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THE MITRE PERSPECTIVE ON RAPID ACQUISITION

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Good afternoon.

It's an honor to stand before you today and share MITRE's perspective on an issue of critical importance: accelerating the delivery of advanced capabilities to the warfighter.

Let's recall that today's system's engineering approach to acquisition was born out of necessity more than 60 years ago, at the dawn of the Cold War, to meet the threat of a potential Soviet nuclear attack on our homeland.

Then President Harry Truman's announcement in the fall of 1949 that the Soviets had secretly tested a nuclear weapon led to the realization that a robust and effective air defense system protecting North America was a key strategic priority.

These were only the beginning moves in what would become a highly dynamic military technical competition with the Soviet Union, marked by action and reaction, as each country sought an advantage through science and engineering to seek advantages and bolster deterrence.

Fortunately, the U.S. was advantaged in this long-term competition because America's scientists and engineers mastered incredibly complex systems engineering challenges that kept us a step ahead of a Soviet Union bent on military superiority.

That technical expertise allowed President Eisenhower to rely on the massive retaliatory power of the U.S.' growing nuclear stockpile to offset the numerical advantage the Soviets had in conventional forces, without trying to match them man-for-man or tank-for-tank… This was the First Offset Strategy and it gave the U.S. an advantage for more than 20 years.

My organization, MITRE, was created as the Soviet Union poured enormous resources into developing what would become the world's largest nuclear arsenal along with huge fleets of bombers and ICBMs to strike American soil. Throughout the Cold War, the Soviet Union continuously increased its striking power.

MITRE's first major systems engineering program – the Semi-Automated Ground Environment (SAGE), would develop into a deep and productive partnership with the Department of Defense and the U.S. Air Force. MITRE was established in 1958 and SAGE went live just a few years after that.

SAGE used early digital computers to link sensors and weapons systems to monitor the nation's airspace, detect potential threats, and coordinate an effective response. It served as the backbone of NORAD's air defense system well into the 1980s, heralding a major step forward in applying information technology to solve military challenges, and in the design and engineering of highly complex systems-of-systems.

We were assigned formal responsibility for operating and maintaining Evaluation SAGE Sector – or ESS – which was a test vehicle for research, development, weapons integration, and evaluation of upgrades to the Aero-Space Defense Mission. This effort provided the whole government, industry, and FFRDC team with invaluable experience in the rigorous and disciplined practice of large-scale systems integration and engineering, testing and evaluation – an approach that really didn't exist before that time.

Those lessons learned and the experience gained were foundational to the Second Offset Strategy, which relied on the use of new sensors, precision weapons, and advanced data processing for precision attack to counter the Soviet's massive buildup of conventional forces on the Central Front of Europe during the 1970s and early 1980s.

This Second Offset saw major new technology programs advance the U.S. military's capabilities in revolutionary ways. Advances included the AWACS airborne battle management aircraft, which gave the U.S. and its allies huge advantages in aerial warfare. This took disciplined systems engineering.

The combination of new precision weapons, sensors, and advanced computing provided the Joint Force with an advanced battle network enabling unprecedented success in the 1980s and early 1990s. Air Force Airmen took the lead in demonstrating these new capabilities. In 1986's Operation El Dorado Canyon, Air Force F-111s scored a direct hit with a 500-pound bomb on a Libyan I1-76 transport plane sitting on the tarmac at Tripoli's airport.

Navy A-6s also carried out precision strikes on critical targets. All of this was underpinned by disciplined system engineering.

In 1991's Operation Desert Storm, the world saw the use of AWACS, the experimental JSTARS ground surveillance and targeting system, anti-radar missiles, laser guided bombs, satellite guided missiles, satellite-aided navigation and timing, and stealth technology all linked together in an overwhelming package. Through systems engineering.

These new capabilities provided historically unprecedented levels of precision that destroyed Iraqi air and ground forces equipped with the latest Soviet-built equipment. That demonstration of the technological superiority of the Second Offset Strategy likely played a role in the final dissolution of the Soviet Union that same year. The world saw how U.S.-led advanced technology clearly outclassed Soviet-style brute force warfare.

Advances continued in the sensors and munitions enabling precision strike. These capabilities would enable the NATO air campaign over Serbia in 1999.

But as we fought overmatched adversaries in the Gulf War and the Balkans, our competitors and adversaries -- China, Russia, North Korea, and Iran -- studied our Second Offset capabilities, looking for ways to blunt American military advantage. We should not be surprised by this development, for strategic competition is dynamic by its very nature and no serious rival will simply cede military advantage.

For 25 years, since the end of the Cold War, the DoD has not seriously considered a military technical competition with an advanced, peer competitor. But as the 2018 National Defense Strategy (NDS) makes clear, we are once again in an era of great power competition with a resurgent Russia and an increasingly capable China.

And as the NDS says, our competitive military advantage is eroding at a time when the threats we face today are more diverse, less predictable, and available to adversaries with access to a globalized technology base. Make no mistake about it, our competitors and adversaries are pursuing determined military buildups aimed at neutralizing U.S. strengths like we haven't seen since the Cold War.

And, we still face the threats posed by Iran and North Korea as those countries develop more advanced weapons and, at least in the case of North Korea, field nuclear weapons capable of striking the United States. In multiple regions, "gray-zone aggression" – intimidation and coercion in the space between war and peace – has become the tool of choice of our great power competitors. The dangers posed by transnational threat organizations, particularly radical jihadist groups, have also evolved and intensified.

The clear take-away is that around the world, the proliferation of advanced technology is allowing more actors to contest U.S. military power in more threatening ways.

The Pentagon's response to such rapidly-evolving threats has been the "Third Offset."
Coined by former Deputy Secretary of Defense and current MITRE Visiting Fellow Bob Work, the Third Offset strategy is a broad effort to maintain America's comparative military advantage.

Our competitors are now developing the very same capabilities that provided our military with dominant conventional overmatch – including stealth, advanced sensors, precision munitions, electronic warfare, space-based capabilities, and cyber advances.

The Third Offset strategy seeks to arrest the erosion of America's conventional deterrence through a combination of advanced capabilities, innovative operational concepts, and new organizational constructs to extend U.S. military dominance.

As we rightly focus on "speed to field" and presenting our competitors with "asymmetric" capabilities they cannot overcome, speed has become king. As a result, flexible acquisition authority has become the panacea. But as my MITRE colleague and former Air Force program executive officer here at Hanscom, Roger Thrasher, wrote earlier this year, the acquisition community tends to mob around favored acquisition approaches and contracting methods like elementary school kids chasing a soccer ball.

These approaches include fixed price versus cost plus; use of Other Transaction Authorities or OTAs; and recent flexible approaches such as Section 804 Mid-Tier Acquisition. Various strategies have gone in and out of favor, seemingly with the rapidity of clothing and hairstyles.

We've all seen little kids play soccer. Without fail, the kids on the field mob the ball as soon as the whistle blows, and the concept of playing positions is quickly forgotten.

Eventually, as the kids grow older, they learn to play proper positions, and develop strategy, discipline, and teamwork skills.

This improves their game, and it's a lot more fun for everyone. But then some of them grow up and join the acquisition workforce and revert to playing acquisition "mob ball".

Like the soccer version, this is frustrating and inefficient.

Every defense acquisition program has a unique set of characteristics, circumstances, and goals. Program managers and contracting officers must choose the right approaches and contract types for the challenges at hand, but too often feel driven to adopt a "one size fits all" approach.

Policy and practice both agree it is vital to think critically about the nature of the endeavor, then pick the right combination of tools and methods.

Today, OTAs and Section 804 Mid-Tier Acquisition are valuable tools, but are also seen as the new hot things. Everyone wants to apply them – and in some cases even mandate them when other methods might be a better fit.

This mob ball approach almost certainly results in using the wrong methods on some efforts. When some of those programs run into difficulty because of the misapplied methods, we're likely to see rules tightening, increased oversight, and perhaps a complete swing of the pendulum away from OTAs and Section 804.

So, what's the alternative? A key first step is recognizing there are multiple pathways and tools to be applied for effectively and efficiently developing new weapons systems.

Use experience and critical thinking to select the right methods.

Senior leaders shouldn't lock in on a single method. As Roger pointed out, one size does not fit all.

Whichever acquisition approach we choose, let's be sure to embrace the Latin proverb Festina lente [Fes-tina Len-tay] meaning "make haste slowly."

We've learned from Roman historians that Augustus – the first Emperor of the Roman Empire – deplored rashness in his military commanders and used this oxymoron as one of his favorite sayings.

Because Augustus thought nothing was less becoming in a well-trained leader than haste and rashness, certain gold coins minted for him bore images of a crab and butterfly, a hare in a snail shell, and a dolphin entwined around an anchor – to emblemize the adage.

The essence of that proverb is as true today as it was more than 2,000 years ago.

Solving problems with a disciplined approach takes dogged persistence throughout the lifecycle of a program. But no one can match U.S. creativity and discipline if we run fast – in the right direction.

SAGE went live in 1963 and with upgrades, remained in service for TWO decades.

Early on, AWACS was mocked as a boondoggle, but with disciplined development it truly revolutionized air warfare.

The U.S. was challenged by the Soviet Union's massive air defense network. Stealth flipped the script and restored the U.S. advantage.

Creativity and discipline brought us the sensors, RPAs, and precision weapons that joint and coalition forces rely on today and tomorrow as major future conflicts will be fought in multiple domains.

The Kessel Run Experimentation Lab or K-REL continues to have success by embracing a non-traditional approach to acquisition and software development, with an emphasis on continuous delivery of capabilities.

Our nation has been here before. We developed and have evolved our original systems engineering approaches to accelerate acquisition timelines by running fast, and in the right direction.

Let us all be inspired to embrace the systems engineering framework of Owning the Technical Baseline as conceived by Dr. Bill LaPlante, including Business Case Analyses to understand what portions of a system must evolve and at what speed.

Government-Defined Open Architectures to enable evolution at the speed of threats. Systems Integration Labs to bring all the pieces together from the industry partners. And Model Based Engineering as a foundational enabler.

Let us all be inspired to continue to embrace the intellectual capital we have in this region and the unique opportunity the Air Force has to leverage Hanscom and the unparalleled Massachusetts technology ecosystem.

Let us all continue to be inspired to work together to embrace and leverage the innovation taking place outside the walls of the Defense Department.

Let us all continue to be inspired by the emerging and breakthrough technologies created by the high-tech companies, start-ups, innovators and entrepreneurs, and through partnerships such as the Defense Innovation Unit, the Mass Innovation Bridge and MassChallenge.

Let us all continue to be inspired to apply that innovation to the programs and systems we are developing to address the Air Force's most critical challenges – today and tomorrow.

We can make it happen, by taking small steps, with individual efforts – you, me, active duty, civilian, large business, small business, academia, and government, all coming together to solve our toughest problems, through disciplined systems engineering, making haste slowly.

Thank you.

About the Author

Ms. Sarah MacConduibh is vice president of the Air Force Portfolio in The MITRE Corporation's National Security Engineering Center (NSEC). The NSEC is a federally funded research and development center sponsored by the Department of Defense and operated within MITRE National Security Sector.

MITRE's Air Force Portfolio (AFP) addresses the Department of the Air Force's critical needs in command and control, communications, intelligence, surveillance, and reconnaissance; cyber and information operations; and information technology.