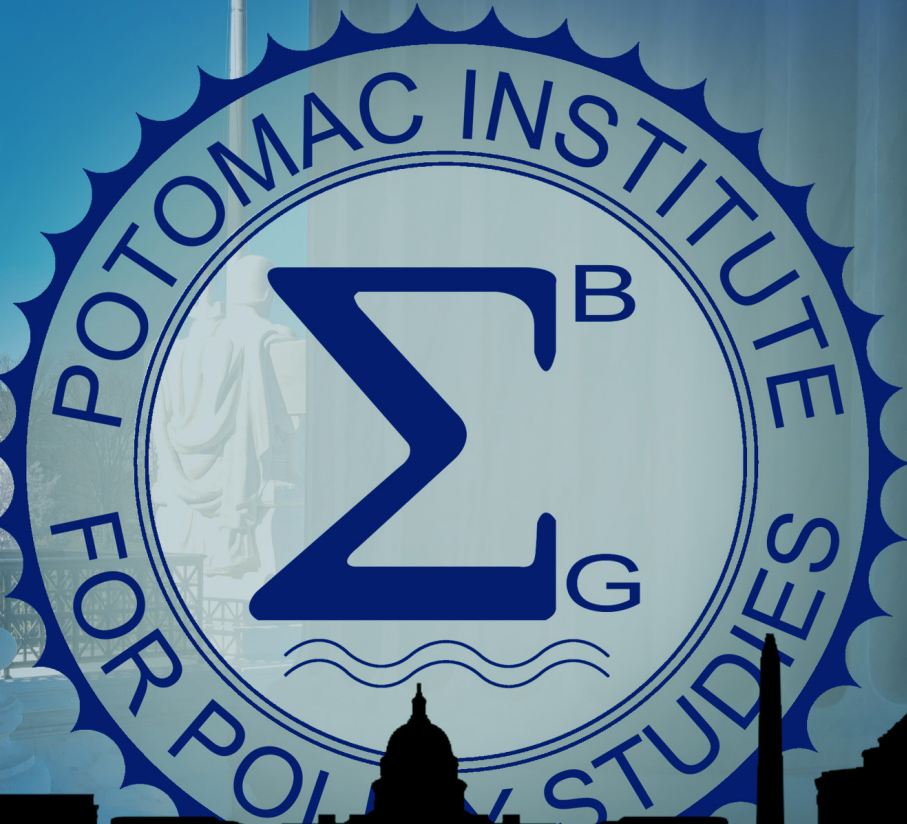


Potomac Institute  
for Policy Studies

An Independent,  
Non-Partisan Voice  
at the Intersection of  
Business and  
Government



2018





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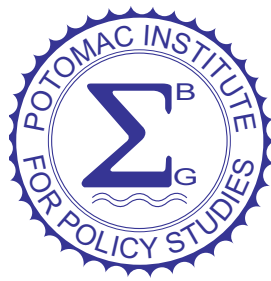
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ABOUT  
**POTOMAC INSTITUTE  
FOR POLICY STUDIES**

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This year the Potomac Institute for Policy Studies has continued to develop meaningful policy options and recommendations and ensured their implementation at the intersection of business and government. This Annual Report is intended to provide an update on the Institute's funding profile, leadership team, and activities this past year. We are building a strong future for the Institute and are working to achieve our mission to support the nation on critical S&T Policy issues.

The Potomac Institute is a unique organization that merges elements of a think tank, consulting organization, federally funded research and development center, and university. We strongly value our position as an independent, non-partisan, trusted source of expertise on science, technology, and national security issues. Our funding is almost entirely from government contracts, which gives us a unique role as a trusted advisor to policymakers, and an up-close window into the real world of policy issues. Historically, the Institute has not relied on foundation or individual giving because we value our independence from ideological or special interests. As a not-for-profit, our public service mission is to contribute an independent and academically rigorous voice to the policy dialogue. We believe strongly that policy should, to the greatest extent possible, be based on science and evidence and that government should fund science and technology to help inform policy decisions when data is lacking.

This year, more than ever before, the Institute occupies a premier position at the intersection of business and government, particularly in the S&T innovation space. We are partnering with several agencies across the military and government that are trying to better understand how to adapt commercial technologies for military use or accelerate important scientific developments and translate them into applications the nation needs. In the coming year this will continue to be a key focus area for the Institute.

The Potomac Institute is known for big ideas – imagining the future of S&T and making bold predictions about its impacts. We have generated big ideas, delivered them to key decisionmakers, and made inputs to help execute them and turn them into a reality. We have been developing efforts on space policy, bio security and synthetic biology, artificial intelligence, and more.

We wish to take this opportunity to express our deep appreciation for the continuing support of the Board of Directors, Board of Regents, and Senior Fellows of the Potomac Institute for Policy Studies. Your input, counsel, and guidance have been invaluable to our mission and our organization.

## 2017 AND 2018 FUNDING UPDATE

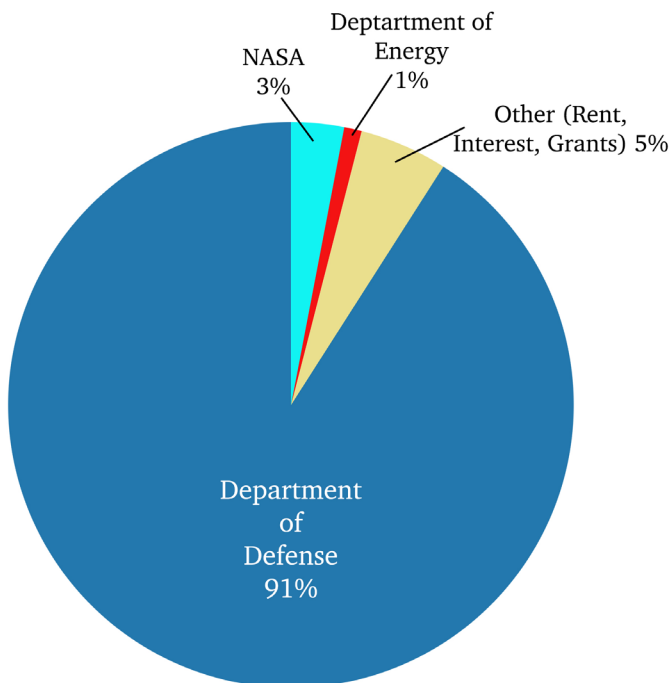
### THE POTOMAC INSTITUTE FUNDING

The Potomac Institute’s funding and focus areas are largely in the national security space, and our funding profile for 2017 reflects this commitment to these issues.

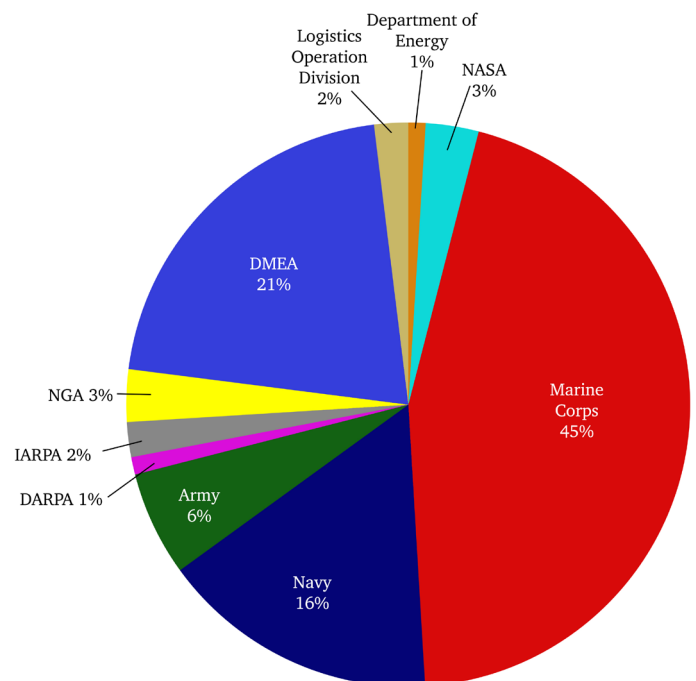
The majority of our funding comes from the Department of Defense via the services or agencies focused on science and technology. We are proud to count many former service members among our Board, staff, and fellows. Throughout our history, we have also served other government customers,

including National Aeronautics and Space Administration, Department of Energy, Department of Homeland Security, the Intelligence Community, law enforcement, and other civil agencies such as Federal Aviation Administration, the Census Bureau, National Science Foundation, National Institutes of Health, Department of Health and Human Services, and more. In 2018, we have grown our business with NASA and are increasing our focus on biomedical and basic science efforts.

POTOMAC INSTITUTE 2017 REVENUE BY SOURCE, BASED ON AUDITED FINANCIALS



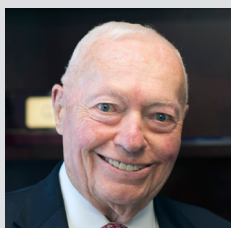
POTOMAC INSTITUTE 2017 REVENUE BY SOURCE, BASED ON AUDITED FINANCIALS



## LEADERSHIP UPDATE



**MICHAEL SWETNAM**  
*Chairman and Chief Executive Officer*



**GENERAL AL GRAY,**  
**USMC (RET)**  
*Chairman, Board of Regents*



**GAIL CLIFFORD**  
*Chief Financial Officer*

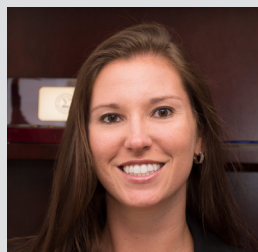


**KATHRYN SCHILLER WURSTER**  
*Chief Policy Officer*

We are proud to announce that as of July 2018 the Potomac Institute’s Senior Management team has grown. This dynamic new team is already showing success in generating new business opportunities and having high-level policy impact.

*Please join us in congratulating our leadership team.*

The Potomac Institute for Policy Studies is excited to welcome Dr. Jennifer Buss as its new president. Dr. Buss is eager to lead the Institute in its mission to promote science and technology policy at the highest levels of government. She served as a Vice President at the Institute for the last three years, has deep technical expertise and has demonstrated her business development and management acumen.



**JENNIFER BUSS, PHD**  
**PRESIDENT**

We are pleased to announce the appointment of two new Vice Presidents of the Potomac Institute, Dr. Kathy Goodson and Dr. Michael Fritze.



**Dr. Kathy Goodson** currently manages science and technology projects serving the Office of the Secretary of Defense and U.S. Navy related to education and training, strategy and execution, and mission assessment. She has had the opportunity to work on a variety of efforts that enhance the contributions of science and technology for government customers, including Advanced Distributed Learning (ADL), Office of Naval Research (ONR), National Aeronautics and Space Administration (NASA), Defense Health Agency (DHA) and the Corrosion Policy and Oversight Office (CPO).



**Dr. Michael Fritze** is an internationally recognized expert in microelectronics, served as a program manager at DARPA on a revolutionary Rad-Hard by Design program, and held research roles at USC-ISI and MIT-Lincoln Lab. He leads the Institute’s robust microelectronics portfolio, with multiple S&T research efforts serving Defense Microelectronics Activity (DMEA), Office of the Secretary of Defense (OSD), Defense Advanced Research Projects Agency (DARPA), the services, and the Intelligence Community. Dr. Fritze also serves as the Director of the Institute’s Vital Infrastructure, Technology and Logistics (VITAL) Center, which focuses on supply chain security and critical infrastructure resilience.

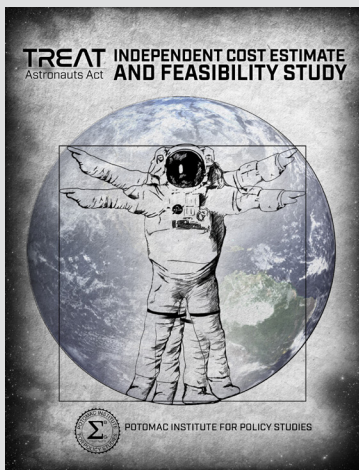
## PROGRAMS UPDATE

The Institute continues to work with a variety of federal government customers to generate strategic advice on S&T issues, from policy to investments to technology assessments. Our work has contributed to the administration's focus on large policy questions on issues like supply chain, infrastructure, national security, and space, to name a few. Thanks to our staff's diligence as well as guidance from experts, our services are continuously requested and praised.

In our work for the government, the Institute provides strategic planning, budget analysis, and technology

forecasting in support of areas as varied as microelectronics security, health concerns and human performance in space, warfighting activities and capabilities, and military training and education concepts. We continue to provide innovative, research-based technology forecasting insights to the defense and intelligence communities. Our customers include OSD, U.S. Marine Corps (MCWL and TECOM), Navy, Air Force Research Laboratory, Defense Microelectronics Activity, DARPA, Department of Energy/NNSA, the Intelligence Community, and many more. In addition, we are working with NASA's Human Performance Division and Chief Medical Officer to help them plan for the biomedical impacts of future space travel.

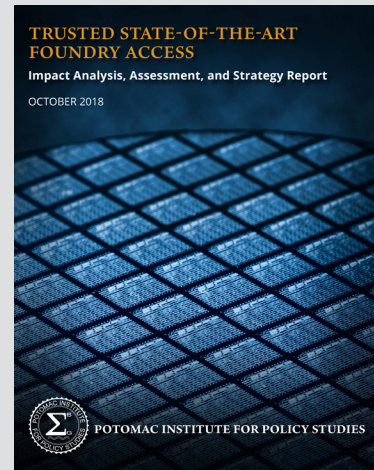
### NASA TREAT ASTRONAUTS ACT INDEPENDENT COST ESTIMATE AND FEASIBILITY STUDY



### RESEARCH AND DEVELOPMENT ECOSYSTEM ANALYSIS



### TRUSTED STATE OF THE ART FOUNDRY ACCESS



*Policy should be based on data and science to the greatest extent possible.*

*– Michael Swetnam*

As part of Potomac Institute’s public service mission, we are proud to be home to several academic centers which provide thought leadership across our core areas of expertise.

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## CENTER FOR REVOLUTIONARY SCIENTIFIC THOUGHT **CREST**

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The Center for Revolutionary Scientific Thought (CREST) is the Institute’s futures group and training program. Its vision is to build a cadre of future S&T leaders (usually a cohort of early-career Fellows each year) who understand existential risks, think strategically about the future of humanity, and have the skills to make and influence policy at the highest levels. This year we hosted four Fellows, two of whom have transitioned to permanent positions with the S&T Policy staff. CREST has published influential papers and studies, including a summary briefing on major issues in S&T for both 2016 presidential campaigns and a major report on S&T priorities for the new administration, “Think Big: Big Science, Big Opportunities, and Big Ideas.” The team has been expanding its technology and market assessment and forecasting work, including a recent report on the “Future of DNA Data Storage.” Some of our big ideas can be viewed on our blog.



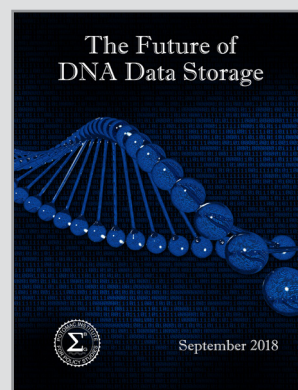
*Any sufficiently advanced technology is indistinguishable from magic.*

– Arthur C. Clarke

### HARVESTING ENERGY FROM AMBIENT SOURCES



### THE FUTURE OF DNA DATA STORAGE

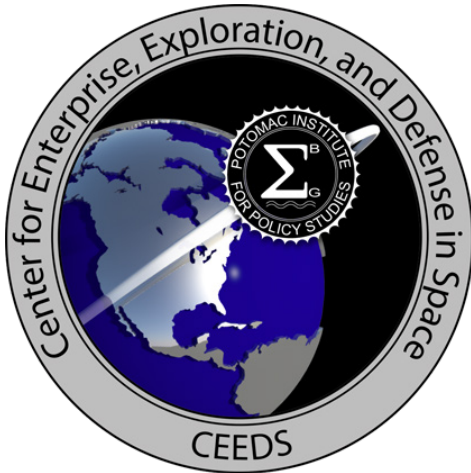




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## CENTER FOR ENTERPRISE, EXPLORATION, AND DEFENSE IN SPACE **CEEDS**

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The Center for Enterprise, Exploration, and Defense in Space (CEEDS) provides senior decision makers a better understanding of the complex policy options in this increasingly important sector. In July 2018, we hosted a group of current and former senior government and DoD officials to discuss implementation of the administration's proposed Space Force and provided recommendations to senior policymakers. Earlier this year we also published a report on "American Space Enterprise and Security," recommending bold new policy to ensure U.S. leadership in space in the realms of commercial enterprise, defense, and intelligence.



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## VITAL INFRASTRUCTURE, TECHNOLOGY, AND LOGISTICS **VITAL**

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In 2018, VITAL has hosted a series of speaker events on security topics including side channel attacks, 5G, blockchain technologies, white hat supply chain attacks, and cyber security in the financial sector. VITAL published event reports

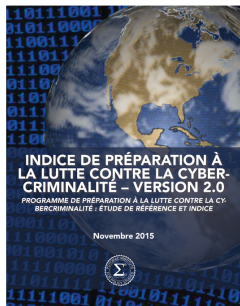
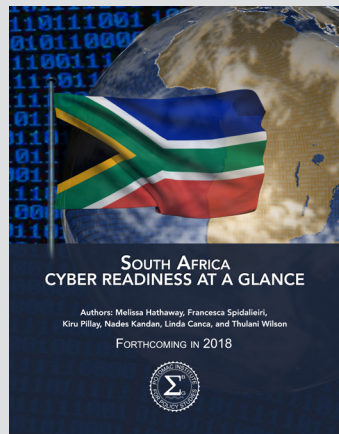
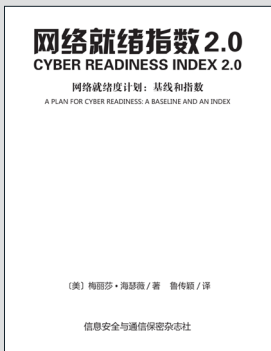
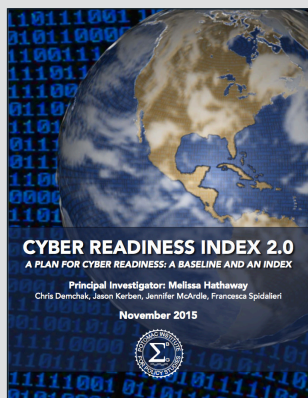
on "The Fast Approaching 5G Revolution: Disruptions and Opportunities" and "Security Strategies for Global Supply Chains." Top DoD, ODNI and other government officials continue to engage and remain involved in VITAL's activities.

The Vital Infrastructure, Technology, And Logistics (VITAL) Center, led by Potomac Institute Vice President and hardware security expert Dr. Michael Fritze, aims to foster and support comprehensive supply chain security for critical infrastructure and national security. VITAL hosts Hardware Security Symposium events throughout the year featuring technical presentations from government, academic, and business experts.

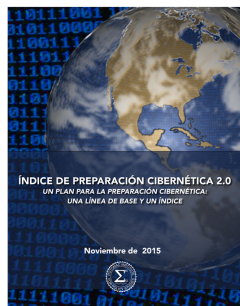


# CYBER READINESS INDEX CRI

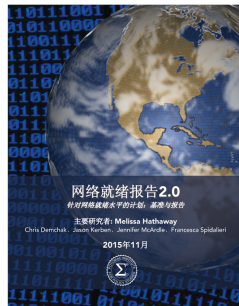
The Institute is also proud of the activities the Cyber Readiness Index (CRI), led by Board of Regents member and cyber expert Melissa Hathaway. The index shows how the unprepared many countries are on the national-level for cyber risks. CRI seeks to incentivize this alignment by bringing attention to each country's Internet-infrastructure dependencies and vulnerabilities, and the national economic erosion caused by cyber insecurity. The CRI report and individual country profiles have been translated into five languages and adopted across the globe, including by the Organization of American States and International Telecommunications Union of the United Nations.



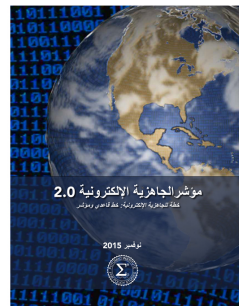
French



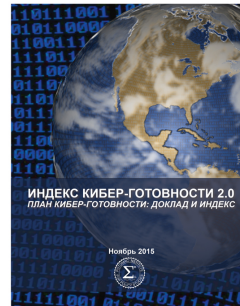
Spanish



Chinese



Arabic



Russian

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CENTER FOR ADAPTATION AND  
INNOVATION **CAI**

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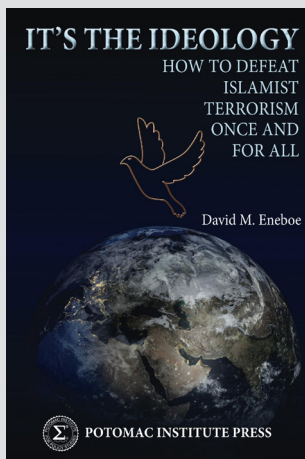
The Center for Adaptation and Innovation (CAI) assists senior defense leaders to identify and define new and potentially disruptive defense capabilities. In 2018, the team has hosted Navy and Marine Corps Commanders returning from deployments who share highlights of their experience in an unclassified setting, including the Special Purpose Marine Air Ground Task Force Southern Command, the 15th Marine Expeditionary Unit/America Amphibious Ready Group, the Special Purpose Marine Air-Ground Task Force-Crisis Response-Africa 18.1 (SPMAGTF-CR-AF), and the 31st Marine Expeditionary Unit/ WASP Amphibious Ready Group. Through discussions about what has and has not worked within current requirements and acquisition processes, the Center advises the Services on adaptations and innovations that can better address the warfighter's complex and uncertain security environment.



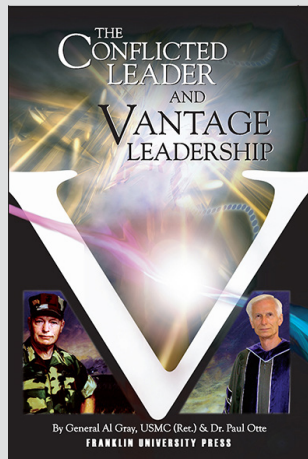
*You can get a lot done if you don't care who gets the credit.*

*– General Al Gray*

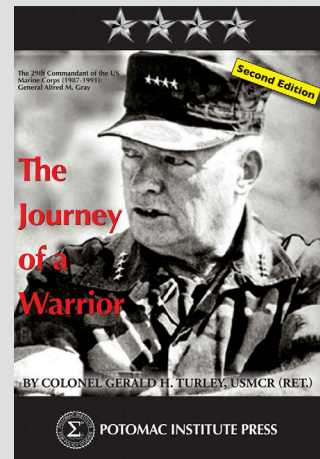
**IT'S THE IDEOLOGY: HOW TO DEFEAT ISLAMIST TERRORISM ONCE AND FOR ALL BY DAVID M. ENEBOE**



**THE CONFLICTED LEADER AND VANTAGE LEADERSHIP, BY GENERAL AL GRAY AND THE LATE DR. PAUL OTTE (DIGITAL RELEASE)**

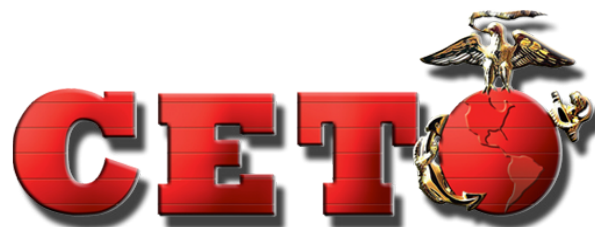


**THE JOURNEY OF A WARRIOR: THE TWENTY-NINTH COMMANDANT OF THE U.S. MARINE CORPS (1987-1991): GENERAL ALFRED MASON GRAY, SECOND EDITION**



## CENTER FOR EMERGING THREATS AND OPPORTUNITIES **CETO**

The Center for Emerging Threats and Opportunities (CETO) team, funded by the U.S. Marine Corps, continues to participate in and support warfighting and wargaming events and activities. CETO assesses the future security environment; identifies and analyzes emerging threats; develop and appraise promising concepts, opportunities and technologies; and serve as a catalyst to stimulate thought and debate on issues of importance to the Marine Corps. As an internal Marine Corps think tank, CETO continues to develop new ideas and concepts in direct support of the Director of the Marine Corps' Futures Directorate under the Deputy Commandant for Combat Development and Integration.



## INTERNATIONAL CENTER FOR TERRORISM STUDIES **ICTS**

The International Center for Terrorism Studies (ICTS) continues its mission of addressing the need to educate policymakers and the public on the nature and intensity of the terrorism threat in the twenty-first century. The Center, under the direction of Professor Yonah Alexander, hosts seminars year-round, bring together academics, government officials, Congressional staff, diplomats, business people, professionals, and the media (its latest events can be viewed at [www.potomac institute.org](http://www.potomac institute.org)) and has produced about a dozen reports since 2017. ICTS prides itself on training the next generation of experts and hosts a team of interns three times a year (this is in addition to the concurrent S&T Policy internship program).

<p><b>TWO DECADES OF COMBATING TERRORISM: TACTICAL AND STRATEGIC LESSONS</b></p>	<p><b>SECURITY CHALLENGES IN THE BALKANS</b></p>	<p><b>THE ROLE OF DIPLOMACY IN COMBATING TERRORISM: SELECTED INTERNATIONAL PERSPECTIVES</b></p>	<p><b>COMBATING BIOLOGICAL TERRORISM: ROADMAPS FOR GLOBAL STRATEGIES</b></p>
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## IN MEMORIAM THOMAS M. O'LEARY



### **THOMAS M. O'LEARY**

**January 14, 1952 - June 5, 2018**

It is with extreme sadness that we share that our esteemed colleague and friend, Colonel Thomas M. O'Leary, USMC (Ret.) passed away on Tuesday, June 5, 2018. Words cannot even begin to express our sorrow upon losing such an important part of the Potomac Institute family.

Tom O'Leary served as the Executive Vice President, Chief Operating Officer, and board member of the Potomac Institute for Policy Studies. He retired from the Marine Corps in 2001. In July of 2001, he joined the Potomac Institute for Policy Studies as a Senior Research Fellow and was subsequently detailed as an IPA from Potomac Institute to the Department of Navy. While an IPA, he served as the first Program Manager for the Littoral Combat Future Naval Capabilities program, then as the Director, Expeditionary Warfare Operations Technology Division, Office of Naval Research, and finally as Technical Director, Marine Corps Warfighting Lab. As a Marine, he served in a variety of service and joint command and staff assignments. He participated in several operations to include the Multi-National Peace-Keeping Force, Beirut; Operation Snowcap; Operation Desert Shield; Operation Desert Storm; Operation Sea Angel; and Operation Restore Hope. He also participated in the Marine Corps' Advanced Warfighting Experiments (AWE) Hunter Warrior and Urban Warrior. Upon retiring from the Marine Corps, he joined the Institute for Defense Analyses as a Research Staff Member where he was the Task Leader for the Joint Study on Effects Based Operations.

Tom O'Leary is survived by his wife Karen (Hughes) O'Leary; daughter, Amy and son, TC; his brother, Neal O'Leary and sister-in-law Nancy O'Leary.

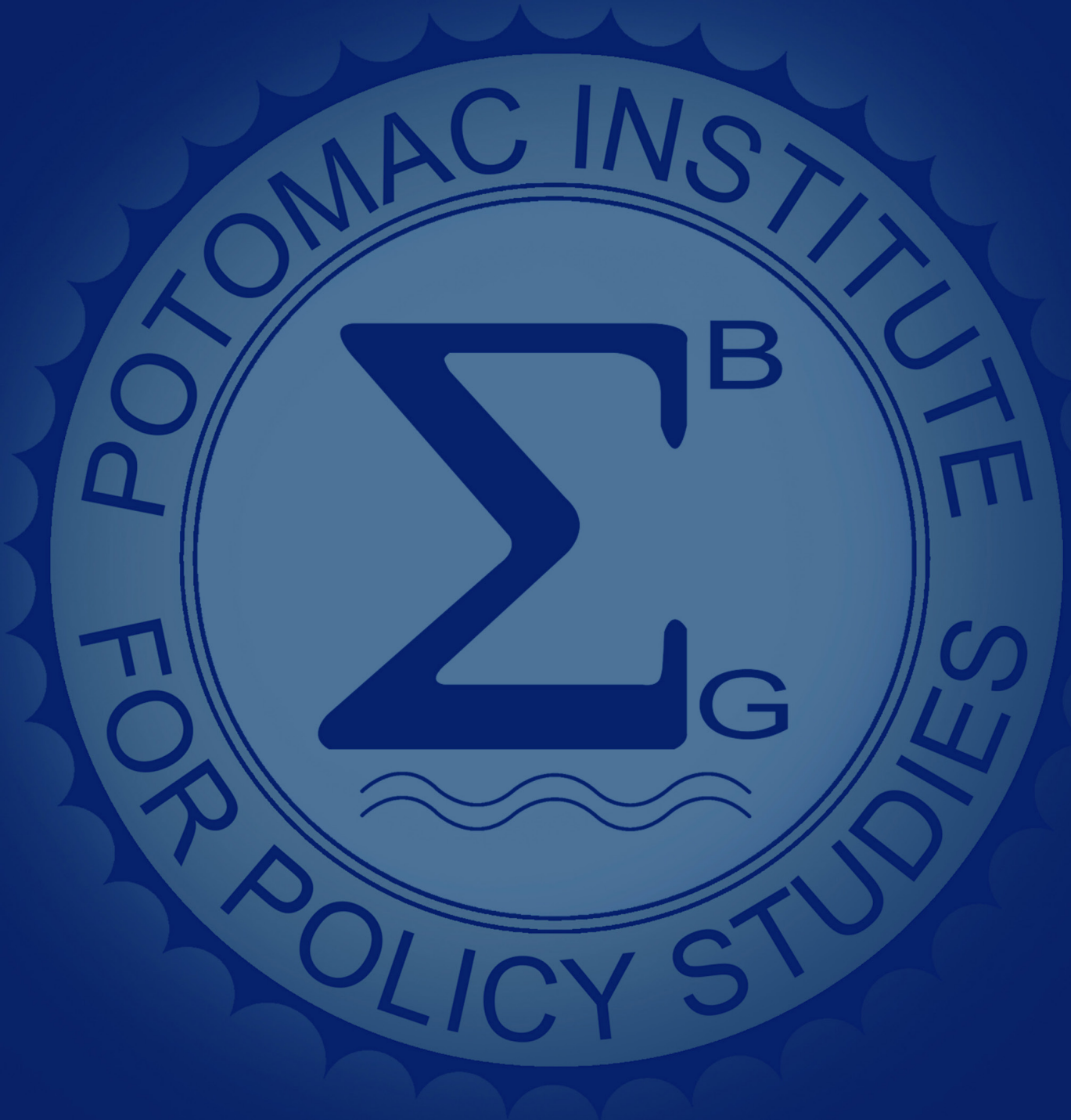
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