D assistance funding. 478 of the cancer-related awards, totaling \$706.2 million, specifically referenced “breast cancer.”** By comparison, 218 awards totaling \$179.6 million in funding referenced “HYPERSONICS” and/or a related term in the award description.⁶ In other words, the **DoD directed 10x the amount of R&D assistance funding into cancer, as compared to hypersonics.** Hundreds of millions in DoD R&D assistance funding were also directed into projects related to obesity/diabetes, autism, heart disease, Parkinsons, and other general health/medical fields.

⁶ To identify related terms, we input “hypersonics” into the Defense Technical Information Center (DTIC) thesaurus. The DTIC thesaurus-generated corpus of related terms included ALTERNATE REENTRY SYSTEMS|BOOST GLIDE VEHICLES|COMMON AERO VEHICLES|HYPERSONIC|HYPERSONIC AIRCRAFT|HYPERSONIC CHARACTERISTICS|HYPERSONIC CRUISE MISSILES|HYPERSONIC DIFFUSERS|HYPERSONIC FLIGHT|HYPERSONIC FLOW|HYPERSONIC GLIDE VEHICLES|HYPERSONIC MISSILES|HYPERSONIC NOZZLES|HYPERSONIC REENTRY VEHICLES|HYPERSONIC TEST VEHICLES|HYPERSONIC VEHICLES|HYPERSONIC VELOCITY|HYPERSONIC WAVES|HYPERSONIC WEAPONS|HYPERSONIC WIND TUNNELS|RAMJET ENGINE|REENTRY VEHICLES



Figure 14. Snapshot of DoD R&D Assistance Awards Referencing “Cancer”

Generalized Medical Research & the Mission of Military R&D

The merits of government-funded medical research are not in question. Advancements in these fields are critical—they stand to benefit large segments of the general population, as well as service members and their families. However, according to the website for the Office of the Secretary of Defense the Under Secretary of Defense for Research and Engineering (OUSDR&E), the purpose of military R&D is to “provide the United States with the capability to produce technologies which are needed or may be needed to support the needs of National Security” (CTOInnovation.mil, n.d.). The prevalence of generalized medical research in the award data calls into question why such a significant share of funding earmarked for military R&D is directed as such.

Upon further research, we determined that a significant portion of military medical R&D is funded through a DoD appropriation known as the Congressionally Directed Medical Research Program (CDMRP). When CDMRP was established in 1992, it received \$25 million in appropriations. By FY2022, appropriations for CDMRP had grown to \$1.55 billion (Erwin, 2021). A 2022 Congressional Research Service report noted that “CDMRP funding has accounted for at least half of the [Defense Health Program] [Research, Development, Test, and Evaluation] account,” with the Breast Cancer Research Program, Prostate Cancer Research Program, and Peer-Reviewed Cancer Research Program among the CDMRP research topics in receipt of the greatest share of funding (Mendez, 2022). According to the CDMRP website, the program is intended to “to foster novel approaches to biomedical research in response to the expressed needs of its stakeholders—the American public, the military, and Congress.” CDMRP justifies the broad nature of its research funding on the basis that **“health-related issues that affect service members or their dependents would fall within the purview of DoD medical research”** (Congressionally Directed Medical Research Programs, 2024).

By this standard, all forms of medical research qualify. **This justification directly conflicts with the broader OUSD USDR&E mandate regarding the objectives of military R&D.** Furthermore, outside of the DoD, other federal departments direct billions of dollars into these same areas annually. In the case of cancer research, \$6.9 billion of the National Institutes of Health (NIH) budget was directed specifically into the National Cancer Institute (NCI) in FY2022 (American Institute for Cancer Research, 2024). The Advanced Research Projects Agency for Health (ARPA-H), the Department of Veterans Affairs (VA), and the Centers for Disease Control (CDC) also direct hundreds of millions of dollars into cancer research annually



(U.S. Department of Veterans Affairs, 2024; Centers for Disease Control and Prevention, 2022; American Society for Radiation Oncology, 2023). Even medical fields that align with military priorities receive substantial R&D funding outside of the DoD. For instance, the VA and NIH collectively direct hundreds of millions of dollars in research funding for TBI every year (U.S. Department of Veterans Affairs, 2019; "Traumatic Brain Injury Research," 2024). While there are processes in place intended to minimize unnecessary duplication of effort in medical R&D, further research is required to assess if and how DoD-funded medical research differs materially from projects funded elsewhere in the government. Additional research is also required to understand if and how the results of these projects are shared with relevant stakeholders government-wide—as well as with relevant research communities outside of the government—to ensure they are leveraged to the maximum extent possible.

In earlier research, we assessed DoD-funded procurement programs that have the stated objective of helping the military access the best and brightest new technologies. We concluded there is a lack of coordination when it comes to developing requirements, including for areas where the government is seeking “innovation.” For instance, on one single day in October 2020, there were more than 100 open requirements on SAM.gov related to “drones” (Bresler & Bresler, 2021). Additionally, one significant reason why technologies funded and fielded through innovation programs often fail to achieve widespread adoption relates to the fact that stakeholders across the government are not made aware of these investments (Bresler & Bresler, 2023). It is unrealistic to assume that DoD medical R&D is immune to the information stovepipes and lack of collaboration that undermine the effectiveness of other government-funded R&D programs.

Recommendations: Combatting Mission Creep in Military Medical R&D

Military medical R&D has experienced mission creep, with funding for broad medical initiatives eclipsing projects explicitly linked to DoD priorities. As the DoD contends with budget constraints, personnel shortages, dynamic threats around the world, and other challenges, it is essential that major lines of effort tie back to a clear purpose and that the disparate stakeholders involved operate transparently and with a shared set of objectives. To that end, the DoD should comprehensively review all DoD medical R&D projects to assess their relevance to military priorities. Projects focused on the health of the general population should be spun-off to other departments and agencies that are engaged in similar research. Shifting projects out of the DoD will present difficulties, particularly for CDMRP initiatives that have been under the purview of the DoD for 30+ years. However, doing so will help reorient military medical R&D around a shared “National Security” objective.

Nonmedical DoD R&D

We then shifted our focus to the 16 DoD R&D assistance programs with no reference to “medical research” in the program name, which accounted for \$21.64 billion in DoD-funded assistance from FY2018–FY2023.

Keyword Extraction & Analysis: KeyBERT

Given the magnitude of the data associated with these 16 programs, we utilized an open source natural language processing (NLP) library called KeyBERT to facilitate our analysis of the award data. KeyBERT uses the Bidirectional Encoder Representations from Transformers (BERT) language model to extract keywords from large blocks of text (Grootendorst, n.d.). For each of the 16 nonmedical assistance programs, we joined the text in the description field for all of their associated awards, and we used KeyBERT to identify the most commonly-referenced terms (“top keywords”).



Research Limitations & Future Research

As noted previously, some award descriptions offered little insight into how the R&D funding was ultimately directed. Most award descriptions also included highly general terms unrelated to the nature of a particular R&D effort, like “government,” “performance,” and “data.” These limitations impacted the quality of our KeyBERT analysis; thus, for certain assistance programs, KeyBERT produced useful/descriptive “top keywords,” but for others, it did not. We recommend that future research involve not only incorporating additional data into the analysis, but also refining the models to exclude certain terms.

Nonmedical DoD R&D Programs: Top Keywords

For programs with award description text that was conducive to KeyBERT, we found that a share of the top descriptive keywords appeared to reflect national security priorities and/or the mission objectives of the particular assistance program. For example:

- **BASIC AND APPLIED SCIENTIFIC RESEARCH:** Machine Learning, Modeling, Prediction, Physics
- **RESEARCH ON CHEMICAL AND BIOLOGICAL DEFENSE:** Biosafety Level, Coating Warehouse, Covid Vaccines
- **SPACE TECHNOLOGY - STMD, SPACE TECH:** Biomanufacturing, Space Travel, Variable Radiation Exposure
- **COMBATING WEAPONS OF MASS DESTRUCTION PROGRAM:** Radiation Effects, Chemical Warfare Agents, Radiation, Alphavirus Infections, Bacillus Anthracis
- **AIR FORCE DEFENSE RESEARCH SCIENCES PROGRAM:** Quantum, Machine Learning, Metallurgy
- **RESEARCH GRANTS PROGRAM:** Coupled Laser Diodes Systems, Cyber, Enhanced Signal Detection
- **DEFENSE PRODUCTION ACT TITLE III PROGRAM:** Domestic Production Capability, Critical Oxidizers, Increased Machining Capability
- **COLLABORATIVE RESEARCH AND DEVELOPMENT CONSTRUCTION PRODUCTIVITY ADVANCEMENT RESEARCH PROGRAM:** Erosion Control Assessment, Advanced Shipbuilding Enterprise, Hypersonic Flows
- **RESEARCH AND TECHNICAL ASSISTANCE PROGRAM:** Agile Manufacturing, Cyber Resiliency
- **AGRICULTURAL RESEARCH BASIC AND APPLIED RESEARCH - EXTRAMURAL RESEARCH:** Algorithms, Engineering Photonic Nanomaterials, Integer Quadratic Optimization
- **NAVY COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS, INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE - C4ISR:** Borne Pathogen Detection, Mission Adaptable Software

While KeyBERT helped us generate summary-level findings about these R&D assistance programs, more comprehensive research is essential. In particular, many of the top domains in the DoD R&D assistance realm mirror the DoD priorities in receipt of significant procurement funding. To understand how assistance-funded projects contribute to advancements in warfighting capabilities, future research should evaluate how assistance-funded projects differ from the investments at the procurement level—and if and how



technological breakthroughs achieved via assistance projects in these domains elevate the common operating environment.

Tracing the Path From R&D to Available Capabilities

Assessing the role of assistance funding as a means of advancing warfighting capabilities requires not only an analysis of the types of projects that receive funding, but also a way of tracking if capabilities developed under assistance programs are subsequently delivered, directly or indirectly, to defense end-users (“transition”). Unfortunately, there is no straightforward methodology for tracking transition, as there is no field in publicly-reported contracting data to indicate if aspects of a procurement contract corresponded to capabilities initially developed through an assistance program. Additional research is required to identify ways of proxying this metric. Initial ideas include:

- For entities that received assistance funding, either at the prime or sub-award level, identifying all subsequent contract and/or subcontract awards, and exploring the award details to determine if there appears to be a link between the products/services being procured, and the assistance-funded projects they undertook previously.
- Exploring the extent to which assistance-funded projects are cited in subsequent proposals.
- Linking assistance awardees’ patents to their assistance-funded projects using text analysis and searching for references to this intellectual property in procurement contract data.
- Exploring DTIC final reports to gauge technical readiness level(s) of assistance-funded projects.

Amplifying Transition Opportunities

Although we could not establish formal metrics to calculate transition, through qualitative research, including conversations with dozens of DoD stakeholders, we concluded that **DoD-funded assistance programs do not formally disseminate information about the results of their funded projects to the broad armed services community.** Although project reports are uploaded to DTIC, the DTIC repository is difficult to navigate and rarely consulted, particularly in the requirements development process. The lack of an efficient way for DoD stakeholders to learn about assistance-funded projects means that the results of these projects are not leveraged to the maximum extent possible.

New tools are required to make information about DoD R&D assistance programs more transparent, both to facilitate greater adoption of the R&D, as well as to ensure adequate oversight of the programs. While the need for information sharing is critical for projects across the DoD R&D assistance realm, **as part of the justification for their overhead/administrative burden, the DoD should require allocators, in particular, to widely disseminate information about the DoD R&D assistance projects they funded to potential beneficiaries.** In-person showcases, newsletters, and other ad-hoc programming are insufficient. Rather, allocators should be responsible for maintaining easily-explorable databases of the entities and projects they fund, designed specifically for USG stakeholders.

The nature of R&D is such that not all projects should result in transition-worthy capabilities. However, the overarching purpose of military R&D should not be to undertake experiments for experiments’ sake. To position these programs so that they serve the warfighting community to the maximum extent possible, we recommend structuring and measuring them in new ways:



- The DoD should develop realistic and well-thought-through goals for what share of assistance-funded R&D projects should transition, either directly or indirectly. Goals should vary based on the technology domain and should include projects funded at the sub-assistance level.
- USG stakeholders and prime contractors should be incentivized/required to leverage capabilities developed via DoD-funded assistance programs.
- Prior to directing funding into new R&D projects, in either the assistance or the procurement realm, USG stakeholders must determine if materially-similar projects have already been funded.

Communities of Interest: A Model for the DoD

While there is a need for tools and processes to improve information sharing, we learned that one way information about R&D projects reaches potential beneficiaries is through a network of informal and formal “**communities of interest**” within the USG. These typically form around a particular technology area, and members from across the services communicate regularly—formally and informally—to share information about interesting projects and advancements in relevant fields. Although these initiatives are limited in reach and only highlight a fraction of R&D projects, the collaborative, bottom-up approach has clear benefits with respect to elevating projects within stakeholder communities that can leverage them. We recommend follow-on research to identify and study these communities of interest, and if appropriate, to invest resources into amplifying their efforts/reach.

Conclusion

New innovations that stand to benefit the military are being produced by a wide range of communities inside and outside of the USG, and assistance funding is one of the many tools available to the DoD to support/harness these efforts. As such, assessing the effectiveness of R&D assistance as a means of enhancing warfighting capabilities, in isolation, is meaningful only to a point. A serious commitment to advancing warfighting capabilities depends on three pillars:

- 1) Attracting and engaging the disparate stakeholders at the helm of relevant innovation—including those outside of the traditional DIB
- 2) Reducing duplicative efforts
- 3) Ensuring breakthroughs reach potential beneficiaries across the DoD as quickly as possible.

The various mechanisms by which the DoD directs resources into innovation—to include R&D assistance programs, SBIR/STTR, the Defense Innovation Unit (DIU), Futures Command, and more—must operate in concert with one another. We hope this paper serves as a springboard for DoD leaders to refine performance goals, establish metrics, develop new standards of accountability, and frame analysis questions that can be tracked and measured over time, to ensure that the military remains at the forefront of technological innovation.

References

- American Institute for Cancer Research. (2024, March 18). *Government funding for cancer research*. <https://www.aicr.org/government-funding-for-cancer-research>
- American Society for Radiation Oncology. (2023, October 16). *ARPA-H awards \$115 million for cancer research*. [https://www.astro.org/news-and-publications/what-is-happening-in-washington/2023/arpa-h-awards-\\$115-million-for-cancer-research](https://www.astro.org/news-and-publications/what-is-happening-in-washington/2023/arpa-h-awards-$115-million-for-cancer-research)



- Bresler, A., & Bresler, A. (2020). *The effect of defense-sponsored innovation programs on the military's industrial base*. Naval Postgraduate School. <https://calhoun.nps.edu/bitstream/handle/10945/64763/SYM-AM-20-059.pdf?sequence1&isAllowed=y>
- Bresler, A., & Bresler, A. (2021). *Why marketing matters: Strengthening the defense supplier base through better communication with industry*. Naval Postgraduate School. <https://dair.nps.edu/bitstream/123456789/4404/1/SYM-AM-21-097.pdf>
- Bresler, A., & Bresler, A. (2023). *Assessing the effectiveness of defense-sponsored innovation programs as a means of accelerating the adoption of innovation force wide*. Naval Postgraduate School. <https://dair.nps.edu/bitstream/123456789/4868/1/SYM-AM-23-101.pdf>
- Centers for Disease Control and Prevention. (2022, June 8). *CDC awards \$215 million in funding to advance national cancer prevention and control toward cancer moonshot goals*. <https://www.cdc.gov/media/releases/2022/p0608-cancer-award.html>
- Congressionally Directed Medical Research Programs. (2024, March 14). *Transforming health care through innovative and impactful research*. <https://cdmrp.health.mil/aboutus>
- Congressionally Directed Medical Research Programs. (2024, March 18). *Overview of the Congressionally Directed Medical Research Programs*. National Center for Biotechnology Information. <https://www.ncbi.nlm.nih.gov/books/NBK424514/>
- CTOInnovation.mil. (n.d.). *Business & industry*. <https://www.ctoinnovation.mil>
- Erwin, M. C. (2021). *Congressionally directed medical research* (CRS Report No. R46599). Congressional Research Service. <https://sgp.fas.org/crs/misc/R46599.pdf>
- Grants.gov. (n.d.-a). *Grants 101*. <https://www.grants.gov/learn-grants/grants-101/>
- Grants.gov. (n.d.-b). *What is federal financial assistance?* <https://grantsgovprod.wordpress.com/tag/what-is-federal-financial-assistance/#:~:text=ederal%20financial%20assistance%20is%20the,purposes%20as%20defined%20by%20Congress>
- Grootendorst, M. P. (n.d.). *KeyBERT*. <https://maartengr.github.io/KeyBERT/>
- Mendez, B. H. (2022). *Congressionally directed medical research programs: Background and issues for Congress*. Congressional Research Service. <https://crsreports.congress.gov/product/pdf/R/R46599>
- National Center for Manufacturing Sciences. (2023, October 13). *About NCMS*. <https://www.ncms.org/about/>
- National Institute of Neurological Disorders and Stroke. (2024, February 28). *Traumatic brain injury research*. National Institutes of Health. <https://www.ninds.nih.gov/current-research/focus-disorders/focus-traumatic-brain-injury-research>
- Trelliscope. (n.d.). *Create and explore data frames of visualizations*. <https://trelliscope.org>
- U.S. Department of Veterans Affairs. (2019, October 22). *VA, DoD to fund up to \$50 million in new research on traumatic brain injury*. U.S. Department of Veterans Affairs. <https://news.va.gov/press-room/va-dod-to-fund-up-to-50-million-in-new-research-on-traumatic-brain-injury/>
- U.S. Department of Veterans Affairs. (2024). *FY 2024 budget in brief*. <https://www.va.gov/budget/docs/summary/fy2024-va-budget-in-brief.pdf>





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