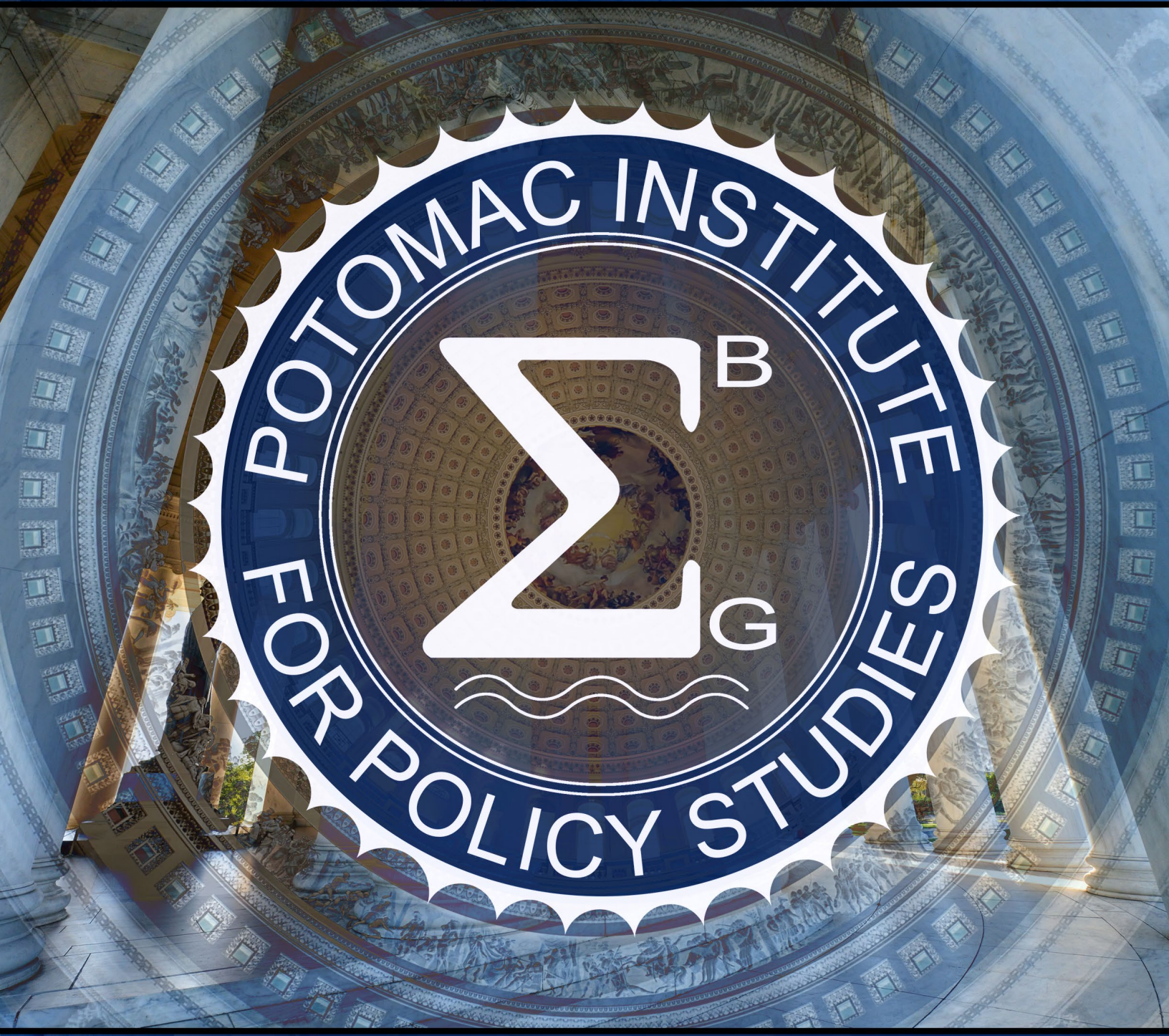
POTOMAC INSTITUTE FOR POLICY STUDIES



2023 ANNUAL REPORT

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FROM THE CHAIRMAN AND THE CHIEF EXECUTIVE OFFICER

Science is, by nature, non-partisan.

The Potomac Institute for Policy Studies was designed to provide an independent voice for expressing the promise and peril of technology in enhancing our national security and enabling American values. In this mission, two core—and mutually interactive—goals have been the pursuit of knowledge and the development of data-driven public policies.

We consider the current and future world, influenced by the rush of technology adoption, in our approaches to researching the thorny societal issues that technological progress will inevitably bring to the global stage in the 21st century. From our findings, we provide well-informed policy recommendations to the federal government and Congress.

At the heart of our efforts are principles of excellence and professionalism. Engaging problems and posing solutions require Bold Ideas fostered by the ability to think differently, explore new concepts and varied perspectives, and propose future visions. Our researchers explore a broad spectrum of topics, forging new inroads to emerging concepts across various academic disciplines that can be applied innovatively.

Our approach to investigation, analysis, and learning is deliberate. We actively seek alternative viewpoints and encourage rigorous debate to deepen our understanding. Embracing the possibility of failure is crucial as we explore these new frontiers.

We can think of no better way to celebrate 30 years of Potomac Institute than by reaffirming our commitment to unbiased scientific research and our dedication to non-partisan S&T policy solutions that address the critical impact areas highlighted in our 2023 report.

General Al Gray, USMC (Ret.)
Chairman, Board of Directors and Board of Regents
Potomac Institute for Policy Studies

Jennifer Buss, PhD
Chief Executive Officer
Potomac Institute for Policy Studies

"In tactics, the most important thing is not whether you go left or right, but why you go left or right."

—GENERAL AL GRAY, USMC (RET.)

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POTOMAC INSTITUTE FOR POLICY STUDIES

OUR PHILOSOPHY

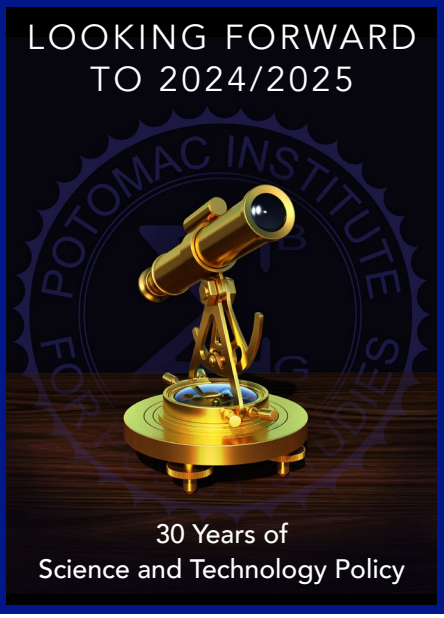
The Potomac Institute for Policy Studies provides nonpartisan, practical, and practicable analysis of science and technology policy to leaders in government, industry and academia. Our studies and policy reviews inform government officials in a manner that carries on the legacy of the former Office of Technology Assessment (OTA) in the U.S. Congress, after which the Institute is modeled. The Institute follows two basic principles. First, we fiercely maintain objectivity and credibility, remaining independent of any federal or state agency, and owing no special allegiance to any political party or private concern. Second, we seek extensive collaboration with similar organizations, as well as with industry, academia and all of levels of government. We believe that the study of today's complex issues demands a wide variety of contributions from various perspectives. We are proud to call ourselves "fiercely objective" as a result of our track record in divorcing political issues from policy challenges.

2022–2023

The Potomac Institute for Policy Studies remained an avenue for the government to engage with networks across the intersection of business and government to find meaningful science and technology (S&T) policy solutions. In 2022 and 2023, we focused on economic defense needs. We recommended ways that industries in the United States can play a more effective role in redefining national security. We enhanced customer organizational effectiveness through strategic messaging and human resource planning, and brought together business and government to identify and lead discussions on crucial S&T issues.

At the start of 2023, the Institute identified eight key areas that supported the continued national discourse between government and business: **1) Global Competition, 2) Mission Engineering and Risk, 3) Economics and Warfare, 4) Strategic Communication and Cognitive Security, 5) Space Policy, 6) Human Health and Performance, 7) Microelectronics, and 8) Technology Futures and Mission Capability.**

LOOKING FORWARD TO 2024/2025



In 2023, the Institute team brought together a small group of our Board of Regents and Senior Fellows to proactively identify specific policy areas the Institute can uniquely shape in 2024. This group helped refine the eight impact areas and tailor Institute research based on developments and data associated with S&T trends in the next two years. Based on the strongest emerging interests of Congress and our clients, the Institute's research implementation plan prioritizes five of the eight areas: **Technology Futures and Mission Capability, Space, Human and Health Performance, Global Competition, and Economics and Warfare**. The Institute team's ongoing efforts will build upon the 2023 research while driving thought leadership into new areas. Our 2024 Annual Report will mark the Institute's 30th anniversary and will provide a review of the impacts of our research.

IMPACT AREAS 2023

Over the past 29 years, our work has led us to identify the following eight focus areas for our team and experts in the coming year. These interests closely align with our work for government clients to continue advancing important policy areas that will help ensure our nation can compete and lead in the S&T world.

GLOBAL COMPETITION

- US Position on the Global Stage
- Strategic Levers in the Grey Zone
- Strengthening Partnerships
- Work Force and Education

MISSION ENGINEERING AND RISK

- Mission Level Enterprise and Risk Management
- Mission Integration and Acquisition
- Reliability of Commercial Capabilities

ECONOMICS AND WARFARE

- Economics as a Diplomatic and Warfare Discipline
- The Role of Industrial Policy
- Supply Chains, Transportation, and Logistics Under Fire

STRATEGIC COMMUNICATIONS AND COGNITIVE SECURITY

- Reclaiming the Narrative
- Communicating Within and Without
- Truth and Public Diplomacy

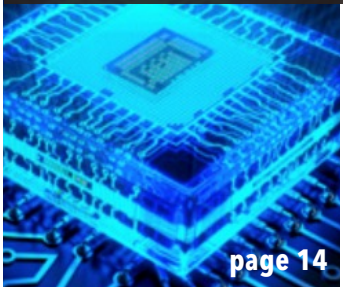
SPACE POLICY

- Commercial Systems Planning
- Enterprise-wide Integrated Mission
- Roles and Missions

HUMAN HEALTH AND PERFORMANCE

- Astronaut Health Risk Reduction
- Health Care Systems Enhancement
- NASA Systems Supporting Humanity
- DoD and Intelligence Community Support to Warfighting

MICROELECTRONICS



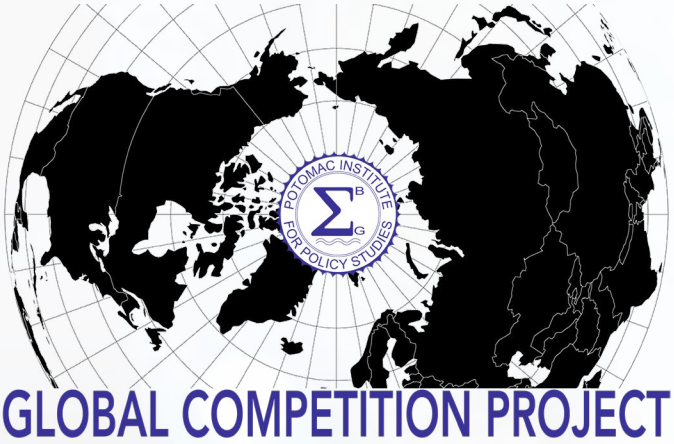
- Realities of CHIPS
- Mission Needs Versus Economic Realities
- Re-shore/Near-shore Decision Making

TECHNOLOGY FUTURES AND MISSION CAPABILITY

- Eliminating the Bureaucratization of Innovation
- Mission Operations Value of Technology
- DoD Stimulating the Industrial Base

Global Competition Project (GCP)

The Potomac Institute for Policy Studies established the Global Competition Project (GCP) in 2021 to help identify, elevate, and address some of the most vexing societal-level challenges facing the United States. Throughout 2021 and 2022, the Potomac Institute's GCP conducted a series of symposia and studies that aimed to leverage the lens of the global competitive environment to bring contextual relevance to the Institute's unique science and policy-focused mission and contributions to the nation. This work, especially influential at the intersection of prosperity and security, helps to ensure the adoption of the right policies and processes to enable the nation to flourish when faced with the complexities of the dynamic contemporary global landscape.



Visit the GCP online at:
potomacinstitute.org/academic-centers/gcp

The GCP ***Elements of Global Competition*** compendium, published in 2023, provides a comprehensive review of the GCP's analyses and results up to the end of 2023. The compendium features a foreword by The Honorable William "Mac" Thornberry and a collection of published writings on global competition from the Potomac Institute for Policy Studies' publication *STEPS: Science, Technology, Engineering, and Policy Studies*. Additionally, the compendium includes original articles not previously published by the Potomac Institute.

ELEMENTS OF GLOBAL COMPETITION
The Potomac Institute Global
Competition Project Compendium

Edited by Tim Welter, PhD and Bob Hummel, PhD
Foreword by The Honorable William "Mac" Thornberry

With contributions from Potomac Institute for Policy Studies Board of Regents members, Senior Fellows, and staff, and special acknowledgment to Global Competition Project event participants.

Mission Integration

A key feature of the Department of Defense (DoD) warfighting strategy is mission integration. This concept is a contemporary spin on the original intent of the Goldwater-Nichols Act's (GNA) to ensure a Joint organizational and operational approach for mission success. An evaluation of mission integration effectiveness is timely given that the DoD, including the Office of the Under Secretary of Defense for Research and Engineering (OUSD[R&E]), prioritizes assimilating mission engineering and mission integration into its program processes. The Potomac Institute conducted two studies evaluating mission integration management practices. The first report was to determine how well the DoD managed mission integration as a reaction to the 2017 National Defense Authorization Act (NDAA) request for information. The second study was to identify best mission integration and mission engineering practices from defense and non-defense commerce and industry to ascertain recommendations for the DoD.

Preliminary findings from the first report noted that while the DoD is working to meet provisions of the 2017 NDAA with OUSD(R&E) performing most mission integration management functions, Congressional expectations differed from Department execution. Reorganizations within OUSD(R&E), and continued mission integration language in the 2018, 2022, and 2023 NDAAs hampered Department implementation. The result was tactical and disaggregated mission integration management functions and no single mission integration management oversight and coordination point. Staffing and funding deficits exacerbated this integration management failure in certain areas.

The second report identified that key mission needs and requirements are not communicated early and clearly by DoD to industry and commercial organizations, but commercial lessons were valuable. While the language used in the commercial sector differs (e.g., product development versus system development), the analogous methods used by the commercial industry to support its customer base, from initial ideation to product support and logistics, could be adapted to support DoD systems.

The findings and recommendations from this work have been applied to other organizations with similar challenges. The Institute continues to refine this work and support clients in enhancing their business practices.

Economic Warfare Operations Capability (EWOC)

Economic statecraft is a reality of competition in the 21st Century, with serious implications for military operations. Industry and supply chains critical to America's economy and core warfighting missions are under routine attack (overtly and asymmetrically). The Air Force can actively fuse operational savvy with economic and business acumen to enhance whole-of-government economic solutions to supply chain risks. Economic threats include not only foreign power-based or terrorist activities but also environmental events that negatively impact supply chains. Economic solutions may originate from outside the government, through partners such as other nations and commercial businesses. These solutions may require additional authorities at the appropriate levels to swiftly decide, act on, and/or elevate threats and vulnerabilities across the US government and industry.

The DoD is not immune to this challenge. Currently, the DoD lacks a holistic organizational approach to identify, monitor, prioritize, and coordinate efforts to mitigate economic-based vulnerabilities in the industrial base and supply chains critical to its core missions. Congress recognized this lack of a comprehensive approach in FY24 NDAA Sec 223(c) parts 3 and 4. The Secretary of Defense's initiative to re-optimize the DoD for Great Powers Competition provides the opportunity to look more deeply into this challenge across the whole of government.

The Economic Warfare Operations Capability (EWOC) concept provides an operational approach to address economic-based challenges threatening the mission readiness of the United States. The EWOC fuses input from domestic and foreign public and private sector mission partners for decision and action.

EWOC operations are focused on preserving the ability to carry out core national missions at the most basic level—by securing the industry and global supply chains vital to these missions. The approach is scalable across the spectrum of conflict with the ultimate aim of delivering deterrence via operational decision advantage.

Unidentified Anomalous Phenomena (UAP)

The Potomac Institute was invited to participate in the cross-agency effort to understand the nature of unidentified anomalous phenomena (UAP) and their impact on national security. NASA and DoD hosted subject matter expert panels to identify the pressing issues associated with methods of studying UAP. The Independent Study Team, a community-based, interdisciplinary forum for soliciting and coordinating community analysis and input, was tasked with eight questions regarding the scientific integrity of UAP.

The following eight questions were addressed in the *Independent Study Team Report*:*

1. What types of scientific data currently collected and archived by NASA or other civilian government entities should be synthesized and analyzed to potentially shed light on the nature and origins of UAP?
2. What types of scientific data currently collected and held by non-profits and companies should be synthesized and analyzed to potentially shed light on the nature and origins of UAP?
3. What other types of scientific data should be collected by NASA to enhance the potential for developing an understanding of the nature and origins of UAP?
4. Which scientific analysis techniques currently in production could be employed to assess the nature and origins of UAP? Which types of analysis techniques should be developed?
5. In considering these factors, what basic physical constraints can be placed on the nature and origins of UAP?
6. What civilian airspace data related to UAP have been collected by government agencies and are available for analysis to a) inform efforts to better understand the nature and origins of UAP, and b) determine the risk of UAP to the National Air Space?
7. What current reporting protocols and air traffic management (ATM) data acquisition systems can be modified to acquire additional data on past and future UAPs?
8. What potential enhancements to future ATM development efforts can be recommended to acquire data concerning future reported UAP to assist in the effort to better understand the nature and origin of the UAP?

The study of UAP requires new and robust data collection methods, advanced analysis techniques, a systematic reporting framework, and reduced reporting stigma. The negative perception surrounding the reporting of UAPs poses an obstacle to collecting data on these phenomena.

The Potomac Institute provided a data-driven and non-partisan perspective on this issue, highlighting the lack of data availability and veracity to confirm or deny the existence of UAP. The research found that the communities that want to believe in unidentified phenomena are not interested in the data.

*The final ***NASA Unidentified Anomalous Phenomena Independent Study Team Report,*** published in September 2023, documented the panelists' recommendations for NASA to address the issues.

Commercial Space

The commercial space industry is expanding, offering new capabilities and opportunities to the market. In 2023, the Institute's research supported federal (defense and civil) clients to examine how commercial innovation can deliver new capabilities faster, improve resiliency through diversified architectures, and maintain technological advantages to outpace adversaries to secure the space domain. This foundational work will continue into 2024, as we continue to research and leverage our team's expertise in space policy. Our work integrates the space policy conversation across the many organizations responsible for the diverse facets of how we come together as a nation and leverage the intersections of business and government to ensure we are working together to develop meaningful policy solutions.

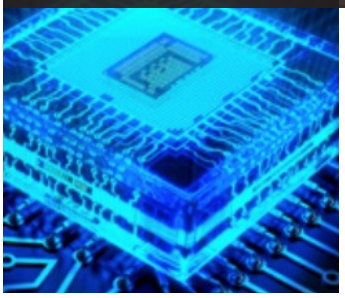
National Aeronautics and Space Administration (NASA)

In 2023, the Potomac Institute carried out several studies for NASA on evolving space policy. With NASA's established goal of achieving long-duration, crewed missions to Mars and exploding market for commercial space excursions, the three studies below explored space policy and human health in spaceflight. The Institute focused on three key areas to support policy needs in 2023: 1) Aerospace Medicine Training and Education, 2) Data Validity for Healthcare, and 3) Food Safety Regulation.

1. **Aerospace Medicine Training and Education.** Recent increases in commercial spaceflight have led to increased demand for medical personnel trained in *aerospace medicine*, specifically those specializing in space rather than aviation medicine. The increased demand has created seamlines in the standards for aerospace medical professionals. To support further standardization and identification of necessary core competencies for aerospace flight surgeons and medics, the Institute conducted extensive research and analysis across the aerospace medical community to identify and prioritize the essential skill and knowledge requirements for space medicine practitioners.

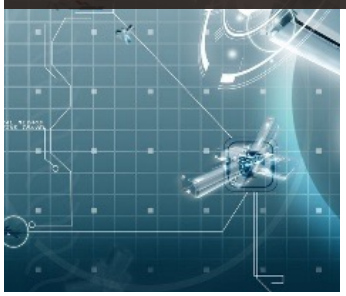
2. **Data Validity for Healthcare.** An additional challenge to NASA's Mars goal is the policy surrounding the health risks associated with human exposure to space, especially as longer-duration flights increase. NASA currently hosts the only US database for space medical data. Data-driven recommendations must form the basis for changes to existing medical policy. Given the limited number of astronauts with space flight exposure, establishing data significance is critical to making meaningful policy changes in this area. Building on the Institute's over ten years of experience in this field, the research staff designed a methodology to validate the health conditions experienced by astronauts as "spaceflight medical conditions." This provides immediate value in more comprehensive health coverage for NASA astronauts. Additionally, as the space insurance industry evolves over time, data-driven diagnoses will benefit government, insurance, private industry, and civilian parties both domestically and internationally.

3. **Food Safety and Regulation.** Food supplies for spaceflight have historically fallen within a grey zone of regulation due to unclear terrestrial authorities on the legal responsibility for food safety in space. This is largely due to the growth of commercial spaceflight services, which has raised questions about ensuring safe foods for private sector space ventures. The Institute assessed current food safety policies, both space and terrestrial, and recommended potential regulatory bodies to help establish guidelines for astronauts as we continue to develop national and international space norms. The evaluation found a lack of space food regulators. Terrestrial food regulators like the US Food and Drug Administration and the US Department of Agriculture have robust measures in place to identify and mitigate terrestrial food safety hazards. However, they require new legal authority to regulate food safety for human spaceflight.



Microelectronics Gaps and Solutions

The Institute has a long history of contributing to the policy conversation on **microelectronics**. This discussion sits squarely at the intersection of prosperity and security in today's globally competitive environment. Nations that control the design and manufacturing of microelectronics are uniquely postured with a strong competitive advantage, at least economically, for the future. This poses a particular challenge for the US government, as it has diverse needs but only represents roughly 1% of the commercial microelectronics market and, therefore, is limited in the demand it can drive in that market. While the US government recently made large investments in the microelectronics CHIPS Act, an action largely motivated by supply chain concerns, guaranteed access is a long-term issue. The Institute's work in 2023 was focused on continuing this discussion and identifying new and unique areas we could contribute to identifying gaps and solutions, most notably analysis on stockpiling approaches and securing the supply chain of the future for multiple government entities.



Capabilities Development Process Evaluation

The problem of explaining value (impact on product development and, therefore, fiscal fitness) continues to be a challenge for National Security Innovation Base (NSIB) partners. The Potomac Institute for Policy Studies developed a process for US Army Combat Capabilities Development Command (DEVCOM) Army Research Laboratory (ARL) to evaluate innovation organizations across the DoD/intelligence community (IC). The research team created an organizational impact assessment (OIA) methodology (and associated repeatable and transparent performance model) to defend DEVCOM ARL senior leaders' investment decisions. In this case, th e investment decisions focused on various research agreements, like Cooperative Resesarch and Development Agreements. To determine which partnership investments would likely be successful at getting new and desired technologies into warfighter hands, the research team created an innovation lifespan development chart that defined tasks associated with product lifecycle transitions from sustainment to initiation of replacement products. The tasks were aligned to organization charters, allowing the Potomac Institute-created performance model to compare partners and evaluate the likelihood of partnership success based on five critical success factor (CSF) categories considered important in developing a thriving innovation ecosystem organization. To increase the likelihood that investing in a potential partner would move a product closer to fielding, each development level required variations in the five categories. The report introduced a means to create organization-specific CSFs that would increase the likelihood that Army leaders would invest in the partner that would be successful at accomplishing its identified mission in the ecosystem.

The OIA methodology can assist any organization's leadership in assessing their current and future investment in research and development (R&D) and S&T and retain America's technological edge. It allows senior leadership to quickly rack and stack organizations and investments via quantitative metrics, identify emerging issues, address concerns as soon as new data is uploaded, and have some degree of confidence regarding adding potential new organizations to the innovation ecosystem. For DEVCOM ARL, upon completion, this research could have a two-fold impact: 1) if adopted by the DoD/IC, this could streamline leadership discussions with other DoD/IC organizations and/or Congress by utilizing the same evaluation approach, and 2) create a common communication platform that addresses Army-specific criteria among DEVCOM ARL internal and external partners.

2023 ENDURING INFLUENCE

CETO is an internal Marine Corps think tank that supports the Deputy Commandant for Combat Development and Integration (DC CD & I). CETO's core mission is to provide the Commanding General of the Marine Corps Warfighting Lab (MCWL) with technical and analytical support for concept development, wargaming, and experimentation programs. CETO conducts assessments of the strategic environment; future threats and potential adversaries; and the associated geographic, environmental, economic, and demographic trends that may influence future warfighting requirements.

The following highlights how the Potomac Institute staff supported Marine Corps Force Development efforts in 2023. As requested by the Commanding General, CETO conducted a thorough and objective assessment of proposed courses of action to reorganize the MCWL staff. The intent of the reorganization was to better coordinate and synchronize the efforts of the various MCWL divisions, as the scope of their individual responsibilities rapidly expanded during the year. CETO efforts better informed the General's decision. As a follow-on effort, CETO produced an information paper recommending structural and supporting relationships for an anticipated MCWL Futures Branch.

CETO increased its support to MCWL Concepts and Plans Division during 2023. The team provided direct consultation to the principal authors of a Concept for 21st Century Amphibious Operations and played a key role in designing a companion wargame that will be played in 2024. More impressive, Chris Haliday joined the core writing for the Marine Corps Concept for Logistics and became the principal author. By the end of 2023, the document underwent all requisite review, and the Commandant of the Marine Corps will sign it in early 2024.

MCWL continues to develop and conduct live force experimentation with USMC Fleet Marine Force units. This year's focus remained on experimenting with the 2030 Infantry Battalion Design (IBX 30). Building on the 2022 Phase I experimentation results, CETO members identified capabilities, structural changes, and operating concepts that required further exploration during Phase II experimentation. The Potomac Institute staff supported the MCWL Experiment Division teams that designed new experiments to evaluate organizational and tactical solutions for previously identified capability gaps. Members of the team supported initial Phase II experiments in October. Earlier in the year, they provided subject matter expertise during Marine Littoral Regiment (MLR) experimentation. The MLR will be a critical component of future Marine Corps contributions to sea denial operations.

CETO again supported the design and facilitation of MCWL wargames that provided key insights for future force development during 2024. Andy MacManus developed a series of related Tactical Decision Games using the proposed Force Design 2030 tactical organization and weapons capabilities. These games were invaluable to wargame designers. Game directors also used them to inform and orient players at the beginning of Force Design 2030-related games.

Other CETO activities during 2023 included participation in the Maritime Working Group Maritime Terrain Shaping and Sea Denial break-out group working sessions throughout the year. These efforts are helping to design future Marine Corps operations in the maritime domain. During 2024, CETO will continue to track strategic patterns and trends and consider plausible futures and their implications for national security in general and specifically for naval warfare in 2030 and beyond.

NSWC

Naval Surface Warfare Center (NSWC) Indian Head Division (Mike Hogland)

We are at a tipping point in our country's history. How our munitions industrial base supplies our fleet in the next few years will decide our nation's future standing in the world order. This isn't stated lightly. The implications of crying wolf are well understood, especially when the nation faces so many other challenges.

After the Berlin Wall fell and the last US peer competitor dissolved, our country enjoyed decades of dominance in every warfighting domain. This allowed our military to invest in diverse, dual-use technologies, such as electronics and command and control, instead of munitions advancements. However, munitions—and the energetics that power them—deter and decide wars. **Energetics are the propellants, rocket motors, and explosive fills that deliver a lethal effect on a target.** Long-range, naval firepower was not necessary during the Global War on Terror, but it is now.

There is an entire generation of warfighters, requirement authors, acquisition managers, and technology developers who never had to design, develop, and field solutions for an existential threat. During the past 20 to 30 years, the commercial sector consolidated and closed large-scale manufacturing lines with little demand. As we accept what a global conflict with a peer competitor will require, we all recognize how underprepared we are. We need an all-hands-on-deck strategy, like the one from the forties when our country answered the call of duty. However, as platforms have grown more advanced and specialized, existing factories can no longer be quickly modified to produce more ships.

What we can do is take a more thoughtful approach to our Government arsenals and include their purposeful overcapacity in our munitions acquisition strategies. The organic industrial base serves two roles: 1) as a catalyst—keeping industry honest, onboarding new partners, and researching those low-ROI innovations, and 2) as a cadre—serving as a backup if industry falters, and providing the surge wartime capacity necessary that is cost prohibitive to industry during peacetime.

Industry often appears to be an easy button, only for us to find years of delays in restarting mothballed production lines. We can minimize these delays by keeping Government munitions production stable and exercised. We must use all our assets to address this crisis. Government-owned and operated assets, including the Navy's only public arsenal in Indian Head, Maryland, are ideal solutions for critical defense competencies with low peacetime demand or minimal dual-use application. Energetics and munitions are similar to underwater nuclear propulsion—minimal non-defense application, but vital to national defense. We would never fully rely on industry to maintain nuclear propulsion capacity and expertise without an organic backstop.

YONAH ALEXANDER SPECIAL REPORT, *SECURITY MAGAZINE*

Director of the International Center for Terrorism Studies (ICTS) Professor Yonah Alexander is a leading figure in terrorism studies. His over 70-year career has significantly contributed to understanding terrorism's global impact.

Through ICTS, Professor Alexander's work advances terrorism studies and unclassified intelligence by supporting a four-pronged mission: monitor current and future threats; develop governmental and nongovernmental response strategies; communicate with policymakers, academia, and the corporate sector; and research critical challenges and opportunities in the global suppression of terrorism.

Professor Alexander's life work in terrorism studies seemed inevitable. He was eight years old when World War II began, and he grew up in Palestine before the creation of Israel. Exposed to the numerous security challenges in the region, he "began to wonder why acts of terrorism, state-sponsored violence and other forms of inhumanity were continuing," and dedicated himself to seeking an answer to this question.

Professor Alexander earned a bachelor's degree in political science from Roosevelt University, a master's in international relations from the University of Chicago, and a doctorate in public law and government from Columbia University.

Professor Alexander has contributed to critical policy addressing terrorism since the 1950s, authoring seminal works on al-Qaida, cyber warfare, and documenting the evolution of US and international anti-terrorism operations. He has over 100 published books on terrorism and counterterrorism, he is the founder of five academic journals, and his work is archived in Stanford University's Hoover Library and highly accessed regularly by international researchers in the field.

Since the inception of his interest in terrorism studies, Professor Alexander has strived to define the nature of violence, and to determine how societies can achieve durable peace with justice. His current focus is on educating the next generation of world leaders to recognize historical patterns and prevent violence before it occurs.

"We have to follow the lessons history teaches us in order to allow for international diplomacy, to continue to have patience, to listen, and to make sure we avoid violent situations, especially now that weapons of mass destruction can destroy the world... The key question, then, is whether civilization will survive? My short answer is yes—if we want to learn from the lessons of history."

— PROFESSOR YONAH ALEXANDER

The text above is a summary of Madeline Lauve's *Security Magazine* article. The full article is available at *Security Magazine*: https://www.securitymagazine.com/articles/99816-yonah-alexander-most-influential-people-in-security-2023

INTERNATIONAL CENTER FOR TERRORISM STUDIES (ICTS)

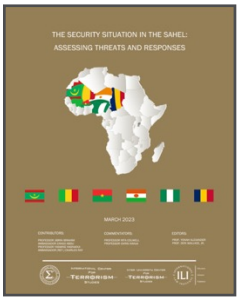
Visit the ICTS webpage at:
potomacinstitute.org/academic-centers/international-center-for-terrorism-studies-icts

2023 ICTS REPORT PUBLICATIONS

Given the current global energy crisis heavily affected by Russia's Invasion of Ukraine, oil strategy challenges, and climate change, what is the outlook for economic and security concerns? In this publication, an interdisciplinary panel of US and foreign experts discusses past lessons, evolving risks, and recommendations for conflict-resolution opportunities on national and international levels.

The latest devastating earthquake in Türkiye and Syria has caused grave humanitarian costs with critical implications for regional and global security. In this publication, distinguished American diplomats and other officials discuss how the US can gain diplomatic advantages during the ongoing tragedy to advance international cooperation to avert future natural disasters and human threats.

Latin America continues to confront multiple political, social, economic, health, and security concerns, including populist leadership, corruption, criminal activities, terrorism, and human rights abuses that threaten regional and global stability. In this publication, a panel of interdisciplinary experts considers the future strategic outlook and offers recommendations for "best practice" response strategies at the governmental, intergovernmental, and nongovernmental levels.



Amid multiple continued grave health challenges, Africa is experiencing an upsurge of other worrisome security threats, such as organized criminal activities, terrorism, and ungovernable societies. In this publication, international experts assess the Sahel's security challenges, and recommend governmental, intergovernmental, and nongovernmental response strategies.

EDUCATION PROGRAM

The Potomac Institute for Policy Studies remains dedicated to fostering a culture that places education, research, and the development of its people at the forefront of its mission. In a world where understanding policy and complex challenges requires innovative thinking, we are committed to creating an environment that encourages the exploration of big, bold ideas. The Institute's Education Program is an important platform for internal and external learning that touches our staff, clients, and the larger community of government, industry and academia. It remains a valuable hub for cutting-edge (current) S&T policy courses as well as a space for internal professional development.

The Education Program entered 2023 with a timely course entitled **CHIPS: Unraveling the Landmark Legislation**. Senior Fellow Mike Fritze, PhD served as the course director. In April, we offered a course on critical minerals with Senior Fellow Sarah Mineiro as the course director. This course highlighted perspectives from government and industry to share why this is an important area of focus for the US government. Senior Fellow Dean Cheng directed our China course in June. This course considered China's military, economy, innovation, and foreign relations. This course aligned with the article *Peak China: Personal Observations as a Western Businessperson in China*, written by Senior Fellow Patrick Ennis, PhD. In September, we lauched a course called **Venture Capital: Casino Royale or Deliberate Innovation** to explore the world of venture capital (VC). The course director, John Wilson, invited four talented speakers from the VC industry to participate as faculty. These experts brought insight and clarity on how venture capitalists and government can work together. In conjunction with Dr. Mike Fritze, October provided us with another opportunity to delve into the world of microelectronics by hosting a public event titled **Towards Security Standards for Commercial Microelectronics**.

INTEGRATION OF ARTS AND SCIENCE EDUCATION

This year, the Potomac Institute began an initiative to explore how to fully integrate the arts to improve the sciences, and the sciences to improve the arts. Spearheaded by the Institute's Vice President, Curtis Pearson, the goal of this project was to develop a pilot program to increase creativity and collaboration by bringing together these areas of learning.

The concept behind this project was to meld science and art education, thereby creating better integrated learning settings where multiple fields are taught together, encouraging cross-disciplinary learning and creating stronger future innovators. Our initial focus examined how the arts and sciences can work together to generate dynamic solutions in both fields. The follow-on pilot program will target communities where funding for arts and sciences is lacking for secondary level education students. The goal is to integrate a cross-disciplinary mindset at this level of learning to help students identify and apply creative science, technology, engineering, arts, and math (STEAM) solutions as they continue developing their education.

A roundtable discussion was held in September 2023 with expertise from across these communities. The objective was to help design the path forward, while identifying promising areas of research and pathways for testing the process.

INTERNSHIPS

The Potomac Institute's Science and Technology (S&T) Internship Program allows aspiring graduate and undergraduate students to research an S&T topic of their choosing, provide bold and insightful recommendations in a policy research report, and present their findings to Institute staff and leadership.

This program, and our International Center for Terrorism Studies (ICTS) program, are both part of our commitment to develop and encourage the next generation of policy leadership. We take pride in leveraging our networks to support the students' development of their articles. The six abstracts on page 23 are samples from our 2023 programs.

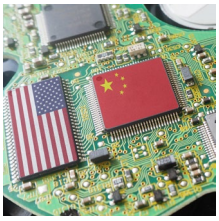
"If you are not teaching, you are not leading."

—GENERAL AL GRAY
29TH COMMANDANT OF THE US MARINE CORPS

View internship opportunities online at:
potomacinstitute.org/about-us/internships

2023 INTERN RESEARCH REPORTS

The views and opinions expressed do not necessarily reflect those of the Institute.



When the Chips are Down: U.S. Semiconductor Export Controls on China's AI Development

Miles Wang, Potomac Institute for Policy Studies and Harvard University

This report examines how US export controls of October 2022 on advanced semiconductors, critical for AI, aim to degrade China's progress. The restrictions have slowed but not blocked China's AI chip ambitions. Sustained enforcement and adaptation will be required amid this ongoing technology competition.

Solar Radiation Management: An Evaluation of Promising Methods and Next Steps

Gwenyth Ross, Potomac Institute for Policy Studies

Global warming threatens future economic stability and quality of life. Experts warn that current emissions reductions are insufficient, pushing consideration of solar radiation management (SRM) as a temporary measure to delay the effects of global warming and buy emissions reduction time. Due to the urgency of this issue, SRM implementation research should be expedited.

Microplastic Mitigation: Leveraging American Capabilities to Mitigate the Future Impacts of Microplastics on Human Health

Julia T. Campbell, Potomac Institute for Policy Studies and Georgetown University

Microplastics threaten American food and water safety, urging government action to mitigate their effects. Major knowledge gaps exist in toxicity, waste treatment, sample identification, and reduction of plastic use. Addressing microplastics now will reduce their future impacts.

Rare Earth Resilience: Foreign Investments in the Pursuit of Supply Chain Security

Maxwell McCarty, Potomac Institute for Policy Studies

The US largely depends on China for rare earth elements. Despite domestic investments, insufficient diversification remains due to overlooking high-impact/low-probability events and security concerns. Enhancing the Mineral Security Partnership, expanding the US DFC's mission, and National Science Foundation grants could mitigate supply chain disruptions.

Global Talent Acquisition and Retention: Connecting Higher Education and Skilled Immigration to Advance American Competitiveness in Science and Technology

Jihyun Won, Potomac Institute for Policy Studies and Amherst College

Higher education, skilled immigration, and technological progress are key to global competitiveness. American innovation, partly fueled by international students and H-1B visas, faces challenges from visa restrictions. A shift toward an interconnected, international STEM landscape is crucial for the United States' growth and influence.

AI Revolutionizing Transparency: Using AI to Increase Transparency in the Federal Government

Rindha Sudhini, Potomac Institute for Policy Studies and University of Pennsylvania

Civic engagement, crucial for democracy, involves efforts to change communities. It fosters associations, productive discourse, and collaboration to improve communities, hold authorities accountable, and ensure that decisions meet citizens' needs. Transparency is key, as trust diminishes without understanding.

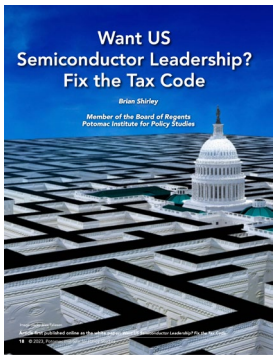
SCIENCE, TECHNOLOGY, ENGINEERING AND POLICY STUDIES (STEPS)

The Potomac Institute publication *STEPS* provides original articles by staff, affiliates, and contributors to the work of the Institute on timely topics relevant to S&T policy. This publication provides a space for new experts in the S&T field to partner with and learn from our more established experts on the Board of Regents and Senior Fellows. In 2023, we produced one issue that received attention in the press and on social media.

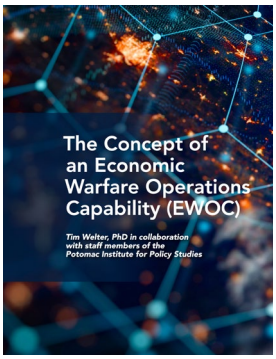
ARTICLES FROM 2023

ISSUE 8 (APRIL)

Values, Strategy, and America's Competitive Posture
The Honorable Alan R. Shaffer; Moriah Locklear, PhD; and Tim Welter, PhD

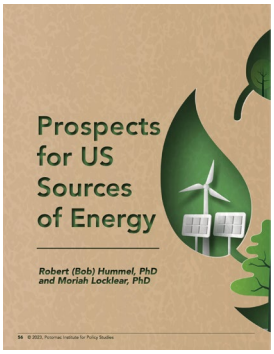


Want US Semiconductor Leadership? Fix the Tax Code
Brian Shirley



The Concept of an Economic Warfare Operations Capability (EWOC)
Tim Welter, PhD in collaboration with staff members of the Potomac Institute for Policy Studies

Reinvigorating Innovation for National Security
Bob Hummel, PhD in collaboration with Potomac Institute for Policy Studies Staff



Prospects for US Sources of Energy
Bob Hummel, PhD and Moriah Locklear, PhD

Read current and past issues of *STEPS* online at: potomacinstitute.org/steps

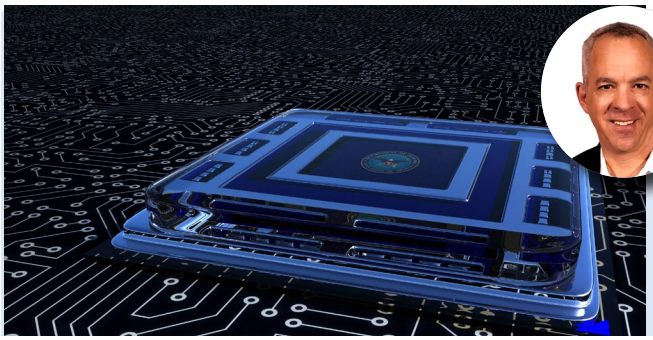
POTOMAC INSTITUTE IN THE NEWS

Peak China: Personal Observations as a Western Businessperson in China

Patrick Ennis, PhD

POTOMAC INSTITUTE FOR POLICY STUDIES
Science for Policy, Policy for Science

Peak China: Personal Observations as a Western Businessperson in China



For the CHIPS Act to pay off, the US needs a historic investment in memory production

Brian Shirley

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For the CHIPS Act to pay off, the US needs a historic investment in memory production

Brian Shirley 12:00 PM EDT • October 13, 2023

Comment

Batten the hatches: Rough times ahead after Taiwan elections

Dean Cheng

BREAKING DEFENSE

GLOBAL, NAVAL WARFARE

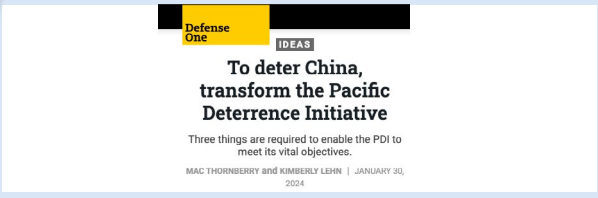
Batten the hatches: Rough times ahead after Taiwan elections

In its presidential election Taiwan may have sent a rebuke to Beijing, but in this op-ed the United States Institute of Peace's Dean Cheng makes a closer, more nuanced examination.

By DEAN CHENG on January 16, 2024 at 1:38 PM

To deter China, transform the Pacific Deterrence Initiative

Mac Thornberry



Defense One

IDEAS

To deter China, transform the Pacific Deterrence Initiative

Three things are required to enable the PDI to meet its vital objectives.

MAC THORNBERRY and KIMBERLY LEHN | JANUARY 30, 2024

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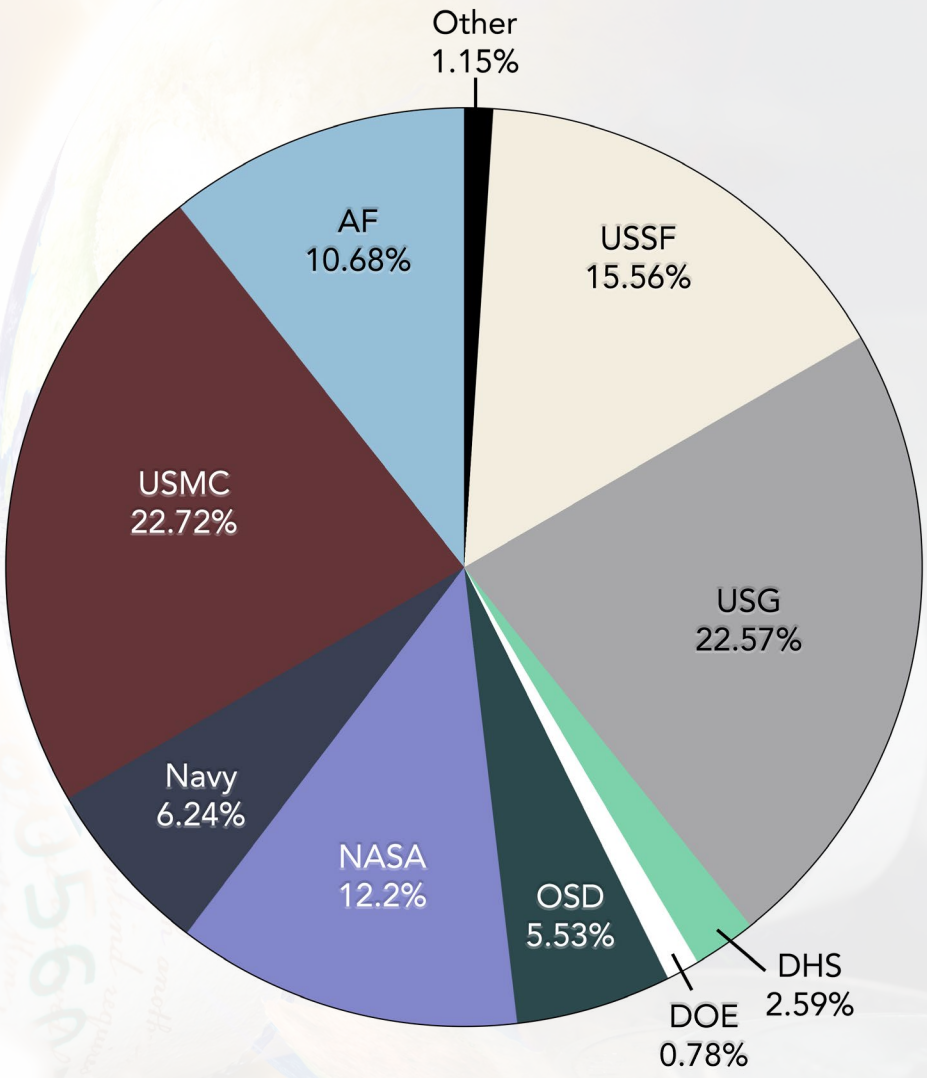
FINANCIALS

Potomac Institute for Policy Studies
Estimated Revenue FY2023



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