

PROJECT MERCURY: A MOONSHOT FOR DEFENSE INNOVATION

by **ETHAN EAGLE, PH.D.**, and **COL. JAMES D. DRYJANSKI, USAF (RET.)**



Senior Airman Ricardo Puente, (left), 726th Air Mobility Squadron crew chief, Staff Sgt. Shawn Reinsel (center), 726th Air Mobility Squadron passenger service agent, and Staff Sgt. Gerdon Jacobs (right), 726th Air Mobility Squadron aircraft services, participate in a group exercise that involves three rounds of impromptu networking on Spangdahlem Air Base, Germany, July 25, 2022. The Project Mercury Innovator Workshop aimed to help Airmen build their innovation capacity, equipping them with the tools they need to continue problem solving as innovators.

Source: U.S. Air Force photo by Airman 1st Class Imani West

Photo cropped to show detail. This image was edited using multiple filters, and dodging and burning techniques.

Accelerating change is no easy task. U.S. Air Force Vice Chief of Staff Gen. David Allvin emphasizes the inherent tension between executing the mission of today and fostering innovation for tomorrow. As the 2021 Marine Corps' debate over tanks highlights, leaders often must figure out what a unit can stop doing, or do differently, to pursue a new concept of operations that can increase readiness and lethality of the joint force. Significant change is nearly always met with fierce resistance.

Changing our focus after two decades countering violent extremism in the Middle East requires that operators and acquisition professionals at all levels think differently about the nature of emerging threats and how to manage risk. This is not about either readiness or modernization, it is about both/and. So, how might we develop leaders who not only focus on cost, performance, and schedule but also foster innovation and adaptation?

Designing the Project Mercury Experience

At Project Mercury, our product is not a project or a widget. We produce teams of people who can collaborate and innovate—so that the United States and its allies can out-think, out-partner, and out-compete potential adversaries. Formed in 2019, Project Mercury is an innovation education partnership between Air University, headquartered at Maxwell-Gunter Air Force Base (AFB) in Montgomery, Alabama, and the Innovatrium of Ann Arbor, Michigan.

The Innovatrium was founded by Dr. Jeff DeGraff of the University of Michigan's Ross School of Business. Known as the "Dean of Innovation," DeGraff began his career as one of the early executives of Domino's Pizza and has since consulted for over half of the Fortune 500 companies. DeGraff believes in democratizing innovation and leveraging diversity through constructive conflict.

At the heart of the Innovatrium's curriculum lies the Competing Values Framework (CVF) originally developed by Robert Quinn and John Rohrbaugh in 1981. Successive Air University Commanders—Lt. Gen.

Steven Kwast, Gen. Anthony Cotton, Gen. James Hecker, and now Lt. Gen. Andrea Tullos—have supported this vision and provided guidance for partnering with the Innovatrium to establish Air University as a center of excellence for innovation education.

Air University's Project Mercury focuses on building innovation readiness—developing innovators with the mindset, competence, and confidence to accelerate change across the Air Force, DoD, and beyond. Like the Air Force's Exercise RED FLAG, the program gives Airmen the equivalent of their first 10 "innovation sorties" in 12 weeks through twin tracks of academics and student-led projects. The Airmen must apply learning through hands-on application and accelerate habit and behavior change through the failure cycle: creating, experimenting, and learning. Investment in developing and empowering people to seek disruptive change is critical to changing culture, strategy, and systems. Incremental innovations like continuous process improvements in a compliance culture will not, by themselves, win a high-end fight.

As of this writing, more than 300 Certified Professional Innovators have been credentialed across the Total Force—officer, enlisted, and civilian—through the Innovatrium's Creativize process and its See One,



Do One, Teach One curriculum. Initiatives from the program's graduates include the Air Force Strategic Studies Group's innovation cell, Morpheus; the National Guard's innovation education program, AIM HI (Academia, Industry, Military-Hybrid Innovation); and Spark Cell development, including the founding of the North Spark Defense Lab at Grand Forks AFB in North Dakota. Coming soon will be a NATO innovation education program advancing Air Force Chief of Staff Gen. Charles Q. Brown's "Integrated by Design" vision to bring together allies and partners, at the start of concept and capability development.

Leading Innovation

Our working definition for innovation is "novel value creation and adoption." It is not just about ideation but

**For more information about Project Mercury,
visit their website at:**

<https://projectmercury.us/>

and join the Project Mercury Innovators Forum on LinkedIn.

about implementing real solutions to real problems. We continue to adapt our program as new insights are discovered, but the following five key principles are enduring for those who want to lead innovation with us.

1. Deep Learning

Some of our participants seem to expect that most “learning” will be bolt-on or additive. Education and training often involve taking some of the things you know and attaching new lessons, like going from algebra to calculus. And this is fair—much of effective performance management is also about this kind of “continuous process improvement,” where small tweaks and additions streamline processes and gain efficiencies. Less frequently do we experience “deep learning” that asks us to break down, stop doing, and eliminate. Understanding and practicing transformational change requires a willingness to explore disruption, move away from certainty, and get comfortable with being uncomfortable. Like Thomas S. Kuhn writes in his 1962 book, *The Structure of Scientific Revolutions*, we must accept when new information doesn’t add but transforms.

2. There’s No Such Thing as Efficient Disruption

To unleash positive deviants, we need to embed Airmen in teams that recognize and leverage their diverse individual strengths. Democratizing innovation means valuing and enabling diverse strengths and approaches on teams, knowing that conflict will surface as they cycle through forming, storming, norming, and performing stages and moving from ideation to implementation. This sharing of skills often doesn’t work because we may unconsciously see values like creativity and innovation as unique or rare while considering the grunt work



Senior Master Sgt. Brent Kenney, 52nd Civil Engineer Squadron infrastructure superintendent, partakes in an innovation exercise on July 25, 2022, on Spangdahlem Air Base, Germany.

Source: U.S. Air Force photo by Airman 1st Class Imani West
Photo cropped to show detail.

of maintenance and manufacturing something that anybody can do.

With the framework of Project Mercury and the “Mercury Mindset,” teams discover that excellence requires hybrids of these competing values and that time is required to constantly strive and adjust to reach a new and improved state. Teams must compete multiple ideas, not choose the best one out of the gate. They also need to occasionally pause the work and focus on reflecting, on rebuilding the team identity and purpose. The U.S. Navy SEAL mantra, “Slow is smooth and smooth is fast” helps convey our process, except that for teams accustomed to going fast, slow is rarely smooth!

3. It’s Not Just Project Management

One critical and difficult lesson about innovation is that some systems are built to usher through “solutions”; innovation, by contrast, looks like heresy because it attacks an unrecognized part of the problem. If you can “solve the given problem,”

perhaps you’ll build a business case or a “mission model canvas.” You may even create “MVPs” (Mission Vision Purpose, Minimum Viable Products), but rarely do these tools offer deep understanding of the rigorous efforts needed to build a viable *strategy* or a sustainable practice of innovation. Innovation is a gamble over what happens *after* what happens next. Some of the best solutions that emerge during discovery eliminate the “given” problem by rerouting our attention to what *really* matters. Or as we say, “If it’s not worth doing, it’s not worth doing well.”

4. Ask “What’s Going on Here?”

No one cares about your innovation; they care about solving their problem! And finding a solution starts with properly defining the problem, understanding who owns the problem and what they value most. The course helps participants ascertain what matters, where leverage exists, and what kinds of influence the team has. The coaches in Project Mercury encourage early connections to industry partners, notable academics, potential stakeholders, and sponsors. It often takes significant intervention by coaches to open teams to external perspectives. Indeed, discerning coaches can guide teams in understanding the fact that other people

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working the same problem is not a signal to abandon the area but, rather, that they are potentially onto something. Somewhat like the gold miner desperate to stake a huge personal and private claim, teams sometimes mistake a crowded field as competitive rather than as a place for them to hone skills and gain the community's trust.

5. Anticipate Emotional Resistance

When innovation theory is taken out of the textbook and applied in real life with real people, teams encounter very real emotional resistance. Threats confront an organization from both too much and too little change. Too little adaptation and the organization loses the edge; too much and it descends into chaos. This is why it is critically important to understand competing values and to value those who uphold what you may inadvertently destroy.

While the fastest way to kill innovation is to make it someone's part-time job, the second fastest way is to eliminate participatory design

opportunities to onboard people to the innovation practice. Mercury provides time for innovators to marinate far beyond a two-day workshop on change and encourages an environment of learning and psychological safety that helps work through individual emotional resistance.

Using These Lessons to Innovate at DAU

Having served on the DAU advisory board looking at a framework for innovation competencies, we believe that the DAU approach is on target. The meta-competencies of *thinking*, *collaborating*, and *cultivating* address the major categories of innovation work and allow for the nesting of other specialty competencies. Any learning journey begins by critically assessing skills and competencies. Where DAU and the military may veer off course, in our opinion, is by assessing competency solely at the individual level. A team of experts is not necessarily an expert team.

The literature predominantly suggests that greater creativity and innovation flourish on diverse teams. Constructive conflict and collective intelligence operate at the team level, and we believe that teams, not individuals, are the appropriate

level of analysis for measuring innovation outputs and outcomes. The iGenome assessment based on the CVF provides a way to assess cognitive diversity at the individual, team, and organizational level. Innovation thrives when we get a chance to flip the script and manage what CVF founder Robert Quinn called "positive deviance"—that is, the best in each team member, rather than striving for group conformity or uniformity.

Calling Other Leaders of Innovation

Innovation education offers the opportunity to move out of one's comfort zone, challenge the status quo, and propose new ways to achieve competitive advantage. We believe that Project Mercury provides the highly challenging and highly supportive environment to foster success at "unlearning and relearning." Several of our graduates have described the developmental experience as the most satisfying of their careers.

The author Jerry Sternin (among others) is credited with the adage, "It's easier to act your way into a new way of thinking than it is to think your way into a new way of acting." We believe that the Project Mercury program provides a vital resource for



Dr. Ethan Eagle, along with facilitators from the DoD, leads the Civil Air Patrol Command Council and national staff through a leadership project on March 4, 2023, at the Crystal Gateway Marriott in Arlington, Va.

Source: U.S. Air Force Auxiliary photo by Lt. Col. Robert Bowden
Photo cropped to show detail.



Master Sgt. Jesus Munoz, 52nd Fighter Wing Medical Support Squadron Pharmacy flight chief, puts a note with a written response to a prompt on a whiteboard on Spangdahlem Air Base, Germany, July 25, 2022. Attendees were exposed to team exploration of real world issues and foundational curriculum within the Project Mercury Innovation Workshop.

Source: U.S. Air Force photo by Airman 1st Class Imani West
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“enacting” innovation habits. Students experience the crucible of presenting and killing their “darling” ideas, experimenting and iterating, collaborating beyond rank or position, and seeing the impact of constructive conflict on improving hybrid solutions. Learning and adaptability are vital competencies in an era of exponential change. To paraphrase futurist Alvin Toffler’s observation over 50 years ago, the illiterate of the 21st century will not be those who cannot read and write but those who cannot learn, unlearn, and relearn. We agree.

Accelerating change requires leadership support, resources (time, money, and manpower), authorities, and compatible systems and processes. Though necessary, these elements are insufficient unless academia invests in developing our human capital. Innovation education provides our workforce with competence and confidence to operate effectively on diverse teams in dynamic, complex, and uncertain environments. To paraphrase Charles Darwin, it is not the strongest of the species that survives, nor the most intelligent; it is the one most adaptable to change. This is why our curriculum doesn’t focus teams on a single “solution” but instead constantly asks,

“How has the idea evolved based on what you’ve learned?”

Given renewed strategic competition and the potential for large-scale conflict, we see an increasing need for the type of thinker we are developing. As Gen. Brown stated in *Accelerate Change or Lose*, “If we don’t change—if we fail to adapt—we risk losing the certainty with which we have defended our national interests for decades. ... We risk losing quality Airmen, our credibility, and our ability to secure our future.”

On the journey to the future, we will find no finish line to cross or single target to repeatedly hit. Rather, we embrace the emerging complexity

and ambiguity. We develop the innovators our nation needs to assure allies and partners of our continuing commitment, deter potential adversaries, and prevail in conflict if deterrence fails. We can’t be the only ones doing this work, so if you are in a pocket of innovation leaders, or want to join one, we want to get to know you! Together we can be the change. The cavalry is not coming! The best way to shape the future is to create it.

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DAU RESOURCES

- Innovation through constructive conflict: Air University’s Project Mercury (Think Differently Webinar)



Dr. Ethan Eagle (left) and teammates at the North Spark Defense Lab at Grand Forks AFB, N.D.

Source: Photo by Col. James D. Dryjanski, USAF (Ret.)
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