Digital Transformation Workshop
"How do we operate as a government prime in a shared environment in a way that works?"

Digital Transformation Workshop Purpose & Objectives

The Department of the Air Force (DAF) Digital Transformation Office (DTO) championed an in-person collider workshop to bring together like-minded industry, academic, and government digital champions to advance digital transformation across the DAF & defense industrial base (DIB). The DTO addresses enterprise digital needs of the DAF acquisition and sustainment communities from near- and long-term perspectives – looking beyond mission sets, breaking down barriers, and enabling digital innovators by connecting them with the information, resources, and support they need to accelerate the delivery of war-winning capability and outpace our adversaries. The workshop, hosted by the American Institute of Aeronautics and Astronautics (AIAA) and the DTO, was an invitation-only event with 60+ participants in conjunction with the AIAA SciTech Forum at the Gaylord in National Harbor, Maryland on 26 January 2023. Subsequent virtual collaborations on 13 February & 20 March with Group Leads, as well as continual coordination, led to the outputs documented in this report.

Keynote speakers opened the workshop with the strategic priorities of Digital Acquisition and Digital Materiel Management (DMM). These two concepts were compared to highlight the alignment between SAF/AQ and AFMC digital transformation visions. The following two lists of objectives describe the scope of each organization's digital vision:

SAF/AQ Digital Acquisition Priorities:
- *Implement Open Systems Standards and Reference Architectures*
- *Ensure Programs Are "Born Digital" or Digitally Adapt over the Lifecycle*
- *Expand Enterprise Solutions and Embrace Cloud-based Collaborative Environments*
- *Institutionalize Processes for Agile Software Development and Software-Intensive Systems*

AFMC Digital Materiel Management (DMM) Initiatives:
- *Structure and Secure Our Data*
- *Train Our Digital Workforce*
- *Provide Access to DMM Tools*
- *Develop Digital Strategies*
- *Instill a Digital-First Culture*
- *Modernize IT Infrastructure*

The focus of the Digital Transformation Workshop was "***How do we operate as a government prime in a shared environment in a way that works?***" It consisted of the following breakout topics for tables consisting of 6-8 industry, academic, and government digital champions:

1. *Secure Environments & Access*
2. *Contracting & Intellectual Property (IP)*
3. *Acquisition & Sustainment Processes*
4. *Enabling Technologies*
5. *Risk & Uncertainty Management*
6. *Workforce Development*
7. *Business Models*
8. *Digital Strategies*

Attendees were assigned to groups to ensure diversity of perspectives and balance across organizations. In addition to exploring problems and challenges, the workshop attendees discussed next steps and a future vision of the DAF working with the DIB. Topics discussed ranged from non-funded to funded efforts, courses of action regarding DAF policy, industry pathfinders (e.g., IRAD, CRADAs), open industry collaboration (e.g., AIAA, AIA, NDIA), and a cadence for communication moving forward.

Acknowledgements

Topic Summaries

Group 1: Secure Environments & Access

Lead(s): Dr. John Matlik; Mr. Rich Kutter, SL

Discussion Overview: The Secure Environments & Access group was highly engaged and explored several challenges. A key discussion topic was general issues associated with incompatible ecosystems. There was also a lot of discussion around multi-level security and respecting intellectual property (IP) in a shared environment. Some questions raised included: 1) How do we get to a point where we're accessing, visualizing, and making decisions off information in a way that recognizes data owned by multiple groups? and, 2) How do we ensure that we don't become a target for adversarial data theft? Subsequent topics moved away from technical challenges to maintaining the organizational talent needed to support secure shared digital environments. The group recommended establishment of appropriate general and cultural incentives to shift from discouraging risk-taking and rewarding indecision, to promoting proactive actions to encourage safe, smart decisions that push progress. There were also discussions around the challenge of retaining talent in the defense ecosystem. Additional topics included connectivity from on-prem to cloud, pace of software approval and reciprocity, and the inefficiency of multiple Department of Defense installations using independent software and cloud approval processes. The group explored how the process might be streamlined to make it both fast and secure, and scalable for multiple installations and enterprises. Pain points were identified that turned into predictable path items, which led to "How might we…" discussions. Finally, the team proposed a first step for each of the challenge statements.

First Steps: Regarding talent attraction, training and retention, the team proposed an initial effort to identify why people would want to work in the defense industry, and better define and leverage appropriate incentives to attract the right talent. There was a side discussion around

how to better move forward to realize and accelerate product development in a universally compatible ecosystem, and how that relates to product lifecycle management (PLM) and cloud vendors. Specifically, there was a recommendation to coordinate a working group effort to better articulate industry and government expectations on vendor interoperability. To accelerate pervasive software and cloud-based app approvals that comply to security policies, the team suggested the DAF build a DIB-wide approved software list in lieu of individual, or location-specific, approvals. This discussion included moving toward agile acquisition, removing barriers to access, information assurance, and identity management across the ecosystem. The team proposed a research program to explore the power of data science to better leverage and develop technologies for seamless data exchange environments. Finally, in discussing strategically deploying incentives that won't raise security risks or penalize personnel for taking risks, the group proposed reviewing the reward process to understand how and when people are (and should be) rewarded for success.

Group 2: Contracting & Intellectual Property (IP)
Lead(s): Dr. Peter Eggan; Ms. Tobey Jackson

Discussion Overview: Contracting and IP discussions revolved around trust issues between the government, contractors, and suppliers, and how to resolve those points of contention (e.g., IP rights, access control, government access versus ownership of data) within contracts. The group dove into what they thought was the obvious, rational approach – utilizing standards to direct how to tag specific data regardless of its nature or repository; tracking information pertaining to piece-parts; and definitively denoting information within models and data to indicate the assertion of IP rights and the IP owner. In addition, establishing mechanisms and processes to make sure that access is controlled to those pieces of information as well as allowing owners to have a say in who has access - all guaranteed through contract language. Another important issue is governing authoritative models and data to jointly track the authoritative source of truth across industry and government systems.

First Steps: Begin with identifying the need for data tagging standards, ensuring all requirements are defined and included in the contract, and exploring existing standards and mechanisms. Equally important is creating a digital guide that encourages consistent terminology, standards, and data tagging. Next steps would be to improve contract requirements, including identifying data ownership and access rights (i.e., custody and access), reducing constraints on flexibility in execution, and ensuring small business concerns are adequately addressed, as their IP is critical to their business. Some elements that will help accelerate these steps include providing tools to small businesses, automating data tagging, building a digital guide, improving FAR language, and creating categories for different data sharing arrangements within contracts.

Group 3: Acquisition & Sustainment Processes
Lead(s): Mr. Noah "Odie" Demerly; Mr. Scott Fouse

Discussion Overview: The main challenges discussed by the Acquisition & Sustainment Processes group were: 1) If the Air Force doesn't change; 2) Current and future sustainment costs; 3) the definition of what we consider failure; 4) Reviews and gateways holding up acquisition; 5) Using simulations to reduce physical testing and the acceptance of those models; 6) Value of the process vs. just doing the process; and 7) Having common, authoritative data. The team determined review/gateway reform was a necessary action, and IP was identified as something that both helps and hinders acquisition. The group explored ideas on how acquisition and sustainment could be improved, identifying potential gains in their processes – data models and qualifications to allow for back-and-forth discussion, fully realizing digital twins and digital threads, and good standards for reference architectures. This progression led to several good challenge statements, most of which were identified as high strategic importance but varied with respect to urgency. Based on these exercises, the group landed on three takeaways:

1) **Digital Airworthiness** – Model accreditation to better quantify the maturity of models and using simulations to support quality testing.
2) **A Bounded Open Pilot Program** – An ever-present issue is that program offices are focused on program execution (e.g., schedule, budget) so there is no time or safe space to explore and improve. Having bounded pilot programs where primes, subs, and the government (possibly academia as well) come together to discuss best practices could result in authoritative sources of truth or reference architectures.
3) **Defining Good Behavior** – Defining and incentivizing good digital behavior so programs embrace culture change, and the benefits of digital are realized. Currently, there's only indirect incentives to change acquisition and sustainment.

Group 4: Enabling Technologies
Lead(s): Mr. Mat French, Mr. Scott Granger

Discussion Overview: The Enabling Technology group distilled their discussions down into six overarching topics. Culture came out loud and clear. Multi-level Security (MLS) was also identified as a high priority area. The remaining challenge areas were available time and budget, home-grown products, data curation and organization, and interoperability. Using these six key areas, items were identified and grouped. For example, under MLS, an auto classifier and declassifier would be great to have – *we'd have the right data at the right classification level with the right people with the right clearance*.

First Steps: Recommended actions include encouraging continuous learning, focusing on workforce culture – getting enabling digital technologies into employees' daily work, and instituting incentives catered to individuals' values. Discussions resulted in two potential first steps: 1) establishing programs that promote early wins and can be executed through short-term pilots (two or three months), pathfinders (six months), or longer-term programs (multi-year); and 2) focusing on a centralized infrastructure to house early programs that prevent fractured

institutional infrastructures from being formed. A centralized consortium-type approach for digital pilots would allow a common infrastructure across industries to allow pilots, pathfinders, and programs to flourish. The conversation around homegrown vs. commercial off-the-shelf (COTS) products reinforced the need for pilot/pathfinder/program infrastructure with representatives from multiple organizations dealing with common issues.

Group 5: Risk & Uncertainty Management
Lead(s): Mr. Rick Arthur, Mr. Nihad Alfaysale

Discussion Overview: Three themes emerged from the discussions of this team. Culture, accountability vs. incentives, and needed investments. The siloed nature of our current state questions, "why put people and time and resources into something that doesn't benefit it directly, but is a benefit to others [in the lifecycle] who get credit and reap the benefits?" Downstream, there's a need for incentives and shared success. Another theme was around uncertainty quantification in general. There are gaps in knowledge and discipline, and to build upon others' activities is a difficult and tedious process. We lack the tools and platforms for sharing and exchanging data in a way that allows the correct assessment and propagation of confidence bounds and uncertainties when going between models. Standard processes are necessary to prevent inconsistency and lack of trust. In considering certainty, the team determined there could be resources to affect infrastructure and interoperability that would require transparency and embedded expertise. Less certain is the commitment to transform, which includes incentives and the dedication of resources, as well as prioritization vs. the day-to-day resource allocation that may need to incorporate legacy data and activities. Similarly, a culture having accountability and decision-maker literacy would be key. This literacy refers to people who are savvy in traditional, non-digital ways of working, and in the shortcomings and strengths of the digital model-based approaches. This allows them to make wise decisions in terms of trade-off analysis, selecting investments, pushing back on sources of errors, and credibly communicating and advocating.

The team suggested that provenance, traceability, and pedigree of data and models are accelerators if formalized and transparent – if not completely standardized. They also suggested enforcing consistency and doing all tedious work through workflow automations. All these attributes would result in informed, proficient decision-makers. Cultural risk avoidance vs. technical readiness were two important themes. A risk-adverse culture requires a shared incentive to prevent overly conservative behaviors (leading to blame, avoidance, etc.) and investments in data quality and provenance to promote confidence and transparency. Technical readiness requires funding for new activities and investments in the maturation of legacy data, models, and processes, even though progress may not be apparent.

Group 6: Workforce Development
Lead(s): Dr. Olivia Pinon Fischer, Ms. Amber Gilbert

Discussion Overview: When identifying problems, the team saw a common theme – educational institutions are being asked to produce digital engineers, but no targeted digital engineering (DE) curriculum currently exists. Additionally, when DE is discussed, it does not necessarily reference one discipline, but instead multiple disciplines and departments must work together to produce curricula. Universities often do not have sufficiently collaborative cultures to influence each other across curricula, resulting in the addition of a new course to an already packed curriculum or program. Another issue is that DE requires more than just classroom work - institutions need the tools in students' hands to effectively train within the software. This type of educational environment would also allow students to collaborate in a way that mimics their future work environment. In addition, the role and responsibilities of a digital engineer have not been clearly defined, and neither have related emerging roles (e.g., digital curators, tool & platform process/quality managers). It is not clear what types of skills these students would need, and even if students do graduate with the necessary skills, graduates would likely gravitate toward big tech companies rather than the government or even the aerospace industry because pay is more competitive. The team also indicated they don't think we're doing a good job of explaining what DE is and its value, which affects its appeal. This has implications for attracting and developing people who are already in the workforce. This is a challenge for employees who are being told they need to do things differently and may already be struggling with day-to-day workload, making additional training less appealing and not valuable.

Considering these factors, the team identified seven focus areas with the main themes being: 1) Access to tools and training (including required funding, up-to-date systems, and IT staffing for implementation); 2) culture changes in academia to enhance collaboration; 3) a pervasive understanding of DE; and 4) the value proposition of digital transformation. Bureaucracy, culture, and people were identified as challenges, as well as lack of time/resources to learn a new skill or add classes since teaching staff is already stretched. Having access to a digital sandbox to train students and demonstrate the value of collaborative development was identified as a best practice. Increased collaboration between industry and academia could also ensure students are exposed to use cases that are of relevance and interest to industry and government relevancy. The team identified how they might expose and socialize DE in a way that encourages collaboration so that the workforce sees digital as a natural way of doing things in their current jobs, rather than something being pushed onto them. Additionally, incentivizing cross-training, integrating collaboration via positive peer pressure, and early exposure to digital to overcome organizational inertia were identified as potential influencers. Another issue identified was both industry and government struggling with how to modernize and update obsolete IT systems in a way that encourages collaboration and integration, provide transparent systems that are interoperable federated systems, and meet the need to share data and tools collaboratively across organizational boundaries.

Group 7: Business Models
Lead(s): Mr. Dave Kepczynski

Discussion Overview: Team discussions arrived at three critical areas for maturing solutions. The first, highest ranked, was replacing physical with digital (virtual) and then scaling. This means performing DE up-front during product development (and adjacent functions) and then leveraging digital models for virtual verification and validation. The models analyzed through virtual verification and validation processes include product design models (e.g., parts, subsystems, systems, & configurations), digital manufacturing models (e.g., assembly plant, tooling, people, processes), and digital service models (e.g., removal, replacement, sustainment). The outcomes of virtual verification and validation focuses on finding and fixing issues early in development leading to less downstream errors and issues, speeding up cycle time, reducing rework, and improving overall productivity, efficiency, and costs. The vision/strategy is to plan with data and correlate models to tests with a greater sense of urgency to get savings and trade-offs on wins early… then scale. The second was "table stakes," we must do DE to be competitive strategically and tactically. The team took a counter approach to this – what if we don't do this and we just continue investigating? It's the antithesis of digital – costs go up and programs are lost. The third and fourth ranked items – an integrated, interoperable digital environment; and a DE central system – go hand in hand. Both are needed depending on the mission and contract and need to be as centralized as possible within the Department of Defense. Otherwise, integration must occur across different digital environments, which becomes difficult from an independent network and integration standpoint.

In discussions, the remaining ideas were – artificial intelligence (AI), automation, engineering leadership support, celebrating early failures, freeing yourself from the data – data constraints. These ideas are important and resonate. Freeing data refers to masking specific IP but freeing the data to enable people to do the rest of the engineering design work without infringement. Cybersecurity needs to be improved and maintained, but people need to be able to collaborate and have more people ideate and iterate. Freeing the data is also associated with data access and required clearances for data and personnel. This is related to being risk averse, whether it's needed or not, and protecting the right things.

To improve acquisition and sustainment through digital transformation, the team deemed necessary the SAF/AQ Digital Building Codes for Digital Engineering and Management, Agile Software, and Open Architecture. Those are the solutions. The problems are cycle time, design complexity, lack of agility, risk aversion, and too many engineering changes. Change orders typically happen down the road – when it's reworked. If issues are found and fixed digitally up front, the amount of change later is very small, and the entire acquisition process speeds up from product development through manufacturing.

Group 8: Digital Strategies
Lead(s): Mr. J. Kyle Hurst

Discussion Overview: The group dove into identifying problems with lexicons, definitions, and terminology; different tool environments; enterprise access vs. ownership; verifying and validating models; getting executive-level buy-in; the gap between acquisition and sustainment viewpoints; how early acquisition translates into legacy systems from a sustainment perspective; IT and cloud infrastructure; and workforce culture. The group combined those areas into four key topics to further explore. One is how to tell the story better – how we simplify the narrative, specify exactly what we're asking for, clearly articulate why we need it, and sell the idea. While there was significant discussion around return on investment (ROI), it was not focused strictly on cost savings or avoidance, but rather on accelerated capability delivery, improved product quality, and derived operational impact. Another is access vs. ownership and the enterprise – given a weapon system is developed in the digital space using digital models, how will the government collaborate with industry throughout the development process, rather than the traditional model of waiting for a product to be delivered from industry and subsequently reviewed and approved. This collaboration extends beyond the government with a prime to a holistic industrial base approach.

At the group 8 table, there were 3-4 traditional industry prime contractors that brought up questions of how industry primes collaborate, whether directly or through groups like industry consortia, etc. The group used this dialogue to develop six challenge statements: 1) How might we share data on a digital platform in a way that protects IP, is secure, is trusted so that the right people could access the right data the right time? – the group thought this would be covered elsewhere so it was tabled; 2) How do we develop a model certification process that effectively leverages data, models, and subject-matter expert support with appropriate IP controls to drive better collaboration and automation? – the group thought it was a long-term aspiration that could be planned, but not addressed right away; 3) How do we leverage the best talents in a way that can bring an outside perspective so we can creatively solve problems and foster the nation's workforce? – the group determined this could be planned; and 4) How might we partner in a way that leverages the best practices of successive technologies so that integration and seamless partnerships across the Services, coalitions, and the international DIB is *real*? The fifth and sixth challenge statements were determined to be most important; 5) How might we collaborate in a shared environment in a way that is meaningful and impactful so that we rapidly accelerate capability development and fielding? – the group determined this could be worked on immediately; 6) How might we crystallize our story on driving digital transformation forward in a way that communicates to all levels so that everyone feels compelled to engage? – likewise, this activity was determined to be action ready.

First Steps: To advance collaboration in a shared environment, the government and industry (e.g., consortiums, industry associations, individually) need to identify the courses of action (COAs) to be collaborated on and outline a message. This also includes aligning messages at large industry partners' leadership levels that are going out to industry-wide decentralized activities. Government can help map out what's being said, what's occurring at a tactical level, and how it

fits together. Because members of the team were from large traditional defense companies, the group also identified industry leaders making collaboration visibly apparent, tying it to the imperative to pursue digital transformation, and emphasizing it as a priority. A targeted engagement opportunity on the Air Force side is the periodic PEO Roundtable event with SAF/AQ, which includes many industry CEOs. After this event, it would be invaluable to distill a story to simplify what's being done and more effectively relay the big picture with compelling, concise, and consistent narratives, and potentially explore outside or additional support.

Common Themes

Collaboration: The Digital Strategy group identified collaboration with industry throughout the product development process as critical, and enhancing collaboration was present in nearly every group discussion. Better collaboration at universities would support more effective development and deployment of DE curriculum. Collaboration was also brought up in the context of freeing data to maintain proper security access while allowing data to be used collaboratively for other research and projects (multilevel security). Airworthiness was identified as a high-impact acquisition and sustainment activity where constant collaboration is required (emphasis on changing tech review process, accreditation programs, etc.). Lastly, for digital pilots/pathfinders, a centralized consortium-type approach would allow common infrastructure across industry partners enabling them to collaborate as a gov-prime partnership.

Incentives: While distilling workshop information, multiple teams recognized that incentivizing action was raised in their groups, whether in the context of attracting/retaining talent or overall workforce culture. Incentivizing cross-training, integrating collaboration with positive peer pressure, and early exposure to digital methods could overcome organizational inertia and lead to behavior changes. Incentives were also discussed as a method of encouraging organizational changes and rewarding good digital behavior. Currently, there are only indirect incentives to change acquisition and sustainment, however incentivizing risk-taking and rewarding successes should be promoted as cultural norms.

Culture: Brought up in one group in the context of addressing the acquisition community's risk aversion, it was revealed that multiple workshop groups independently brought up issues around culture more holistically. In the Enabling Technologies group, culture was one of the key topics the team addressed with regards to work environment. Workforce development also identified culture in the context of collaboration difficulties across departments and universities. Another issue identified was that both industry and government are struggling with how to modernize and update obsolete IT systems in a way that encourages collaboration and integration, aids recruiting and retention, and supports modern training. Finally, several groups discussed the DAF's current risk stance that stifles innovation, instead the DAF should shift to promoting proactive changes to encourage safe, calculated actions with measures of uncertainty alongside perceived risk.

Enterprise Investments: The Strategy group discussed the policy and implementation challenges created when activities/processes are decentralized, and other groups noted that decentralized pilots/pathfinders/programs would limit their applicability and increase overhead costs. The Business Model group also recognized this, albeit in the context of integration and interoperability of systems to allow for centralized management and execution. Having bounded, enterprise-wide pilot programs where primes, subs, and the government (possibly academia as well) come together to build off best practices could demonstrate the benefit of authoritative sources of truth and reference architectures.

AIAA DEIC Workshop Follow-on Activities

In response to the workshop outcomes and recommendations noted above, the AIAA DE Integration Committee (DEIC), in coordination with the Digital Transformation Office (DTO), has taken the initiative to establish and progress several working groups. A brief record of those working groups, goals and leads is captured below.

Digital Workforce Development Working Group:
- Goal: This working group aims to document, in a white paper, workforce development examples, challenges and opportunities to accelerate the upskilling and development of the DE savvy workforce needed to respond to the current customer and business landscape and needs. The output of this effort will be reported out at SciTech 2024 and formally released as a new AIAA DEIC sponsored Position Paper in 2024.
- Lead: Olivia Fischer (Georgia Tech, AIAA DEIC Secretary) is the focal point for this working group.

Digital Thread/Twin Integration Working Group:
- Goal: This working group seeks to document the key challenges and opportunities for how industry, government, cloud vendors and PLM vendors can move forward toward realizing secure digital collaboration between organizations to realize specific value-added use cases. The output of this effort will also be reported out at SciTech 2024 and will be released as an AIAA DEIC sponsored white paper that will serve as foundation for secure collaboration realization efforts in 2024.
- Lead: Jay Ganguli (Raytheon, AIAA DEIC Digital Twin Co-chair) is the focal point for this working group.

Digital Maturity Model & Assessment Working Group:
- Goal: DTO has been partnering with AIAA to explore what a harmonized industry Maturity Model and Assessment might look like for digital transformation. This work was kicked off as part of a follow-on to the Digital Transformation Workshop held in National Harbor during SciTech 2023. The goal will be progress alignment and a series of workshops through 2023 into 2024, including cross-industry and cross-Service workshop as part of SciTech 2024.
- Leads: Steven Turek (DTO) & John Matlik (Rolls-Royce, AIAA DEIC Digital Twin Co-chair & DEIC Outreach Lead) are the focal points for this working group.

Digital Engineering Studies:
- Goal: RAND asked AIAA DEIC to coordinate engagement with Aerospace Industry OEMs / members of AIAA and AIA to help understand "Implications for Weapon System Programs and Supply Chain Adoption." Furthermore, a series of other surveys have been commissioned by the USAF under the banner of the USAF Studies Board. If the USAF approves, intent is to make this a panel session for broader report out of findings from this series of surveys.

- Leads: Dave Kepczynski (GE Aviation & AIAA DEIC Chair) and John Matlik (Rolls-Royce, AIAA DEIC Digital Twin Co-chair & DEIC Outreach Lead) are focal points for this effort.

AIAA DEIC Digital Engineering "Book":
- Goal: AIAA DEIC is kicking off the collation of an aerospace industry "book" on DE by leveraging the position papers, implementation papers, and technical papers that are being developed as part of the AIAA DEIC efforts. A DEIC working session is being planned for SciTech 2024 on this topic. This is also being coordinated with other book efforts like the OMG Digital Twin Consortium book on "Digital Twins" which is more focused on an academic audience.
- Lead: Olivia Fischer (Georgia Tech, AIAA DEIC Secretary).

Workshop Participants

First	Last	Organization	Table/Subtopic Assignment Area
Dan	Isaacs	OMG DTC	Business Model
Daniel	Hettema	OUSD R&E	Business Model
Dave	Kepczynski	GE	Business Model
Paul	Nelson	NGC	Business Model
Seth	Lundgren	Field Aerospace	Business Model
Amanda	Scarpato	NGC	Contracting/IP
Colin	Raufer	Boeing	Contracting/IP
Dave	Diaz	HQ AFMC/ENZ (DTO)	Contracting/IP
Emily	Bak	OUSD R&E (ctr.)	Contracting/IP
Jason	Hoff	SAF/AQRE	Contracting/IP
Peter	Eggan	SAF/SQT (ctr.)	Contracting/IP
Scott	Cole	Lockheed Martin	Contracting/IP
Tobey	Jackson	AIAA	Contracting/IP
Ian	Marks	Virgin Galactic	Enabling Technology
John	Vickers	NASA	Enabling Technology
Mat	French	NGC	Enabling Technology
Michel	Ingham	NASA	Enabling Technology
Scott	Granger	Ansys	Enabling Technology
Sirisha	Rangavajhala	Draper	Enabling Technology
Stephanie	Chiesi	Blue Origin	Enabling Technology
Bob	Happersett	Lockheed Martin	Processes
Darcy	Allison	Raytheon	Processes
John	Dong	Boeing	Processes
Mark	Kassan	AFNWC/EN	Processes
Michael	Belisle	NGC	Processes
Mike	Metzger	AFLCMC/LPZE	Processes
Odie	Demerly	HQ AFMC/ENZ (DTO)	Processes
Scott	Fouse	AIAA	Processes
Aniruddha	Mukhopadhyay	Ansys	Risk & Uncertainty
Michael	Madden	NASA	Risk & Uncertainty
Michael	Sangid	Purdue University	Risk & Uncertainty
Nihad	Alfaysale	SAF/AQRE	Risk & Uncertainty
Rick	Arthur	GE	Risk & Uncertainty
Sankaran	Mahadevan	Vanderbilt University	Risk & Uncertainty
Steve	Arnold	NASA	Risk & Uncertainty
Terril	Hurst	Raytheon	Risk & Uncertainty
Don	Farr	Boeing	Secure Environment & Access

Jay	Hensley	SAF/AQRE	Secure Environment & Access
Jeff	Reed	NGC	Secure Environment & Access
John	Matlik	Rolls-Royce	Secure Environment & Access
Natalie	Straup	NGC	Secure Environment & Access
Randy	Langmead	Siemens	Secure Environment & Access
Rich	Kutter	AFLCMC/EN-EZ	Secure Environment & Access
Tom	McCarthy	Raytheon	Secure Environment & Access
Brian	Carbrey	Boeing	Strategy
Michael	Sekerak	SAF/AFRC	Strategy
Kristen	Baldwin	SAF/AQR	Strategy
Kyle	Hurst	HQ AFMC/ENZ (DTO)	Strategy
Marc	Tang	NGC	Strategy
Marilee	Wheaton	Aerospace Corp	Strategy
Melanie	Jonason	AFLCMC/LPSE	Strategy
Nathan	Hartman	Purdue University	Strategy
Alicia	Kim	UC San Diego	Workforce Development
Amber	Gilbert	AFLCMC/WBDID	Workforce Development
Darryl	Howell	OUSD R&E (ctr.)	Workforce Development
Dimitri	Mavris	Georgia Tech	Workforce Development
Olivia	Fischer	Georgia Tech	Workforce Development
Ryan	McNeal	HQ AFMC/ENZ (DTO)	Workforce Development
Jeremy	Medaugh	WBI	Facilitator
Steven	Turek	HQ AFMC/ENZ (DTO)	Facilitator