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Speed and Agility: How Defense Acquisition Can Enable Innovation

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Panel 14. The Big Picture of Defense Acquisition

Thursday, May 5, 2016	
11:15 a.m. – 12:45 p.m.	<p>Chair: Andrew Hunter, Senior Fellow in the International Security Program, Director of Defense-Industrial Initiatives Group, Center for Strategic International Studies</p> <p><i>Defense Modernization Plans Through the 2020s: Addressing the Bow Wave</i> Todd Harrison, Director, Defense Budget Analysis and Senior Fellow, CSIS</p> <p><i>Speed and Agility: How Defense Acquisition Can Enable Innovation</i> Peter Modigliani, Division Chief Acquisition Specialist, The MITRE Corporation</p> <p><i>Defense Industrial Base Issue That Can Be Overlooked When Focusing on Major Weapon Systems</i> Nancy Moore, Senior Management Scientist, RAND</p>



Speed and Agility: How Defense Acquisition Can Enable Innovation

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Abstract

The Department of Defense (DoD) leadership demands a more agile, innovative enterprise that can rapidly integrate and deliver leading technologies. In its struggle to keep up with the rapid pace of change in both threats and technologies, the DoD is burdened by complex, bureaucratic processes, policies, and culture that hinder speed and agility. The disjointed budget, requirements, and acquisition domains compound the DoD's difficulties. Many acquisition professionals lack the requisite experience to navigate a disorganized knowledge enterprise to develop strategies and execute processes. Congress and DoD executives have instituted many initiatives to rapidly acquire and deliver capabilities to the warfighters, but these have varying maturity and success.

The DoD can implement key enablers from the enterprise to the tactical levels to replicate the success of government and industry innovations. Schedule should join cost as a top priority for a DoD acquisition enterprise that builds upon and integrates many innovative organizations and initiatives into its activities. This requires bold leadership to reshape the culture and enable top talent to prosper. The DoD should restructure programs and portfolios to enable agile and iterative developments, continue partnerships with established industry, and engage the services of innovative new firms to maintain technological superiority.

Strategic Imperative

Over the last few years, the president, DoD executives, and Congress have sought to ensure the DoD is more agile, flexible, and technologically advanced. Better Buying Power (BBP) 3.0 initiatives include incentivizing innovation and productivity in government and industry, eliminating unproductive bureaucracy, and promoting effective competition. These initiatives are designed to counter the threat that adversaries pose to U.S. technological superiority.

The FY16 National Defense Authorization Act (NDAA) includes a number of provisions to drive speed, agility, and innovation. These include expanding rapid innovation programs and rapid acquisition authorities. One section that holds particular promise directs the creation of a middle-tier of acquisition to promote rapid prototyping and rapid fielding acquisition pathways. These programs rapidly field either prototypes or production units and complete fielding within five years. There are provisions for funding R&D and rapid prototypes. It empowers senior officials to waive laws and policies that impede certain rapid acquisitions. Other types of programs seek to time-box the lengthy requirements process and better align the acquisition and budget systems to support speed and agility.

In March 2016, House Armed Services Committee (HASC) Chairman Mac Thornberry introduced the Acquisition Agility Act to spur the next set of reforms that will ensure that the DoD can respond to rapidly changing threats (Thornberry, 2016). It seeks to enable the DoD to field better technology faster by restructuring major weapon systems,



allowing them to rapidly deliver a minimum acceptable capability, then incrementally develop additional components for an open-designed platform.

Key Challenges/Barriers

The Defense Acquisition Enterprise is one of the world’s biggest bureaucracies, eclipsed only by the full DoD and federal government as a whole. The enormous burdens imposed by laws, policies, guides, and memoranda from multiple levels of DoD and Service oversight overwhelm programs. All DoD programs follow most of the same processes in the acquisition framework, yet each program spends considerable time and energy identifying the required processes and how to execute them. These processes force program offices to spend far too much time generating paperwork and navigating the bureaucracy rather than thinking creatively about program risks, opportunities, and key elements of their strategies.

Technology Adoption

While the DoD once led technology R&D, global commercial companies now drive innovation (see Figure 1; The White House, 2016). The DoD’s R&D budget has declined by over 20% from its peak in 2010, and the defense industry R&D dropped by a third from 1999 to 2012. Many defense firms followed industry trends of stock buy-backs to obtain short-term financial gains, and deferred long-term technology investments. Google, Apple, and Microsoft spend five to six times more on R&D than the five largest defense firms combined (Center for a New American Security, n.d.). As a result, the defense industry moves too slowly to adjust to current technology trends. This has prompted many DoD executives to place high priority on reaching out to new industry partners and breaking down the barriers that prevent organizations from doing business with the DoD.

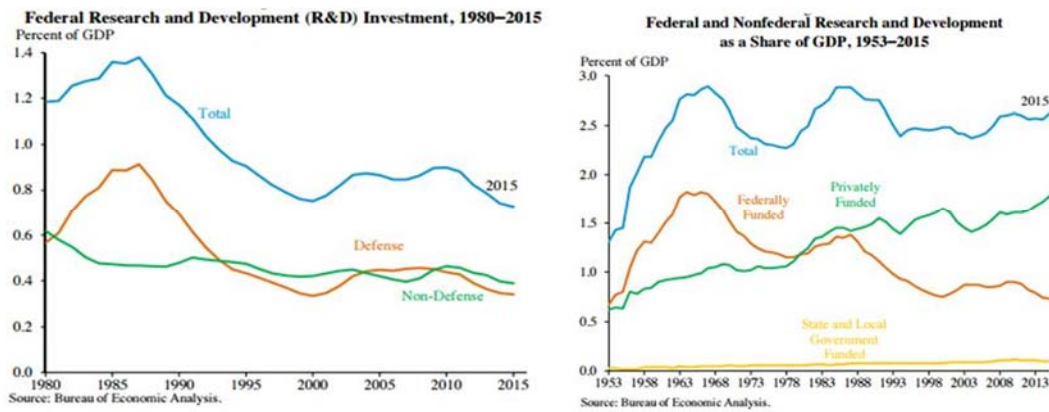


Figure 1. Federal R&D Investments

In *Crossing the Chasm*, Geoffrey Moore (1991) describes the vast gap between early adopters of a high-technology product and the early majority of the market (Figure 2). Drawing on the technology adoption life cycle model and the diffusion of innovations theory, Moore outlines the different expectations of each group and proposes strategies for mainstream product adoption.



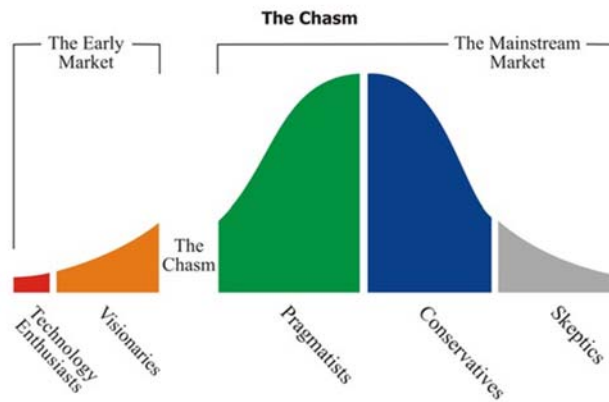


Figure 2. Industry Technology Adoption

The DoD confronts a similar chasm between the emergence of innovative technologies and the integration of those technologies into programs of record (see Figure 3). DoD labs, the Defense Advanced Research Projects Agency (DARPA), Federally Funded Research and Development Centers (FFRDCs), academia, and industry continue to develop exciting new technologies, but the current acquisition system makes it impossible to rapidly and effectively leverage them for the warfighter. One challenge centers on identifying new technology that could remedy operational shortfalls or enable programs to take advantage of opportunities. Furthermore, if a small business demonstrates an operational solution, it must often take part in a lengthy competition with no guarantee of eventual income and, if selected, be subject to rigorous design, testing, and security protocols designed for larger companies.

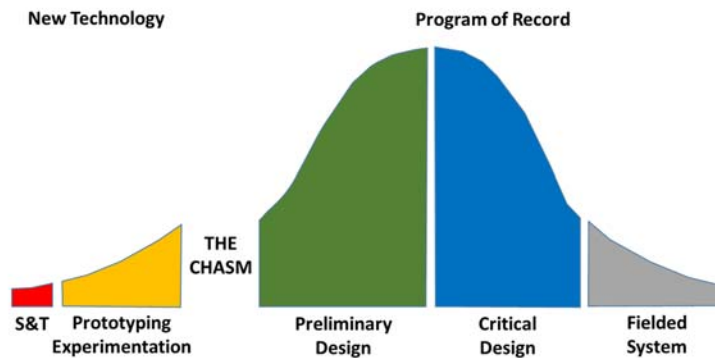


Figure 3. DoD Technology Adoption Chasm

Long development schedules limit the DoD’s ability both to provide new capabilities that enable new operational advantages and to retire legacy systems with their increasing costs and risks. Over the last five years, the DoD has paid considerable attention to curbing this growth. DoDI 5000.02 stresses iterative development as a remedy, yet many major systems struggle to implement this approach effectively.

While major systems often take 10–15 years from concept to fielding (see Figure 4), programs only have a *12–18-month window to incorporate new technologies* into the design. During the Technology Maturation and Risk Reduction phase, programs contract with a few

companies to develop competitive prototypes. During this phase companies leverage their research and development (R&D) programs and bring in partners to identify the leading technologies to exploit to maximize system performance. The window closes shortly before the Preliminary Design Review (PDR), at which point the key technologies are agreed upon in the design. No further opportunity for technology insertion typically occurs until after the system achieves Initial Operational Capability (IOC), when the program office may seek to upgrade fielded systems or inject improvements via a subsequent increment—which is often managed as another acquisition program.

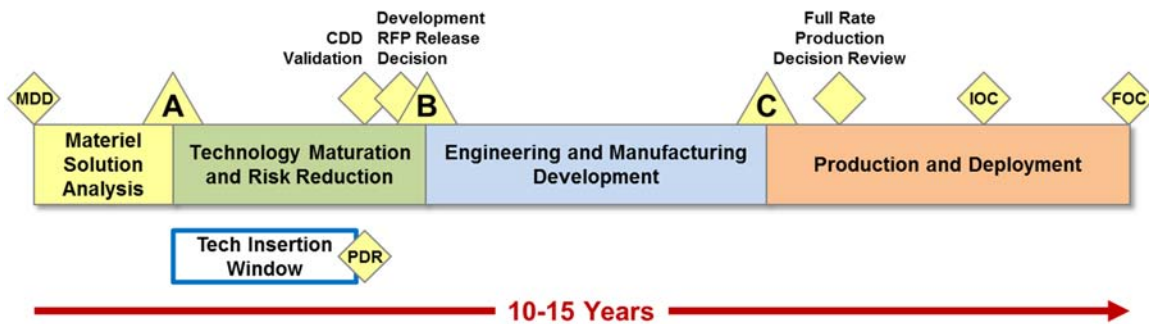


Figure 4. Technology Insertion Window

Key Enablers for Innovation and Technology Insertion

Examining successful government and commercial enterprises, as well as common themes in the DoD’s new organizations, initiatives, and legislation enabled identification of some key enablers. Every corner of the Pentagon is investing in organizations focused on rapid capability deliveries. These are led by forward-thinking risk-takers, supported by an innovative culture and subject to only limited bureaucratic constraints. Programs are structured effectively from the start to deliver capabilities fast and avoid common acquisition pitfalls. They emphasize a renewed partnership with industry, particularly with non-traditional high-tech startups. Finally, a focus on delivery, where schedule takes increased priority, drives designs and decisions.



Figure 5. Key Enablers for Innovation and Technology Insertion

Technology Incubators

Incubators and accelerators have proven critical to the development of high-tech startup businesses. These programs mentor and train entrepreneurs in technical and business skills to help them launch a product and scale their business, secure funding, identify partners, hire the right employees, and mature their ideas. Leading incubators include IdeaLab, which assists companies to identify technology solutions to big problems early in the process. Accelerators such as Y Combinator enable speed to market via a defined schedule. Y Combinator alone funded over 1,000 startups with a combined valuation of over \$65 billion.

Rapid Acquisition Organizations

Acquisition executives, policy-makers, and process owners can learn from both Silicon Valley and adaptive government organizations how to streamline their processes to enable faster deliveries. The DoD has many organizations and initiatives designed to enable speed, agility, and technological innovation. In 2012 Secretary of Defense Ashton Carter created the Strategic Capabilities Office (SCO):

to help us to re-imagine existing DOD and intelligence community and commercial systems by giving them new roles and game-changing capabilities to confound potential enemies—the emphasis here was on *rapidity of fielding, not 10- and 15-year programs. Getting stuff in the field quickly.* (Carter, 2016)

The SCO has quickly matured into a major defense organization operating under only limited bureaucratic constraints, with an FY16 budget of \$460 million for classified initiatives. Projects address strategic threats and have achieved early product successes in 3D-printed micro drones, self-driving boats, and an electromagnetic railgun.

In other examples, the Pentagon's Rapid Reaction Technology Office (RRTO) executes a series of prototyping and technology demonstration programs to hedge against technology risk, accelerate warfare capabilities, and conduct industry outreach to remove barriers to commercial technology use. The Air Force Rapid Capabilities Office (RCO) focuses on urgent classified projects that must deliver results in accelerated timelines. A flat organization governed by senior Air Force and DoD officials, the RCO operates with active warfighter engagement, small empowered teams, and stable funding. The RCO manages the new Long Range Strike Bomber as one of its premier programs. The Chief of Naval Operations seeks to replicate this model with a Maritime Accelerated Capabilities Office to field mature programs. The Army's Rapid Equipping Force focuses on delivering emerging technologies to deployed operational soldiers. The Joint Improvised Threat Defeat Agency (JIDA) provides COCOMs rapid acquisition and tactical responses to counter improvised threats.

The growth of rapid acquisition organizations gives acquisition executives new avenues to meet their top priority and rapid capability demands. However, these organizations may also have negative effects on traditional acquisition organizations. The DoD's top talent will flock to the rapid acquisition organizations so that they can work on high-priority programs with minimal restrictions and likely achieve greater success. This means that traditional program management offices will have less talent and standing to meet the demands of lengthy bureaucratic processes, compounding program risks, costs, and schedules.

Instead of instituting new programs and organizations to circumvent the acquisition bureaucracy, the DoD could place further emphasis on streamlining and innovation. This



would include empowering the acquisition workforce with modern digital tools that effectively leverage their collective intelligence in a knowledge-based enterprise. The DoD should also hold leaders of functional areas accountable for streamlining their policies and processes, and provide the workforce with current guidance, templates, and exemplars on which to model their activities. Arming programs with the right structure and strategies from the start will improve the likelihood of program success and reduce delays in reviews and documentation.

Leadership and Culture

As the DoD seeks to promote rapid, agile, and innovative solutions, it must also adopt the leadership traits and organizational culture of the successful organizations. DARPA, Silicon Valley, and many other government and commercial organizations have recognized how to deliver capabilities quickly to respond to changing conditions in the market or battlefield.

Management thought leader Gary Hamel (2016) has identified key features of high-performing organizations, including

- Small, autonomous teams empowered to make key decisions
- Strong sense of competition and collaboration between operating units
- Significant investment in financial, commercial, and technical skills of employees
- Deeply shared norms and mutual responsibility for unit and enterprise success
- Radically simplified planning and budgeting processes

According to Hamel, a key driver of the bureaucracy is the continual addition of compliance requirements, either by law or policy. Hamel (2016) recommends that organizations assess themselves against three key bureaucracy indicators: the number of management layers, percentage of employee time spent on compliance, and average review timelines.

The DoD must actively engage program champions, stakeholders, and oversight organizations to accelerate decision-making and maintain program momentum. Delegating decision authorities to the lowest possible level and maintaining a short chain-of-command provides rapid, decentralized decision-making. To balance these delegated authorities, portfolio reviews give executives and stakeholders transparency into progress over recent months and plans for the next few months. This governance model would enable capability deliveries months or years earlier than traditional tiered, serial, gate-check program reviews.

Successful leaders set a bold vision, concrete goals, and incentives for successful capability deliveries against an aggressive schedule. They provide simple strategies, free of bureaucratic jargon, incorporating key stakeholder interests. For instance, Boeing's goals for the 727 aircraft design were that the plane must be able to hold 131 passengers, fly nonstop from Miami to New York City, and land on La Guardia runway 4-22 (a short runway). Stakeholders who can clearly articulate the strategy and their role can focus on achieving the desired outcomes. The tight integration of end users and developers enables regular collaboration on operational concepts and development details. This ensures a common understanding of operational requirements and potential technical solutions. While program managers and contracting officers provide official direction to contractors, facilitating user-developer collaboration has proven critical to satisfying users. Acquirers and developers



who know specific users by name will have greater impetus to delivering a high-quality system than those who treat users as some abstract, faceless group.

A few DoD organizations embody the traits necessary to overcome the bureaucracy and delight users with groundbreaking innovations. Two organizations with a long track record of success can serve as models for others to replicate.

DARPA has a 50-year history of radical innovation spanning the Internet, satellites, stealth, and unmanned vehicles. DARPA's model includes 100 temporary technical program managers and a mix of high-performing individuals and teams from across government, industry, and academic research centers. Its projects are challenging, focused, and finite, making them attractive to high-caliber talent (Dugan & Gabriel, 2013). DARPA focuses on "use-inspired, basic research" that balances visionary, exploratory, basic research with practical applied research. Project leaders have the authority to reallocate resources, change strategies, and move talent on or off the project as needed, and focus on iterative progress rather than detailed upfront planning. DARPA's flat structure ensures that leaders rapidly become aware of issues and address them.

Special Operations Command (SOCOM) values speed over all other factors when it comes to acquisition (Guerts, 2016). SOCOM collaborates closely with many other organizations to "work at the speed of SOF" [Special Operations Forces] and ensure efficient and effective acquisitions in its dynamic, complex environment. SOCOM opened its own technology incubator, SofWerX, housing it in a 10,000 square-foot open floor building with the look and feel of a tech startup (Erwin, 2016). SOCOM involves innovative firms in frequent engagements, demonstrations, and hackathons.

The culture of the program office also plays a critical role in achieving speed and agility. Many program offices have staff who have applied the same methods for the last 30 years. These are not the innovators the DoD needs. Program managers need acquisition professionals with enough experience to understand the key elements of their function, yet are deeply committed to pursuing new business models. Moreover, a modern workplace environment and suite of collaboration tools would help programs to recruit and retain top talent.

Contracting Officers (COs) must function as strategic partners tightly integrated into the program office, rather than operate as a separate organization that simply processes the contract paperwork. COs cannot treat every contract as an 18–24 month procurement process, but instead must seek to understand the program objectives and design contract solutions. In 2016 the Office of Federal Procurement Policy (OFPP) launched the Digital IT Acquisition Professional (DITAP) Training and Development Program for COs to ensure that the DoD has a cadre of high-performing professionals to acquire leading IT capabilities in the Digital Age, and directed agencies to form Acquisition Innovation Labs to foster a culture of innovation (Rung, 2016).

The different acquisition phases require *different types of leaders*. The early phases call for visionary innovators who can explore the full opportunity space and engage in intuitive decision-making. The development and production phases demand a more



pragmatic orchestrator to execute the designs and strategies via collaboration and consensus decisions.¹

Program Structure

A BBP 3.0 initiative centers on aggressively reducing cycle time by targeting the root causes of schedule delays (Kendall, 2015). The Defense Acquisition Enterprise should promulgate—and act on—the Silicon Valley mantra “Always Be Shipping.” Silicon Valley often focuses on getting a Minimum Viable Product (MVP) in the hand of users quickly, then iterate based on active feedback and system performance. The MVP mindset requires some culture and policy changes in Pentagon operations across requirements, budgets, and acquisition domains. A major weapon system that delivers all of its planned capabilities after 10–15 years will not satisfy its customers as much as a system that delivers 60% of its capabilities in 6–8 years, with the program office then involving the customer in iterative deliveries every few years thereafter. This principle holds true for acquisitions from small software programs to the F-22 fighter.

Good program managers know their schedule’s critical path and focus sharply on reducing barriers. Sufficient, but not excessive, upfront analysis of requirements, technologies, costs, risks, and alternatives will enable program managers and stakeholders to effectively scope the program. These insights will help structure a program to deliver an MVP as soon as possible, while allowing iterative development over the long term. This balance of speed and rigor will ensure that warfighters obtain useful capabilities faster. Programs should embrace constraints by first adopting fixed schedules, mature technologies, and open architectures that drive design, and then relying on iteration to keep pace with technology advances. Follow-on increments then enable programs to integrate technologies that have since matured to address emerging requirements based on current operations and feedback on previous deliveries. Continual investment in research and analysis enables many government and industry partners to iteratively mature new technologies for a mission area.

The *HASC Acquisition Agility Act* seeks to drive Major Defense Acquisition Programs (MDAPs) to this structure and requires use of open design principles. It proposes that warfighters assign targets for costs and fielding dates and that Milestone Decision Authorities manage programs to these targets. The act differentiates between platforms and their components: Platforms are the major systems and involve slower development, whereas components are structured to be easily and quickly upgraded as technology develops to deliver improvements without waiting for a new system to be approved.

At present, the DoD continues to manage acquisition programs as large, stand-alone systems driven by independent budgets, requirements, and program offices, yet DoD executives and operational commanders seek integrated suites of capabilities. The DoD can enable speed and agility by restructuring, integrating, and managing related programs as acquisition portfolios. The major schedule drivers include securing a budget, defining requirements, program documentation, and awarding a contract. A portfolio structure manages these elements at a capstone level, enabling smaller programs to navigate the acquisition life cycle faster. A portfolio strategy, architecture, and roadmap can shape the

¹ These leadership traits were derived from Geoffrey Moore’s concepts in *Escape Velocity*.



continual development and integration of a suite of smaller programs. Dynamic allocation of funds and talent to priority projects optimizes the portfolio performance and achieves a balanced force mix of large, medium, and small systems.

Agile is the leading software development methodology in industry, with growing adoption across the DoD and the federal government. It empowers small, high-performing teams to focus on demonstrating and delivering software rather than on coordinating dozens of documents that must be sent up the chain for approval each step of the way. A tailored version of Agile's guiding principles for the DoD includes the following:

- Small, frequent releases iteratively and incrementally developed
- Reviews of working software instead of extensive documentation
- Rapid response to changes in operations, technologies, and budgets
- Active user involvement to ensure high operational value

While Agile practices are best suited for IT programs, many of them apply to all programs, especially as software plays an increasing role in system performance. Programs have tailored their structure and processes to enable Agile adoption and experienced some early success. The resulting software is often of higher quality and more responsive to users' priority needs. Successful implementation of Agile requires a different culture and set of rigorous processes than the traditional acquisition environment.

Partnerships With Industry

In previewing the FY17 defense budget Secretary of Defense Carter (2016) said, "One of my core goals in this job has been to build and to rebuild bridges between [DoD] and the innovative, strong American technology and industry community." LinkedIn has provided him with ideas on how to overhaul the outmoded DoD personnel system and innovate for the force of the future. Secretary Carter has named Eric Schmidt, Chairman of Google parent company Alphabet, to head the Defense Innovation Advisory Board, which will "address future organizational and cultural challenges, including the use of technology alternatives, streamlined project management processes and approaches—all with the goal of identifying quick solutions to DoD problems" (Defense Media Activity, 2016). The Air Force seeks to harness IBM's Watson's computing power to tackle the "morass of the federal procurement process."

The DoD has established the Defense Innovation Unit Experimental (DIUx) as an initiative to foster increased communication, knowledge, and access to high-tech startup companies in Silicon Valley and Boston. DIUx seeks to build and strengthen relationships and play matchmaker between emerging technologies and operational challenges. By developing outposts where the entrepreneurs operate, the DoD can reach new companies outside the Capital Beltway.

As an example of an innovation partnership, Airbus partnered with micro-manufacturing innovator Local Motors to co-create commercial drones using the Airbus Quadcruiser's hybrid concept as the starting design. Local Motors recently released its Strati roadster, the world's first 3D-printed car. Airbus sought to "speed-up development and manufacturing in aerospace through an open competition based on co-creation and micro-manufacturing." The concept integrates the design of fixed-wing aircraft and quad-copters by combining the business models of a leading commercial firm with a new, distributed network of innovators.

While the DoD continues to engage startups to identify innovative technology solutions, integrating them into major weapon systems programs still requires active



participation by traditional defense prime contractors. The large defense contractors argue they have robust networks to identify innovative small businesses with promising solutions and involve them as subcontractors; alternatively, they acquire the technology or company. DoD executives want to use their buying power and operating environment to expand the identification of new technologies and the ability to link those technologies to military applications.

Deliveries Are the Ultimate Measure

The DoD's annual reports to Congress should highlight the military capabilities—aircraft, ships, ground vehicles, space, and cyberspace assets—delivered to warfighters over the past year. At proper levels of classification, the reports should also include a summary of the operational impact of these new systems (with proper classifications) to give operational commands, Congress, and taxpayers a clear understanding of the value these systems provide to their end users relative to the \$300 billion per year cost.

The DoD and Government Accountability Office (GAO) already publish the total and unit cost of each major weapon system. Tremendous visibility and incentives would result if the scheduled IOC and Full Operational Capability (FOC) dates for each system were also published and featured prominently on a DoD website. Seeing how many months and years elapse between the program's start—often with the Materiel Development Decision (MDD)—and IOC and FOC would shock many. Supporting tables for program sponsors and acquisition executives could compare the schedule length against their original estimates to identify and monitor schedule drivers and delays.

The MC-12W Liberty Aircraft represents a recent rapid acquisition success story. To address an urgent demand for information, reconnaissance, and surveillance (ISR), the Air Force's Big Safari program rapidly integrated existing sensors and communication datalinks on a commercial aircraft. It delivered Liberty to the theater in less than eight months from funding approval, at a low unit cost of \$17 million. Liberty provided a balanced force mix to complement high-end systems such as Joint STARS and Global Hawk. The aircraft flew over 300,000 combat flight hours in Afghanistan and is credited with 73% of all Air Force ISR sorties and the kill/capture of hundreds of high-value individuals in Afghanistan during 2012.

Summary

The DoD's massive size constitutes both its competitive advantage and greatest risk. For the DoD to ensure that U.S. forces remain the premier military in the 21st century, programs must constantly innovate by rapidly incorporating leading technologies. The DoD must remain strategically agile, responding to new threats and opportunities across new domains. Secretary Carter, Under Secretary Frank Kendall, and Congress have pioneered many initiatives on innovation and rapid technology insertion. Each Service and Agency has embarked on related initiatives and set up relevant organizations. Some will require a few years to take root and grow into regular operations.

To succeed, these efforts require committed leadership, but innovation rarely occurs as the result of a top-down, central planning initiative. Instead, achieving the desired results requires a robust ecosystem of technologists, acquirers, and users with environments to model, demonstrate, and test prototypes and solutions. This network of experts across government, FFRDCs, academia, and industry should regularly collaborate online and in person.



DoD leaders need to empower junior officers and civilians to explore new ideas about both technology and business practices. They should assign a team to relentlessly examine every aspect of the acquisition enterprise and expose bureaucratic policies, processes, and barriers that hinder speed and agility. The DoD must also review the current acquisition workforce and identify the outstanding performers to recruit and retain. Then, DoD should partner young, motivated technology enthusiasts with experienced acquisition professionals to mentor each other and tackle challenges. Programs should regularly recognize and promote staff who take risks, embrace new partnerships, and deliver new capabilities to warfighters sooner.

The DoD should structure its programs to apply proven processes for managing schedule-consuming requirements, contracting, and budgets so that they can navigate the acquisition life cycle faster. Systems leveraging open architectures and incremental designs can focus on delivering initial capability quickly, and then iterate improvements over time. The DoD can tailor acquisition processes for each major type of system to streamline each program's path through focused guidance. Partnerships with industry—both traditional defense contractors and startups—will allow the DoD to benefit from their research, technological innovations, and business practices.

DoD executives have laid the groundwork by creating many new organizations and initiatives. As a result, acquisition professionals now have many avenues for pursuing innovative solutions and the leadership support to do so. It will be up to the leaders who join DoD under the next administration to build on their efforts to enable a nimbler acquisition process that meets the needs of a dominant military.

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Speed and Agility

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5 May 16

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Purpose / Outline

How Defense Acquisition Can Enable Innovation and Rapid Technology Insertion

- Strategic Imperative
- Challenges
- Five Enablers



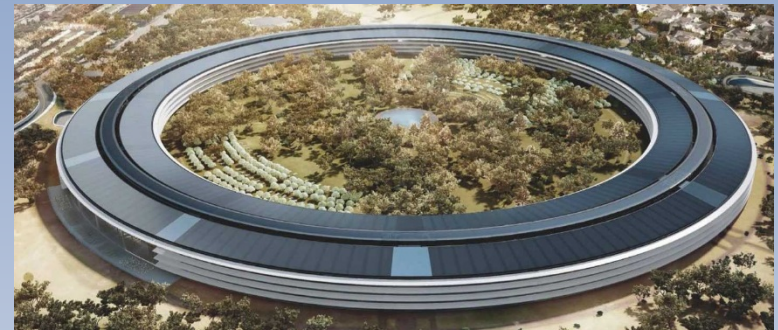
DoD Challenges and Vision

Current State



- **Bureaucracy**
- **Heavily Regulated**
- **Slow**
- **Technology Parity?**

Desired State



- **Agile**
- **Innovative**
- **Rapid**
- **Technology Superiority**

Strategic Imperative



Congress FY16 NDAA

- Rapid innovation, acquisition
- Rapid prototyping and fielding

SECDEF



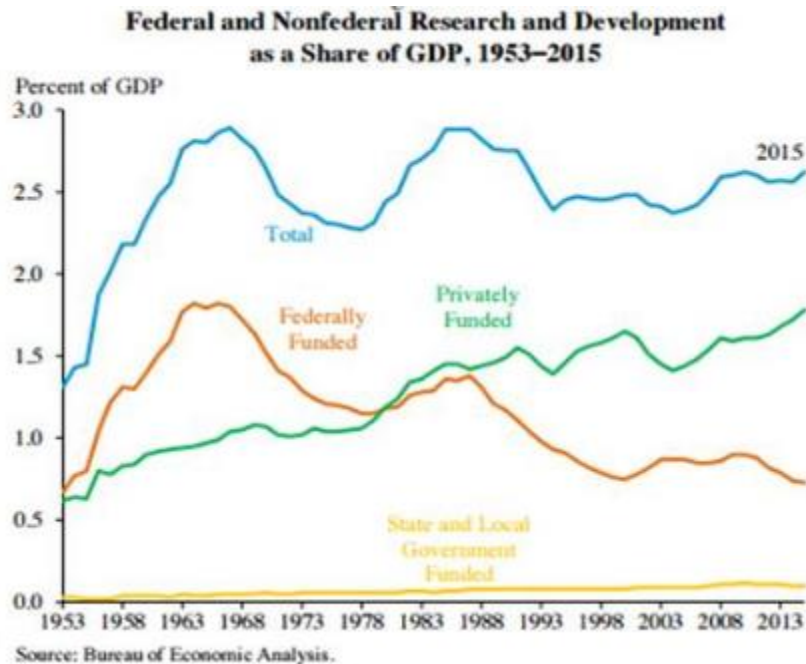
BBP 3.0

- Partner with innovative tech industry
- Rapid fielding, not 10-15 years

- Innovation and Technical Excellence
- More Productivity, Less Bureaucracy

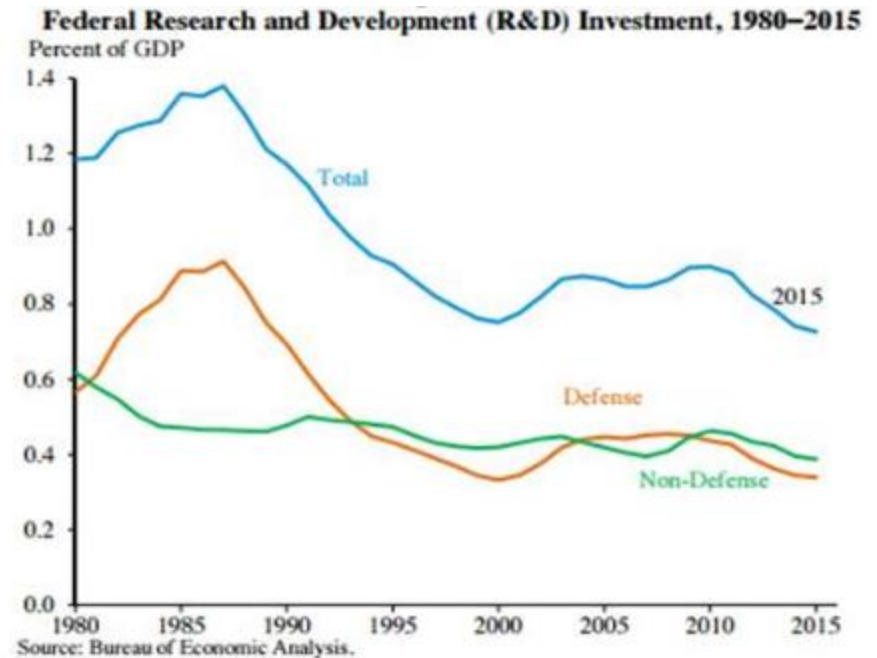
DoD Is No Longer the Global R&D Leader

Federal vs Private R&D



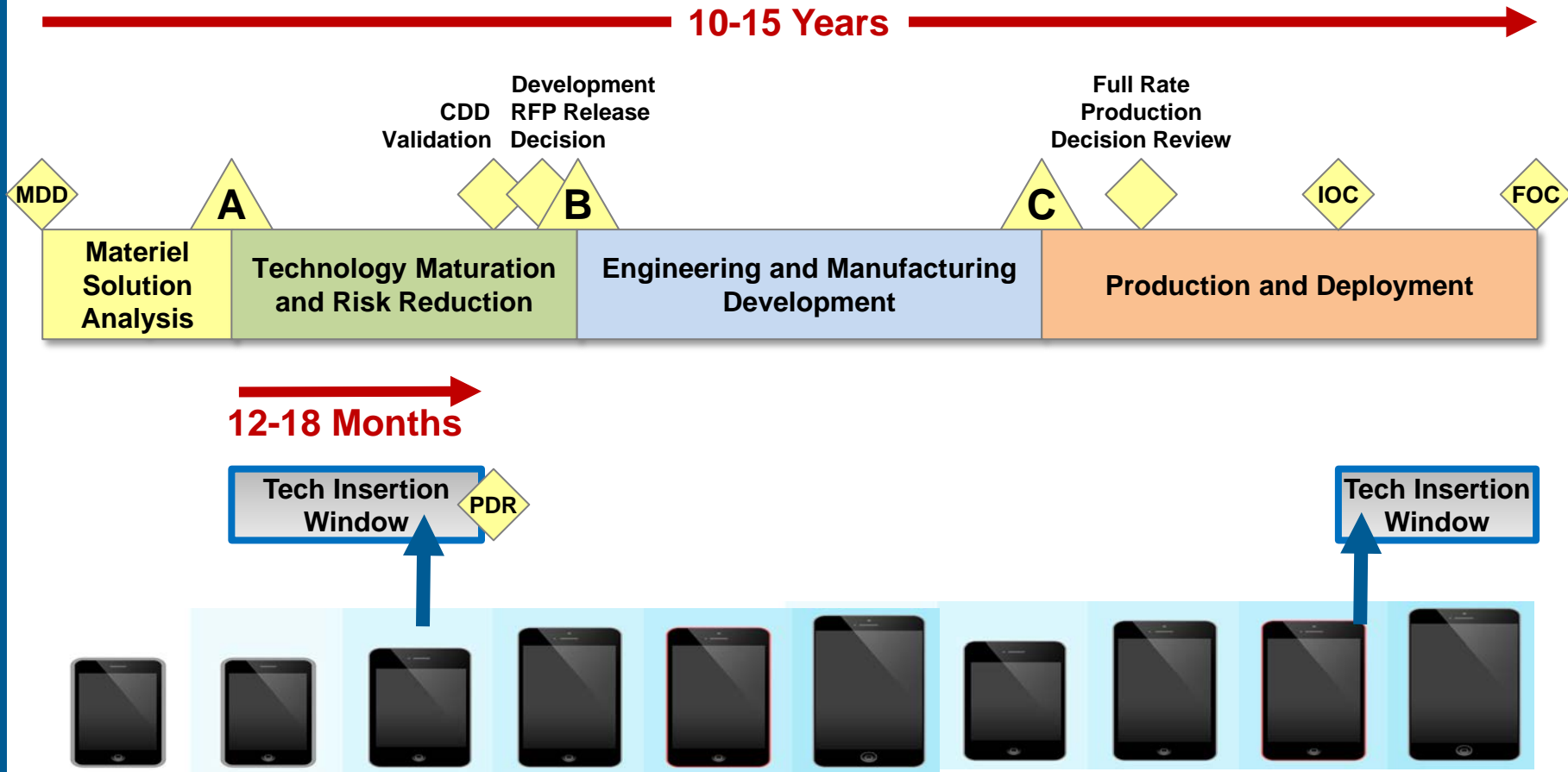
Industry Drives R&D

Defense vs Non-Defense R&D



Defense R&D Declining

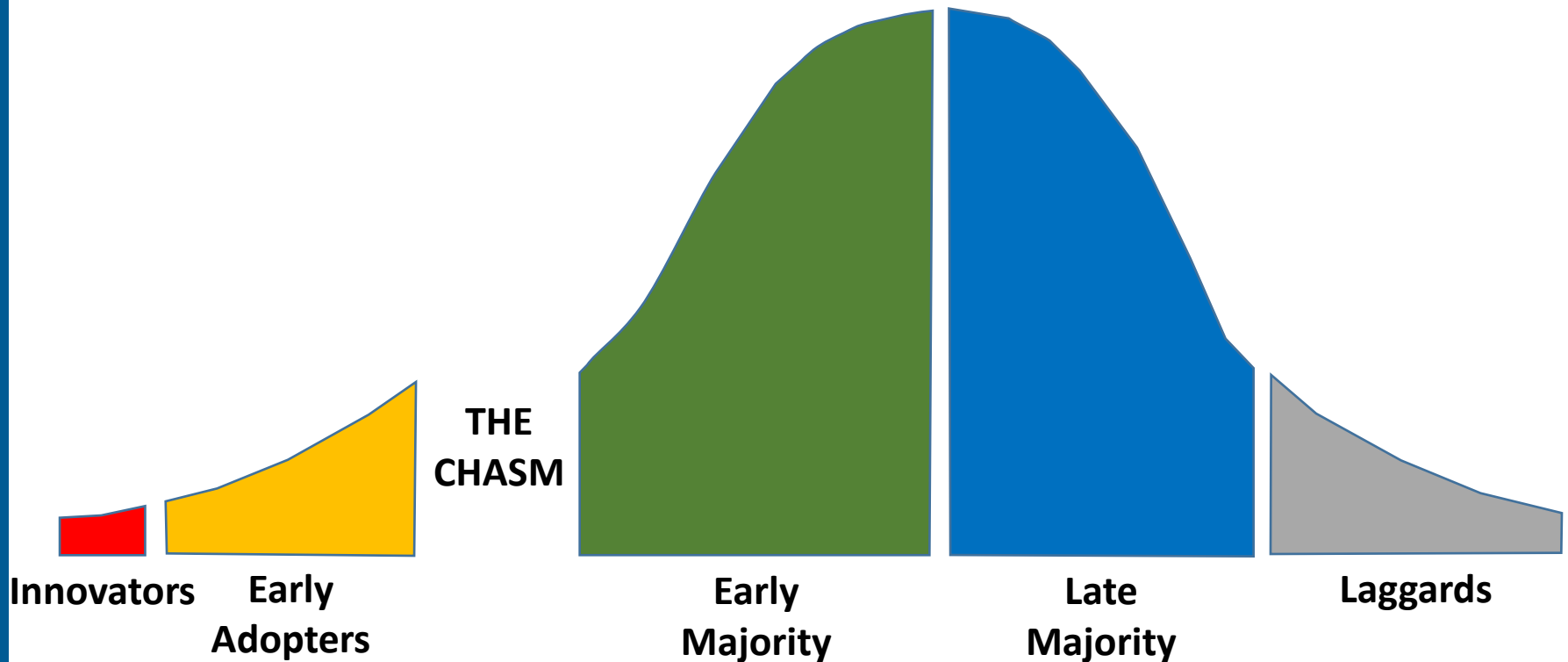
Technology Insertion Window



Small Window to Insert Technology Across Long Program Life

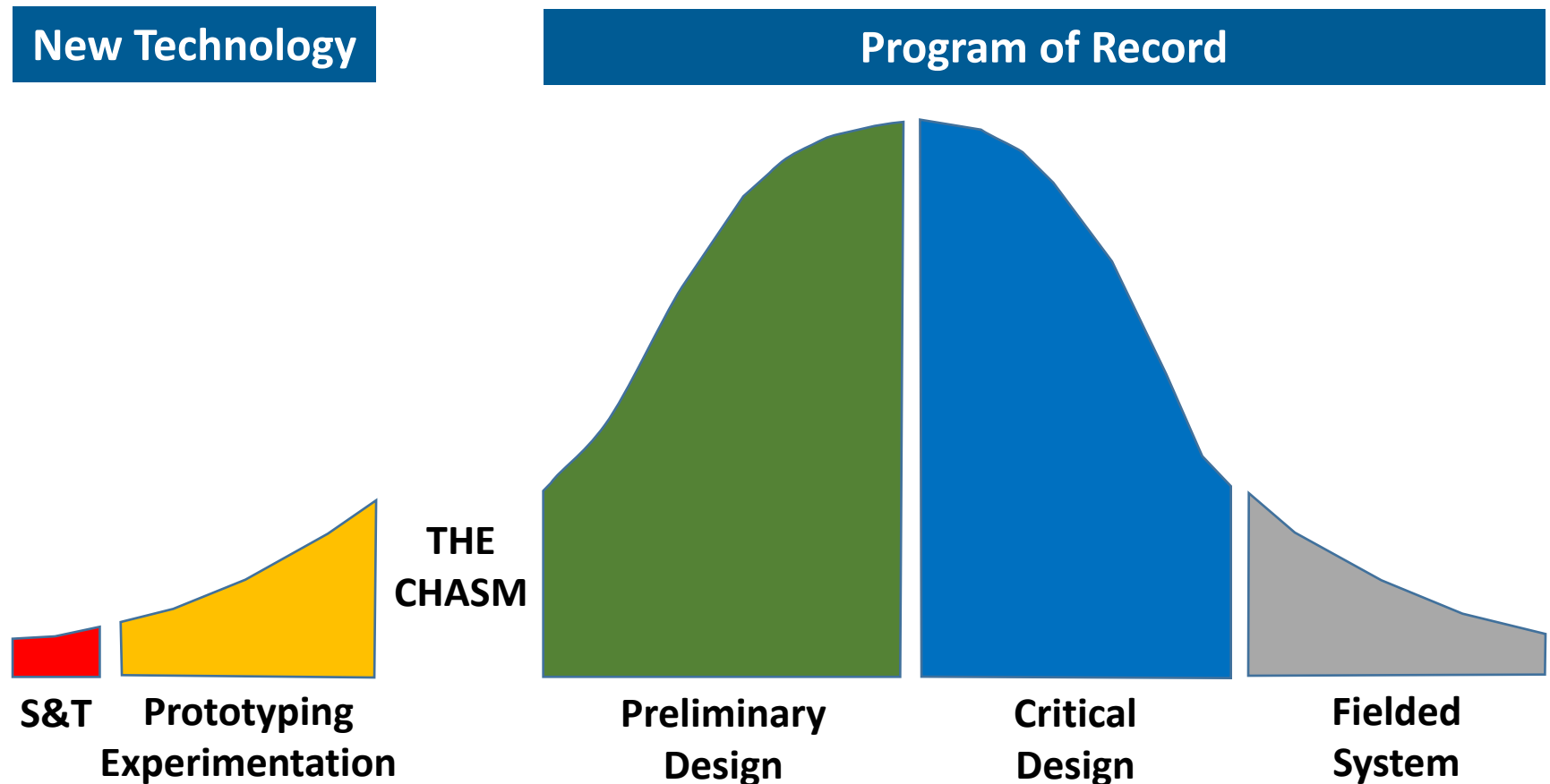
Crossing the Chasm

Geoffrey A. Moore



Technology Marketing – Bringing Products to the Mainstream

DoD's Technology Adoption Chasm



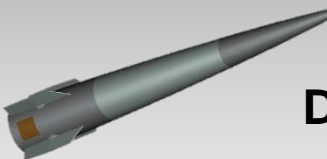
Very Difficult for DoD Acquisitions to Leverage New Technologies

How DoD Can Cross the Chasm




Rapid Acquisition Organizations

OSD



Strategic Capabilities Office
Defense Innovation Advisory Board
DASD/EC&P Rapid Reaction Technology Office
Digital Defense Office



Air Force

Rapid Capabilities Office



Big Safari

Navy

CNO Rapid Innovation Cell

Maritime Accelerated Capabilities Office

Army

Rapid Equipping Force

Network Integration Evaluations

Agencies

USSOCOM
SOFTWERX

DARPA

JIDA

JICSpOC

Rapidly Acquire Priority, Game-Changing Capabilities

Leadership and Culture

Leadership



- Bold vision, concrete goals
- Incentivize speed
- Flat structure, ↓ decisions
- Professionals who partner
- Right leaders for the phase

Culture



- Small, empowered teams
- Competition & collaboration
- Shared norms for success
- Invest in people
- Radically simple processes

Replicate elements of high-performing organizations

Program Structure

Portfolio

- Budget
- Requirements
- Contracts
- Program Docs

Minimum Viable Product (MVP)

- Deliver capability to users **QUICKLY**
- Accelerate learning
- Iterate based on user feedback

Own The Tech Baseline

- Enable Open Sys Architecture
- Understand tradespace, risks
- Drive competition, innovation

Agile

- Small, frequent releases
- Review working software
- Responsive to changes
- Active user involvement

Build Platforms, Not Programs

Partnership with Industry

Shape Personnel Reforms



Defense Innovation Advisory Board



Communicate with Startups



Understand Tech Landscape



**Identify State-of-the-Art Commercial Technologies
Incentivize Technology Innovators To Tackle DOD Challenges**

Delivery Focus

“I created the SCO for rapidity of fielding, not 10- and 15-year programs. Getting stuff in the field quickly”
-Secretary Carter



- Acquisition Executives should publish list of IOC dates for all major systems
- PMOs should post IOC date prominently around office as constant reminder
- Bring Warfighters into PMO to establish personal connections to drive purpose

Incentivize Delivery Schedule Comparable To Cost Control

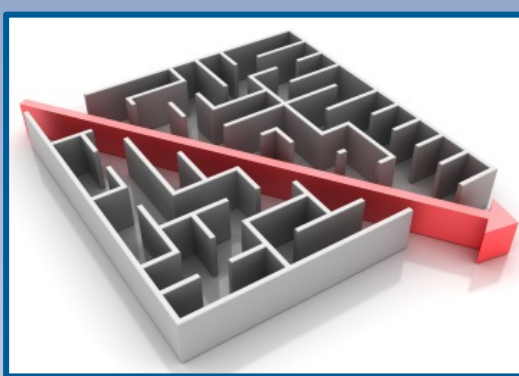
Recommendations

Innovation Ecosystem



- Assemble leading technologists, acquirers, users
- Provide them an environment to model, demo, test

Bust Bureaucracy



- ID clear goals
- Empower staff to explore, take risks
- Teams to ID and destroy barriers

Structure for Speed



- Portfolios address schedule drivers
- MVP + incremental, Agile development
- Own Tech Baseline

Build on Initiatives to Enable a Rapid, Innovative Enterprise