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The Dual-Use Revolution:

Strategic Investment Opportunities in Defense & Commercial Technologies

In Partnership with

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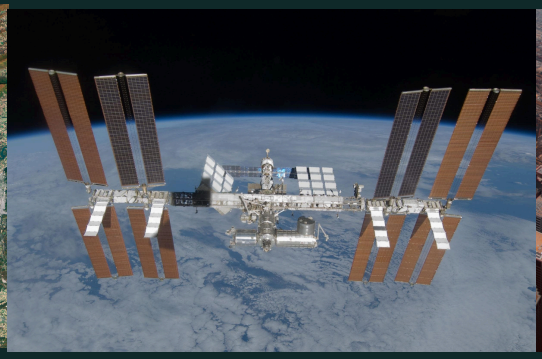


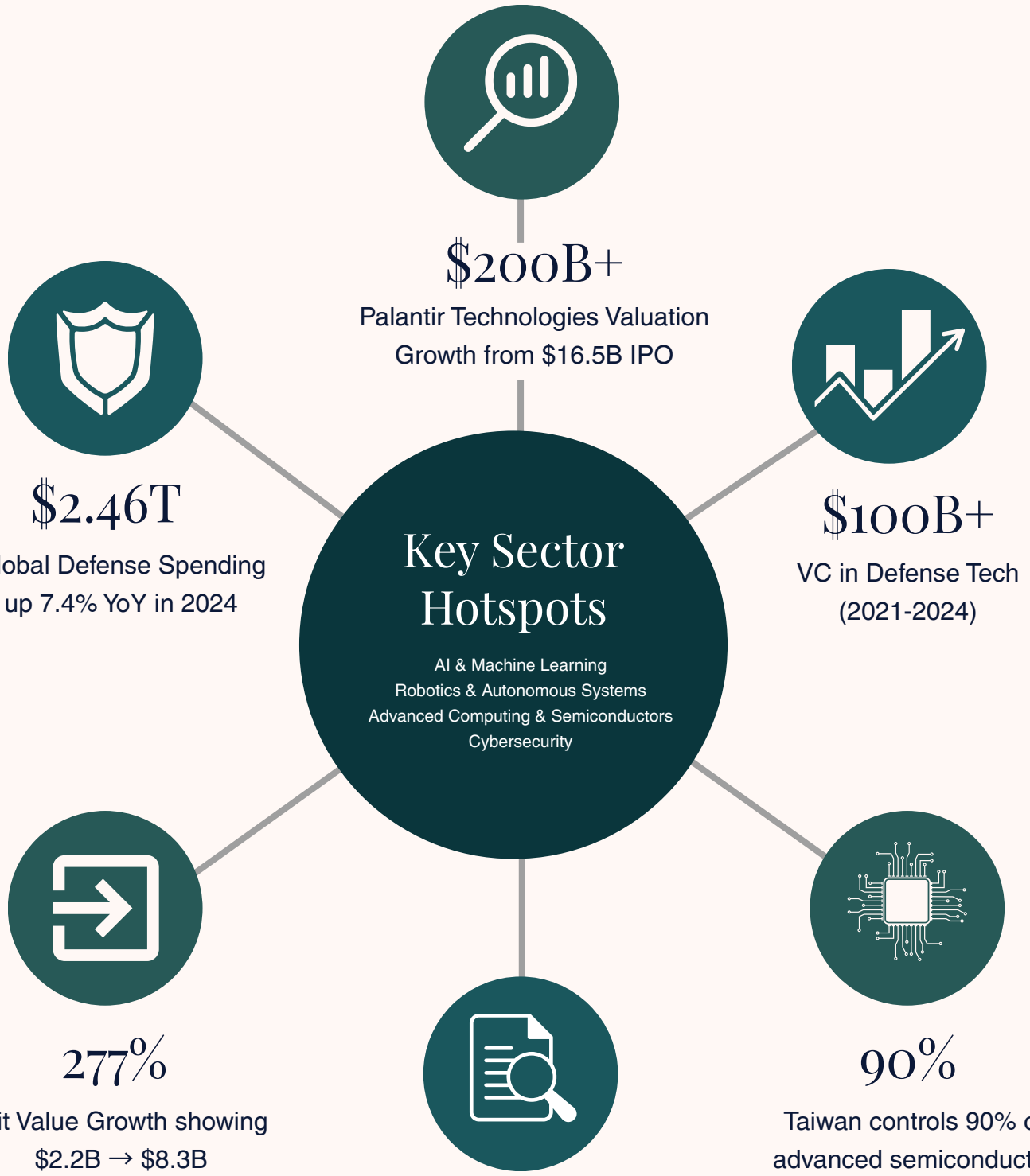

Executive Summary

The dual-use technology sector is experiencing a significant resurgence, creating substantial investment opportunities at the intersection of commercial innovation and national security. This white paper examines the strategic importance of dual-use technologies and explores the compelling investment thesis in this rapidly evolving market.

Contents

As global tensions rise and innovation accelerates, dual-use technologies are becoming crucial for economic competitiveness and security, making this an opportune time for investment in this category, though success demands specialized expertise and understanding of both government and commercial market dynamics.

The Dual-Use Technology Investment Landscape



A Letter From Scott Army

Scott Army,
Head of Alternatives meetperry

I'm pleased to share a significant milestone in our 2025 thematic investment approach with this white paper on Dual-Use Technology—representing the educational foundation we've been building over the past 18 months.

May's investment theme focuses on Dual-Use Technology + National Security Interests, a category demonstrating the power of our approach. The opportunity is substantial: VCs allocated $48 billion to defense tech in 2021,[1] with total venture investment matching federal R&D at $209 billion by 2024.[2] This sector combines cutting-edge innovation with national priorities, creating unique opportunities for informed investors.

Our three-part content process immerses you in each investment theme:

- This **White Paper** sizes the market and maps the investment landscape—a comprehensive analysis equipping you to evaluate investments in this space.
- **Thematic Sessions** will bring you virtual conversations with GPs, founders, and investors shaping this sector.
- **Elevate Series Events** will connect you directly with experts and entrepreneurs pioneering dual-use innovations.

What truly sets meetperry apart are our member experts. I'm particularly grateful to Scout Ventures' Brad Harrison and Cody Huggins, who partnered with us to create this resource.

Access all our Dual Use content here

Through this white paper and subsequent programming, you'll gain a sophisticated understanding of dual-use technologies, connect with sector leaders, and access carefully vetted investment opportunities. This represents the thoughtful, comprehensive analysis that distinguishes meetperry's approach to alternative investments.

Looking forward to exploring this investment frontier together,

Scott Army,
Head of Alternatives meetperry

meetperry is an exclusive membership-based family office, wealth services, and alternatives platform. The MP Select Funds are a family of multi-strategy, diversified thematic funds designed to provide holistic exposure to key emerging investable themes and trends identified by meetperry and its family office member experts.

A Letter From Cody Huggins

Cody Huggins,
Partner Scout Ventures

In today's geopolitical landscape, we're witnessing a pivotal moment for technology investment. The convergence of global tensions, record defense spending, and private sector innovation has created one of the most compelling investment opportunities of our generation: dual-use technologies.

At Scout Ventures, we've observed firsthand how technologies serving both defense and commercial applications are reshaping industries and national security. The numbers are striking. The defense technology sector saw 35 exits totaling $8.3 billion, in the first half of 2024, representing a 277% increase from the 39 exits valued at $2.2 billion for all of 2023.[3]

This represents a fundamental realignment of public and private interests. America's technological dominance was built on dual-use innovation—from ARPANET to GPS, semiconductors to AI. Today, companies continue developing technologies serving both national security imperatives and commercial markets.

The dual-use approach offers clear advantages: non-dilutive government funding (we've averaged a 2:1 match across our portfolios), larger addressable markets, and government validation. Our Fund III investment in Tomahawk Robotics, which was acquired for $120M in 2023, returned 60% of capital with nearly half qualifying for QSBS treatment.

While challenges exist in navigating government acquisition processes, the current administration is streamlining procurement through expanded Other Transaction Agreements & expediting the software acquisition process within the Department of Defense, and prioritizing critical technologies like autonomous systems, AI, and quantum computing.

As investors, we can support companies advancing America's strategic position while generating significant returns.

Cody Huggins
Partner, Scout Ventures
meetperry member

Scout Ventures is a leading seed-stage venture capital firm focused on early-stage investments in frontier and dual-use technologies.

Introduction

A Golden Era for Dual Use Technology

Dual-use technology—innovations that serve both commercial and defense applications—represents one of the most compelling investment opportunities of this decade.

With over $100 billion in venture capital deployed to defense tech companies in the last three years, this sector is experiencing unprecedented growth driven by converging market forces.[1]

Over the last several years, America has experienced a resurgence in dual-use technology. These technologies aren't merely theoretical—they're delivering substantial returns. In the first half of 2024, the defense technology sector saw 35 exits totaling $8.3 billion, representing a significant increase from the 39 exits valued at $2.2 billion for all of 2023. This 277% increase in exit value demonstrates the maturing nature of the market and growing corporate appetite for defense technology acquisitions.[2]

> “We have no doubt that this is one of the best periods in history to invest in dual-use technology.”

Companies such as SpaceX and Palantir, which generate revenues from both private industry and government, dominate media headlines and have made their way into the common discourse of researchers, policymakers, military officials, entrepreneurs, and capital allocators. Palantir Technologies has grown from a $16.5 billion IPO in 2020 to over $200 billion market capitalization by successfully commercializing technology initially developed for intelligence applications.

The defense technology landscape has undergone a fundamental transformation. What was once dominated by government R&D is now driven by private sector innovation, creating unprecedented opportunities for investors who understand this emerging ecosystem. As the nation once again aligns public and private interests around technologies that advance both national security and economic prosperity, dual-use technology has emerged as one of the best investment categories of our time.

Many mistake dual-use technology’s recent popularity for nascency. The Russo-Ukrainian War, COVID-19 related supply chain disruptions, the Israeli-Palestinian conflict, and rising tensions with the People’s Republic of China put dual-use innovations at the center of many of America’s most pressing issues – from geopolitical tensions, supply chain vulnerabilities and emerging trends in artificial intelligence and quantum computing.

These events have driven a noticeable realignment of public and private interests. Technologies and solutions that advance both national security and economic prosperity–our nation has once again realized that the two cannot be decoupled.

In fact, as we will discuss later, the United States owes much of its security and prosperity to foundational technologies that were developed at the intersection of public and private use.

The last seven decades, in particular, have a storied history in this regard. The ties between early Silicon Valley, the Department of Defense, and modern technology are deeper than one might initially suspect.

Low-Cost Revolution: How $500 Drones Are Reshaping Global Military Power

The defense landscape is being fundamentally reshaped by the increasing proliferation of capable technology at decreasing price points. This "democratization" of defense technology is empowering a wider range of actors, from smaller nations to non-state entities, and altering traditional military balances of power.

The affordability and versatility of drones have been a primary driver of this shift. Drones costing as little as $500 have demonstrated the capability to neutralize high-value targets such as tanks and artillery pieces worth millions of dollars. The conflict in Ukraine has illustrated this trend. First Person View (FPV) drones created from low-cost commercial components have emerged as particularly effective weapons, with Ukraine targeting production of one million units in 2024.

Even seemingly rudimentary technologies like the Australian cardboard drone (Corvo PPDS) are proving to have significant military utility, capable of delivering payloads over considerable distances. The Iranian Shahed drones, while costing around $20,000 each, have demonstrated their lethality by taking down infrastructure worth millions.

The "Uberization of warfare" extends to software applications, with civilian technologies like Android tablets loaded with specialized programs being adapted for military use.

The Evolution of Dual Use Technologies

DARPA's Legacy of Innovation

Dual Use Technologies have been a cornerstone of America's technological leadership. The Defense Advanced Research Projects Agency (DARPA) has played a pivotal role in this domain, creating an ecosystem where high-risk defense research transforms into commercial breakthroughs that benefit both national security and economic prosperity.

Origins - Cold War Innovation Engine: DARPA was established in 1958 as a direct response to the Soviet Union's launch of Sputnik, with the mission to ensure America would "never again be beaten by technological surprise." Building on the successful WWII government R&D model established through initiatives like the Manhattan Project, DARPA created a new paradigm for technological innovation.

In its early years, DARPA managed crucial space and rocket development programs, including work on the Saturn V and Centaur rockets, later transferred to NASA. This pattern—DARPA incubating high-risk technologies before transitioning them to military services or civilian agencies—became its signature approach.

> "Created in response to the launch of Sputnik in 1957, DARPA stands as our nation's commitment to never again face a strategic technical surprise."

The Information Revolution: From Military Networks to Global Connectivity: DARPA's most transformative contribution came in 1969 with ARPANET, the world's first packet-switching network connecting defense research computers. What began as a modest military communication system evolved into today's internet—a technology that has revolutionized modern life. DARPA's vision extended beyond connectivity; the agency funded foundational research in human-computer interaction, including the first computer mouse (1964) and time-sharing systems.

In 1973, DARPA launched what would become another world-changing technology: the Global Positioning System (GPS). Initially developed as NAVSTAR for precise military navigation, GPS was later opened for civilian use. Today, GPS underpins everything from smartphone navigation to global shipping logistics.

Microelectronics and Computing - Catalyzing Silicon Valley: Throughout the Cold War, DARPA advanced semiconductor technology with profound impacts on both defense and commercial computing. The agency's investments in gallium arsenide enabled faster transistors and higher power than silicon, directly contributing to miniaturized GPS receivers and precision-guided munitions.

Silicon Valley's rise was intimately connected to this dual-use ecosystem. Early semiconductor companies like Fairchild benefited tremendously from defense contracts, which provided both funding and demanding technical requirements that accelerated innovation. When NASA chose Fairchild's integrated circuits for the Apollo program in 1962, it created a market that drove economies of scale, dramatically reducing chip prices within a decade.

Modern Breakthroughs: Commercial Strategy for National Security

Today, DARPA continues its dual-use approach with remarkable results. The agency's investments in artificial intelligence spawned technologies behind Apple's Siri voice assistant, while DARPA's 2004 Grand Challenge for autonomous vehicles jump-started today's self-driving car industry.

Under the leadership of Sha-Chelle Devlin Manning, DARPA's Chief of Commercial Strategy, DARPA established its Commercial Strategy Office in 2019 to "rapidly scale DARPA-funded technologies critical to DOD's warfighting mission." This initiative focuses on eliminating adversarial investment while increasing U.S. private capital in critical technologies.

The results are impressive: since 2018, DARPA's Embedded Entrepreneur Initiative (EEI) has helped performers raise over $1.2 billion in private investment capital and secure $639 million in acquisitions. The program pairs technical teams with commercialization experts to accelerate market entry.

As Manning states, "When companies make an effort to hear feedback on the product-market fit by trying to have the empathy to understand and have those discussions with customers or potential customers early on, it really helps when starting a pitch or a capital raise."

Recent programs demonstrate DARPA's commitment to dual-use innovation:

- The OPTIMA program enhances computational efficiency by embedding processing within memory arrays, with applications ranging from defense systems to commercial edge computing.
- The QuANET program advances quantum photonic integrated circuits with applications in military cybersecurity and civilian data protection.
- DARPA's five newly designated Commercial Accelerators across the U.S. connect performers with regional entrepreneurial talent and investor networks to rapidly commercialize technologies.

The Dual-Use Advantage for Investors

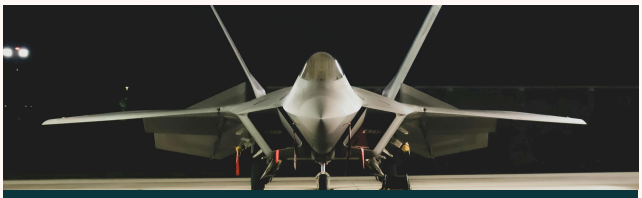
DARPA's history demonstrates a consistent pattern: government-funded, high-risk research creates technological foundations that private investors can leverage for commercial growth. As Manning puts it, "entrepreneurship is a service to the country," encouraging investors to see defense technology as both a commercial opportunity and national service.

Manning notes DARPA's commercialization efforts focus on "preventing adversarial influence in DARPA-funded technologies, so they remain accessible and available to the United States and its allies." This approach has been central to maintaining America's technological edge.

The most successful dual-use technologies solve fundamental problems common to both sectors, benefit from rigorous military testing, and can scale economically to meet civilian demands. Investors who understand this can position themselves to capitalize on the next generation of breakthrough technologies shaping our future.

Government R&D in AI and Autonomous Systems: DARPA-funded projects have originated both the Siri voice assistant on Apple's iPhone and a bomb-disposal robot that was later adapted to create the Roomba vacuum. Likewise, DARPA's mid-2000s "Grand Challenge" races – driverless car competitions for autonomous military vehicles – helped jump-start the modern self-driving industry in Silicon Valley.

A Brief History of Dual Use Technology



1940s-1950s: Defense - Led Innovation

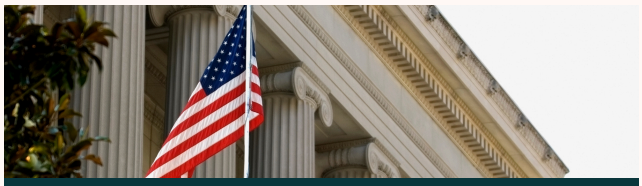
- 1945: Manhattan Project leads to nuclear tech later used by civilians
- 1957: Fairchild Semiconductor founded, wins Air Force contracts
- 1958: DARPA created in response to Soviet Sputnik launch

1980s-1990s: Transition Begins

- 1980: US business R&D surpasses government spending
- 1983: GPS used for civilian aviation after Korean Air Lines incident
- 1990: Introduction of World Wide Web

2020s: Dual-Use Renaissance

- 2020s: US gov't defense R&D falls from 36% to 3% of global total
- 2021-2024: VCs invest $100B in defense tech
- 2024: Defense tech sector sees 35 exits totaling $8.3B in first half of year



1960s-1970s: Government Dominance

- 1960: US defense R&D is 36% of global defense R&D total
- 1962: NASA chooses Fairchild's integrated circuits for Apollo program
- 1960-1970s: DARPA creates ARPANET, (Internet), DoD builds NAVSTAR (GPS)

2000s-2010s: Private Sector Leadership

- Mid-2000s: DARPA's robotic challenge jumpstarts self-driving cars
- 2009: Waymo created (has raised $25B)
- 2016: US invests $4B in 10yrs on self-driving cars. Top 5 OEMs: $46B in 1yr

Current State of Affairs

The Dual-Use Investing Renaissance

The dual-use defense technology sector has experienced a substantial increase in venture capital investment. Over the past three years, US venture capital funds have injected over $100 billion into defense-related companies, a trend largely propelled by escalating global geopolitical tensions and the pressing need for innovative defense solutions.[1]

This surge is not merely incremental—in 2021 alone, VC investment in the sector nearly doubled to $48 billion from $20 billion in 2020.[2]

The exit environment is equally compelling. In the first half of 2024, the defense technology sector saw 35 exits totaling $8.3 billion, representing a significant increase from the 39 exits valued at $2.2 billion for all of 2023. This 277% increase in exit value demonstrates the maturing nature of the market and growing corporate appetite for defense technology acquisitions.[3]

This has fostered a growing recognition within the venture capital community of the strategic and economic importance of the dual-use defense sector. The potential for these technologies to not only serve military applications but also to be adapted for commercial markets further enhances their attractiveness to investors.

> "The United States owes much of its security and prosperity to foundational technologies that were developed at the intersection of public and private use."

Prominent venture capital firms, including Andreessen Horowitz, Alumni Ventures, Sequoia Capital, and General Catalyst are among those actively seeking investment opportunities in this space. This growing convergence between the defense industry and the venture capital ecosystem signifies a strategic shift towards leveraging private sector innovation to address critical national security challenges.

Innovation-focused organizations within the Department of Defense (DoD) are also increasingly collaborating with startups to identify and adopt these advanced solutions, further fueling investment in the sector.

The Autonomous Vehicle Race: How Private Capital Outpaces Government Investment

In 2016, the U.S. vowed to invest $4 billion over ten years to accelerate the development and adoption of vehicle automation. In the same year, PricewaterhouseCoopers reported that the top five original equipment manufacturers spent a combined $46 billion on autonomous vehicle technologies in 2015 alone.[4]

Founded in 2013, General Motors owned Cruise raised over $15 billion before halting operations in December 2024.[5] Furthermore, since 2009, Alphabet subsidiary Waymo, is estimated to have raised and spent a combined $25 billion.[6]

Public-sector investment struggles to operate at the scale of private-sector investment, especially in the midst of large market opportunities.

The Shift from Public to Private Innovation

A fundamental transformation has occurred in how defense innovation is funded and developed. In 1960, the U.S. accounted for 69% of global R&D, with defense-related R&D alone accounting for more than one-third (36%) of worldwide research spending.[7] The federal government funded approximately twice as much R&D as U.S. businesses.

Today, that dynamic has completely reversed:

- The U.S. share of global R&D has fallen to 30% (2019)
- Business R&D expenditures now greatly exceed government spending
- Federal defense R&D as a share of total global R&D has declined from 36% in 1960 to just 3.1% in 2019 [7]

These trendlines present enormous national security challenges as critical capabilities become increasingly decentralized.

Figure 1: The U.S. share of global R&D has fallen drastically

The pie charts below compare global R&D spending for the "U.S." versus "Rest of the World." The chart on the left is global R&D spending in 1960. The right-hand chart is 2019. Notably, the United States accounted for 69% of total R&D expenditures in 1960 versus only 30% today.

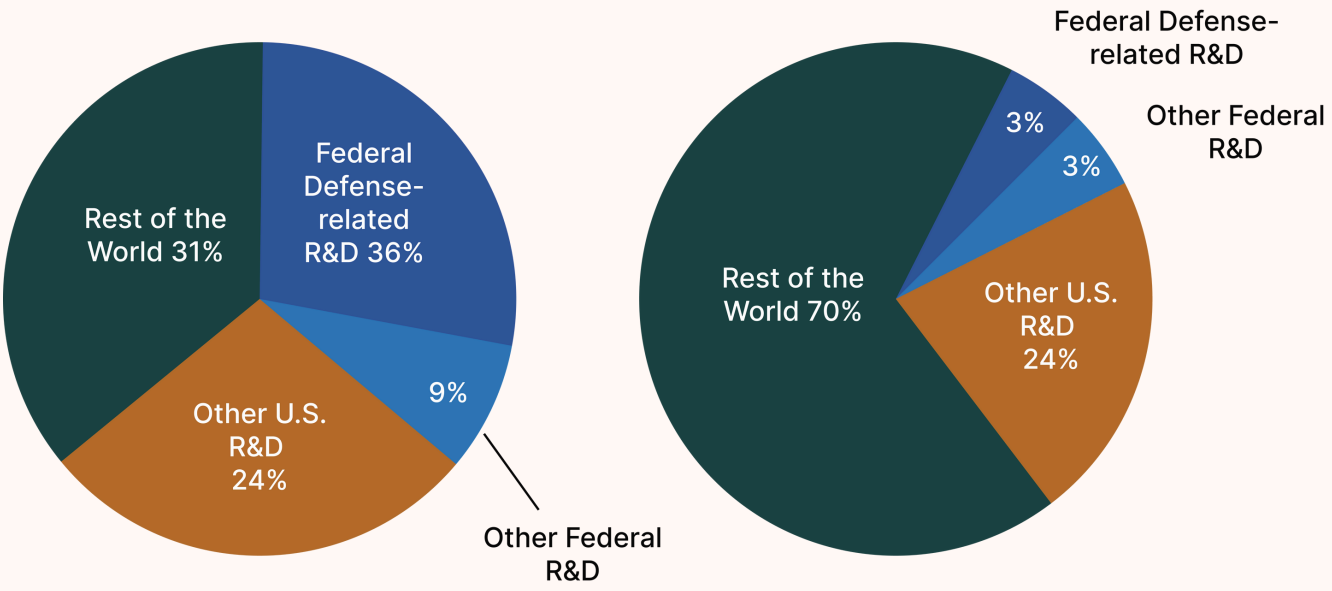
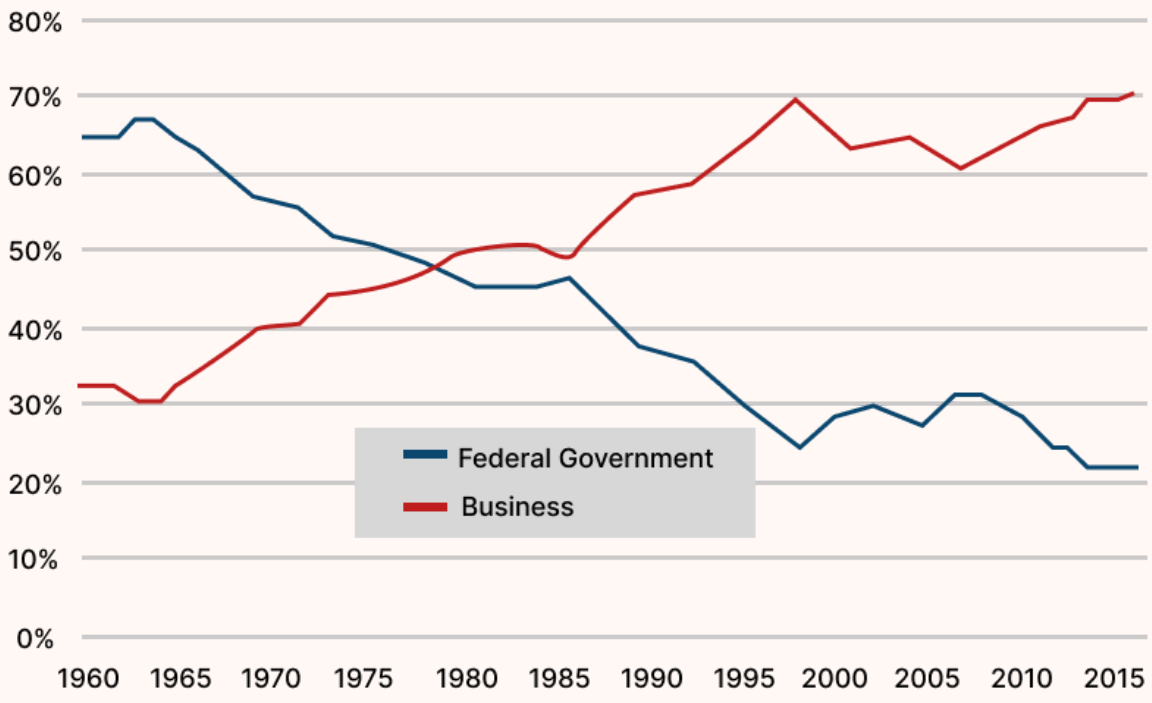


Figure 2: Federal Government vs. Business R&D as % of total R&D

The data is clear – R&D spending has flipped from public sector dominance to private sector spending.



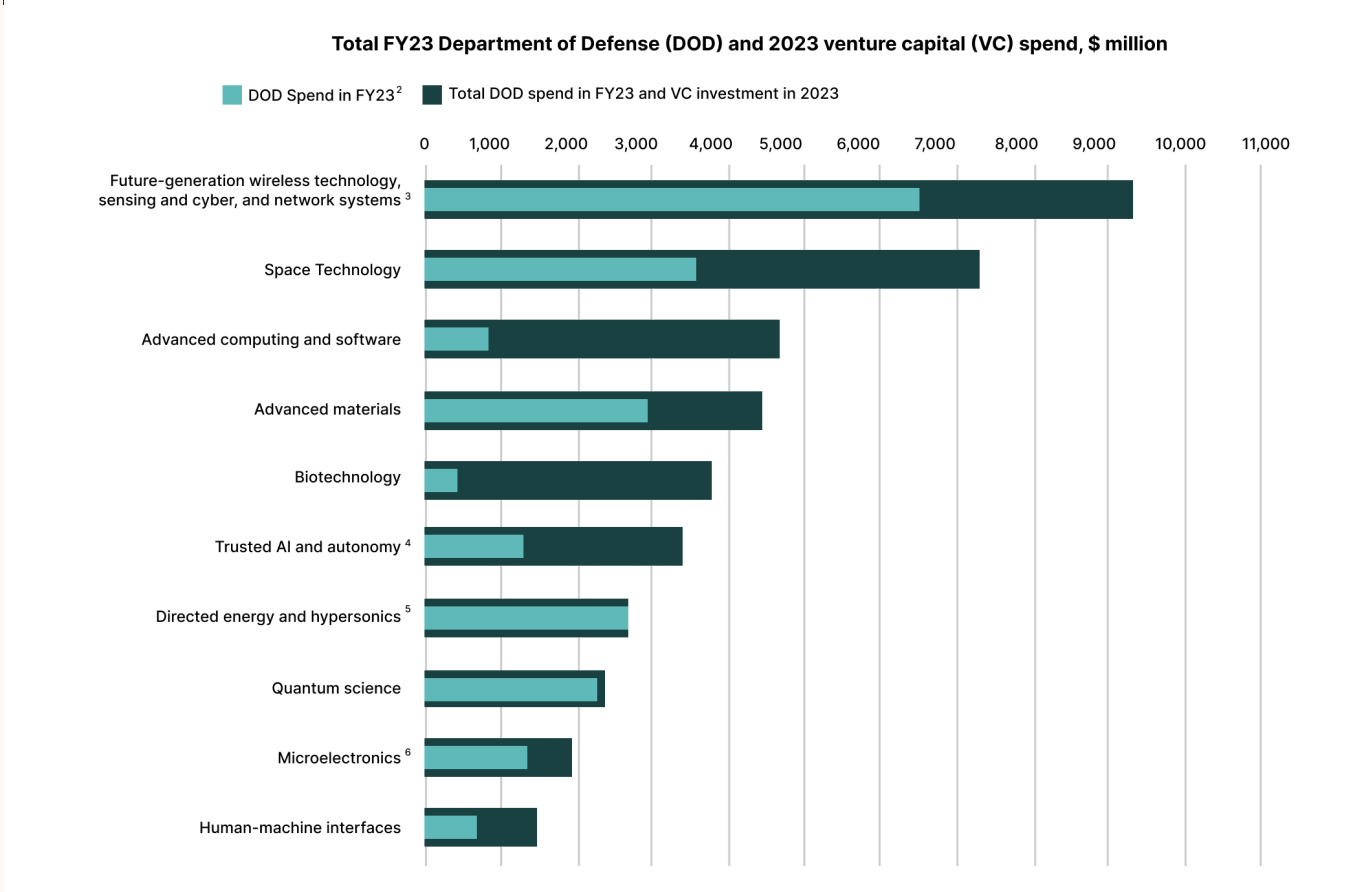
The last six decades have ushered in a new paradigm for U.S. R&D. During the 1960s, U.S. businesses began accelerating R&D spending. In Figure 2, you can see private sector R&D ultimately surpassed the federal government around 1980. Notably, the federal government has not decreased spending, but instead, has simply been overtaken by private and publicly-held corporations innovating for profit.

To further demonstrate the role of private sector R&D investment, it is helpful to look at the venture capital industry. President Biden's 2024 fiscal year federal budget proposal for R&D amounted to $209.7B.[8] In calendar year 2024 alone, the U.S. saw $209B in venture capital investments. Needless to say, the private sector's profit-seeking-nature and access to capital allow it to solve many of the incredibly complex problems experienced by society.

The federal government will continue to play a pivotal role in the development of future capabilities through steady, not-for-profit investments. The goal here is not to disparage the federal government, but instead, to call attention to the confluence of factors inherently changing our innovation apparatus.

Figure 3: Total Fiscal Year 2023 Department of Defense vs. 2023 Venture Capital Spending

In 2023, Venture Capital led or roughly matched government investment in five of the ten critical technology areas studied, according to McKinsey & Company.[9]



Strategic Drivers

Geopolitical Tensions and the Changing Battlefield

The current geopolitical landscape is defined by escalating tensions that directly fuel the demand for advanced defense technologies. The ongoing Russia-Ukraine conflict, China's increasingly assertive posture in the Indo-Pacific, and persistent instability in the Middle East have fundamentally altered security concerns worldwide.

The U.S. defense industrial base, while possessing significant technological prowess, faces several challenges. U.S. companies dominate the global defense market, holding a staggering 59% share of the top 15 defense contractors by revenue.[1]

However, the National Defense Commission has described the U.S. defense industrial base as “grossly inadequate” to confront the dual threats posed by Russia and China, citing too few personnel and companies, unstable financial support, and insufficient production capacity.[2] In the event of a major conflict, such as a war with China over Taiwan, the U.S. is projected to rapidly deplete its stockpiles of essential munitions, including long-range precision-guided weapons, potentially within a week.

> “China possesses an overwhelmingly larger shipbuilding capacity, approximately 230 times that of the United States.”

Meanwhile, China is acquiring high-end weapons systems and equipment at a rate five to six times faster than the United States. This rapid modernization and expansion of its military capabilities pose a significant challenge to the U.S.'s ability to maintain a technological and numerical advantage.[3]

China also possesses an overwhelmingly larger shipbuilding capacity, approximately 230 times that of the United States, with a single major Chinese shipyard exceeding the combined capacity of all U.S. shipyards.[4] This disparity in shipbuilding capacity is particularly concerning given the critical role of naval power in projecting influence and controlling vital sea lanes.

The Russian defense industrial base has demonstrated a strong focus on military buildup, evidenced by a substantial 41.9% real-terms increase in military expenditure between 2023 and 2024.[5] The ongoing conflict in Ukraine has highlighted Russia's capacity to rapidly surge production in certain areas, underscoring its ability to adapt its industrial base to meet wartime demands.

Russia also plays a significant role in the global supply of certain raw materials crucial for defense production, such as palladium and industrial diamonds. In 2019, Russia was a major exporter of ships, aircraft, armored vehicles, and missiles, indicating a well-established defense production capability across various domains.

The Escalating Geopolitical Landscape & The Impact on Global Defense Spending

These flashpoints have triggered a substantial increase in defense spending, particularly among NATO members and U.S. allies in Asia. European nations are assuming greater responsibility for their own security, expanding military budgets in response to perceived shifts in U.S. defense policy and direct threats from Russia. It is also important to note that the vast majority of NATO allies who are increasing their defense spending do not have the infrastructure in place, and will look to procure U.S. innovative technologies & capabilities.

In 2024, total global defense spending reached an unprecedented $2.46 trillion, marking a substantial 7.4% increase in real terms compared to the previous year. This growth rate has accelerated from 6.5% in 2023 and 3.5% in 2022, indicating a rapidly deteriorating global security environment and a heightened sense of threat among nations. As a result, global defense spending as a proportion of GDP has also risen, reaching an average of 1.9% in 2024, up from 1.6% in 2022 and 1.8% in 2023.[6]

Figure 4: Global Defense Spending (USD Trillion)

Year	Global Spending	Real-Terms Growth	% of GDP
2022	2.24	3.5%	1.6%
2023	2.24	6.5%	1.8%
2024	2.46	7.4%	1.9%

Source: International Institute for Strategic Studies (IISS)

The Munitions Cost Conundrum

A growing concern in modern warfare is the significant cost disparity between advanced munitions and the increasingly prevalent, low-cost threats they are designed to counter.

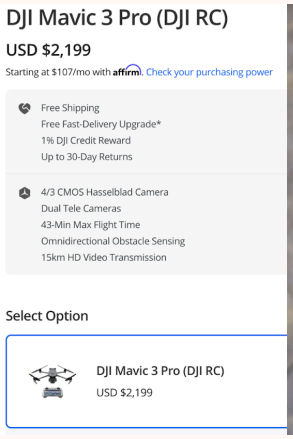
> "The fact that <$2,199 drones like the DJI Mavic are regularly being employed against military assets costing >$1,000,000 represents a fundamental paradigm shift in modern warfare."

The proliferation of economically asymmetric threats, such as drones and guided munitions, has exacerbated this issue:

- Low-cost drones priced at $500-2,000 can neutralize tanks and artillery worth millions[8]
- Advanced interceptor missiles like the PATRIOT PAC-3 MSE cost orders of magnitude more than the threats they defeat[9]
- Houthi forces in Yemen have employed relatively inexpensive drones and missiles to challenge sophisticated naval assets, with the U.S. Navy requesting hundreds of millions of dollars in additional funding to replenish its missile inventory[10]

This unsustainable cost model has driven demand for "attritable" systems—unmanned aircraft designed to be reusable but affordable enough that their loss can be tolerated in combat.

Companies like HavocAI and Swarmbotics AI (both Scout Fund IV portfolio companies) are developing solutions in this category for maritime and land domains respectively.



Maritime & Ground Innovations: How HavocAI and Swarmbotics AI Are Revolutionizing "Attritable" Defense Systems

HavocAI develops unmanned boats capable of performing various maritime missions, demonstrating how attritable systems are extending into naval operations, allowing for cost-effective, scalable responses to asymmetric threats at sea.

Meanwhile, Swarmbotics AI focuses on small, unmanned ground vehicles (UGVs), expanding the concept of affordable, reusable defense systems to land-based operations. These innovations illustrate how the attritable approach is not limited to air operations but is increasingly vital for ground and maritime domains as well.

The significant cost difference between advanced munitions and the threats they counter creates an unsustainable economic model for defense. This can lead to the depletion of critical stockpiles and an inability to effectively respond to persistent, low-cost attacks. The development and deployment of attritable solutions are therefore a strategic imperative to restore cost-effectiveness in defense. By fielding a higher volume of affordable assets, the U.S. can better counter asymmetric threats and potentially overwhelm adversary defenses.

Taiwan's Semiconductor Dominance: A Strategic Vulnerability and a Cornerstone of Tech Supremacy

A growing concern in modern warfare is the significant cost disparity between advanced munitions and the increasingly prevalent, low-cost threats they are designed to counter.

Semiconductor Manufacturing Company (TSMC), occupies a uniquely strategic position. It represents both a critical vulnerability for the global economy and a cornerstone of technological supremacy, particularly for the United States.

TSMC stands as the world's most advanced and largest contract chipmaker, accounting for over 90% of the global manufacturing capacity for advanced semiconductors.[11] Overall, Taiwan produces over 60% of the world's semiconductors, contributing a substantial 15% to its own GDP. [12]

This dominance has evolved since the 1980s, with TSMC pioneering the "pure-play foundry" model, which focuses exclusively on chip manufacturing for other companies' designs.

Major U.S. technology giants, including Apple, Amazon, Google, Nvidia, and Qualcomm, rely on Taiwan-based manufacturers for nearly 90% of their advanced chips. TSMC, along with South Korea's Samsung, is one of only two companies worldwide capable of manufacturing the most advanced 5-nanometer semiconductors.[13] [14]

This concentration of advanced semiconductor manufacturing in Taiwan also creates a significant strategic vulnerability. Taiwan's critical role in the global chip supply chain has led to it being referred to as its “Silicon Shield” in the context of military tensions with China. A disruption in Taiwan's chip production would make it virtually impossible to produce smartphones, PCs, data centers, and countless other goods that rely on advanced semiconductors. [15] [16]

The U.S. recognizes the strategic importance of this sector, as evidenced by the CHIPS Act, which aims to boost domestic chip production as an insurance policy and to maintain a technological advantage over potential adversaries like China.

Taiwan's dominance in advanced semiconductor manufacturing creates a single point of failure for the global technology supply chain, making it a critical geopolitical flashpoint and a significant vulnerability for the U.S. and its allies.

New Frontiers In Dual-Use Technology

Artificial Intelligence: Transforming Modern Defense

AI is rapidly transforming modern defense capabilities across multiple domains.
Key applications include:

- Autonomous drones capable of independently identifying and engaging targets;
- AI-powered surveillance systems like Israel's Iron Dome that analyze patterns and predict outcomes;
- Predictive threat analysis using machine learning to identify cyberattacks and forecast enemy movements;
- Autonomous combat systems operating without direct human control; and
- Large Language Models automating text analysis and report generation [1 2 3]

U.S. technological superiority depends on leadership in AI, which relies on advanced semiconductors. America currently maintains advantages in semiconductor technology, cloud computing, high-impact AI research, and intellectual property protection. Recognizing this strategic importance, the U.S. has implemented export controls on high-end semiconductors to countries like China to preserve this critical advantage.

Companies like Tern AI and Beacon AI (both Scout Fund IV) exemplify specialized defense applications, delivering predictive analytics and autonomous decision-making capabilities to enhance operational readiness and pilot safety. These innovations demonstrate the tangible benefits of integrating applied machine learning into defense operations.

Overall, maintaining U.S. technological superiority is inextricably linked to its leadership in AI. Semiconductors are the fundamental building blocks that power AI, and access to cutting-edge chips is essential for leading economies to maintain their technological edge.

Quantum Computing, The Future of Dual-Use Innovation

Quantum computing represents a transformative frontier for defense innovation with significant dual-use potential. Quantum sensors can detect underground structures, nuclear materials, and subtle electromagnetic emissions, enhancing intelligence, surveillance, and reconnaissance capabilities. Quantum Key Distribution (QKD) enables

virtually unbreakable secure communications, while quantum sensors offer alternative positioning, navigation, and timing options when operating in GPS-denied environments. These systems excel at complex logistical challenges, potentially streamlining battlefield resource management. Quantum computers can rapidly process multi-source intelligence, identifying threats with unprecedented speed and accuracy. However, they also pose security challenges, as they could break most current asymmetric encryption schemes, making the development of post-quantum cryptography increasingly critical.

Quantum networks aim to transmit quantum information securely, enabling communication, identification, position verification, and distributed computing.

The inherent dual-use nature of quantum technologies offers tremendous potential for both military applications and civilian benefits, including drug discovery, economic modeling, and materials science advancements.[4][5][6][7][8]

Crossover of Critical Technology Areas & Dual-Use

Many of the most dynamic commercial technology areas—such as advanced robotics, artificial intelligence and machine learning (AI/ML), cybersecurity, data storage, advanced energy systems, quantum computing, aerospace, advanced materials, and modern software—strongly align with the U.S. government's designated Critical Technology Areas.

These government-prioritized categories, which include Advanced Computing, AI, Advanced Engineering Materials, Clean Energy Generation and Storage, and Highly Automated Systems and Robotics, reflect technologies that are both economically transformative and vital to national security.

This convergence isn't incidental—it signals a shared understanding that leadership in these fields is essential for competitiveness, resilience, and strategic advantage.

Critical Technology Area[9]	Technology Subfields
Advanced Computing	Advanced supercomputing, Edge computing, Cloud services, Data storage, Computing architectures, Modeling and simulation, Data processing, Spatial computing
Advanced Engineering Materials	Materials by design, Novel properties, Characterization techniques

Critical Technology Area	Technology Subfields
Advanced Gas Turbine Engine Technologies	Aerospace, maritime, and industrial engine technologies, Digital engine control, Hot-section manufacturing
Advanced and Networked Sensing and Signature Management	Sensors, Sensor processing, Adaptive optics, Remote sensing, Geophysical sensing, Signature management, Pathogen detection
Advanced Manufacturing	Additive manufacturing, Clean and sustainable manufacturing, Nanomanufacturing, Lightweight metal manufacturing
Artificial Intelligence (AI)	Machine learning, Deep learning, Reinforcement learning, AI assurance, Foundation models, Generative AI, AI safety
Biotechnologies	Synthetic biology, Multi-omics, Computational biology, Bioinformatics, Engineering of sub-cellular systems, Biomanufacturing
Clean Energy Generation and Storage	Renewable energy, Nuclear energy, Fusion energy, Energy storage, Electric and hybrid engines, Carbon management
Data Privacy, Data Security, and Cybersecurity Technologies	Secure data storage, Encryption, Secure hardware/software, Intrusion detection, Identity management, Cyber threat intelligence
Directed Energy	High-energy lasers, High-power microwaves, Particle beam weapons, Counter-DEW, Beam control, System integration
Highly Automated, Autonomous, and Uncrewed Systems, and Robotics	Autonomous vehicles, Uncrewed systems, Swarming technologies

The Investment Opportunity: Why Dual-Use Technologies Now?

The defense technology sector is witnessing increasing collaboration between government entities and the private sector. Governments are recognizing the rapid pace of innovation within startups and are actively seeking partnerships to modernize defense capabilities.

These efforts, alongside streamlined procurement processes and extended contracts, demonstrate a growing commitment from governments to leverage private sector innovation for national security.

The convergence of four key factors creates opportunity for investors in dual-use technologies:

- **Urgent Operational Needs:** Geopolitical tensions have created demand for immediate capability enhancements across all domains—land, sea, air, space, and cyber. This urgency translates to accelerated procurement timelines and greater willingness to work with non-traditional vendors.
- **Technological Maturity:** Many critical technologies have reached inflection points where they can deliver meaningful operational advantages. AI, autonomous systems, advanced materials, and space technologies have progressed from theoretical concepts to deployable solutions.
- **Policy Alignment:** Recent legislative and policy changes have removed barriers for innovative companies to work with defense customers. Expanded Department of Defense engagement with Other Transaction Authority (OTA) agreements, modernizing the software acquisition process, the Defense Innovation Unit (DIU), and other initiatives create accessible pathways to government contracts.
- **Return Potential:** The combination of commercial and defense applications creates multiple revenue streams and exit opportunities, enhancing both potential returns and risk mitigation.

Unlike purely commercial technology investments, dual-use companies benefit from consistent government demand that tends to be countercyclical to economic downturns. Defense budgets typically remain stable or increase during periods of geopolitical uncertainty, providing resilience against market volatility.

Strategic Seed to $120M Exit: How Tomahawk Robotics Validates the Dual-Use Investment Thesis

Scout Ventures led Tomahawk Robotics' seed-round in December 2018 and assisted in maturing the company's AI-enhanced, universal robotic controller solutions.

Tomahawk gained significant traction within DoD and industry, working with customers such as JSOC, MCWL, DIU, NSW, Anduril, Shield and many defense primes before being acquired by AeroVironment in September 2023.

Notably, this $120M acquisition returned 60% of capital back to investors and almost half fell under Qualified Small Business Stock (QSBS). This exit also shows the importance of investing early (seed stage) in order to drive strong returns on $100M+ exits.

Join Us in Austin | The Dual-Use Tech Revolution: Where Defense Meets Commercial Innovation

You're invited to meetperry's exclusive conference The Dual-Use Revolution: Strategic Investment Opportunities in Defense and Commercial Technologies.

Join us in Austin as we explore one of 2025's most compelling investment themes.

Our distinguished speakers, including DARPA's Chief of Commercial Strategy and founders of breakthrough companies like HavocAI and Tern AI, will discuss how geopolitical tensions, the shift from public to private innovation, and the democratization of advanced capabilities are reshaping the investment landscape.

Moderated by leadership from Scout Ventures and meetperry, this event offers exclusive insights into how the meetperry community can invest in technologies serving both defense and commercial markets—potentially one of the best investment categories of our time.

Registered members will receive a Google Calendar invite to this event, which includes Google Maps information for getting to the venue on May 20th.You can view event details and RSVP guests via our website. For more details, please email: concierge@meetperry.com.

Conclusion

The dual-use technology sector is experiencing a significant resurgence, propelled by a confluence of factors including escalating geopolitical tensions, evolving defense needs, and the growing recognition of the economic potential inherent in technologies that can serve both military and civilian applications.

This trend is further fueled by the increasing alignment of critical technology areas—such as artificial intelligence, advanced computing, cybersecurity, and advanced materials—with applications that have strong commercial viability. This convergence creates a fertile environment for innovation and investment, allowing companies to develop technologies that can serve multiple markets, enhancing their revenue potential and reducing dependence on any single sector.

Ultimately, the confluence of public and private sector interests, combined with substantial financial backing, is poised to catalyze significant advancements in dual-use technologies. This approach not only fosters innovation but also promises to have a transformative impact on both the defense landscape and the broader economy. We think this is one of the best periods to invest in the dual-use technology category.

Want to learn more about The Dual-Use Technology Revolution?

You can access all meetperry exclusive Dual-Use Technology content here or by scanning the QR code above.

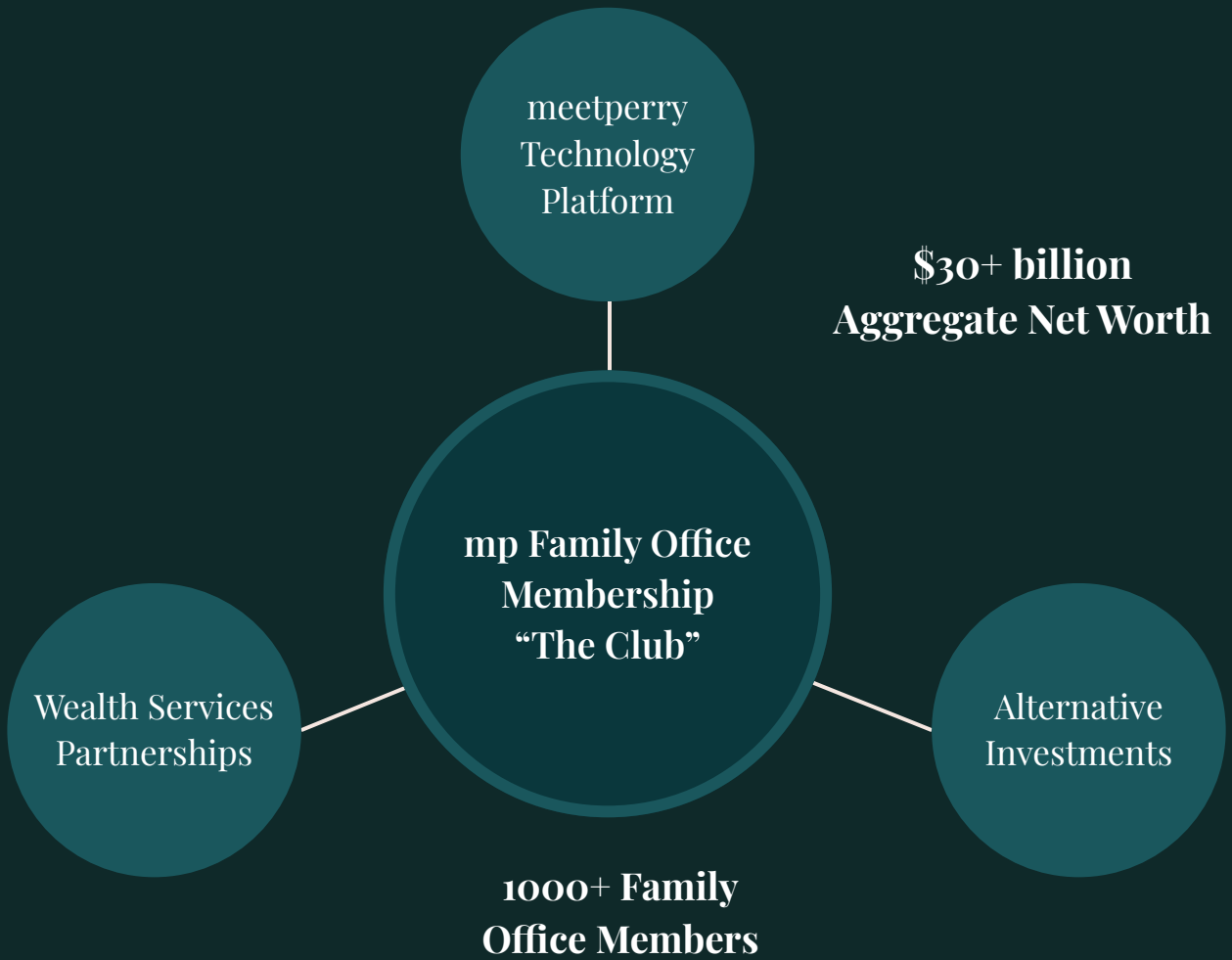
About meetperry

meetperry is a Modern Family Office for Modern Times.

meetperry is an exclusive membership-based family office, wealth services, and alternatives platform

Our global membership is a vibrant and highly engaged community of like-minded, high net value individuals and their families that enrich each other's lives in the pursuit of our common mission. That mission is to work together to orchestrate opportunities and to share experiences that lead to greater fulfillment in wealth and in life.

The MP Select Funds are a family of multi-strategy, diversified thematic funds designed to provide holistic exposure to key emerging investable themes and trends identified by meetperry and its family office member experts.



About Scout Ventures

Scout Ventures is a seed-stage venture capital firm focused on creating asymmetric returns by investing in cutting edge technology supporting Western frontiers. The Scout team, mostly military service academy graduates with active service and Intelligence Community experience, brings unique expertise to identify innovative opportunities.

Scout specializes in dual-use technologies with both commercial and defense applications, successfully leveraging non-dilutive capital through the team's defense and national lab networks at a 2:1 non-dilutive to equity ratio.

With the team's twenty-year track record of 85+ deals and 22 exits, Scout's unparalleled network includes 1,200+ DoD connections, reviewing 10,000+ deals annually.

Scout funds founders who demonstrate grit and vision, specializing in helping early-stage companies build client bases and robust organizations through frequent communication and guidance through difficult decisions.

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