

Insights and lessons learned from a career in software engineering, program management, and human capital

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Ms. Brigid O'Hearn
Senior Software Acquisition Innovation Specialist



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Agenda

- Biography & Background
- Insight on Agile, Digital Acquisition, and Human Capital
 - Acquisition policy on Lean/Agile
 - Acquisition innovation
 - Human Capital/Workforce Development
- Program Office Perspective
 - Agile Transformation of Large Legacy Weapon System Programs
 - Aircraft Platforms with Common Hardware & Software
- Enablement by Transforming Software Acquisition Policy & Practice (TSAPP)
 - TSAPP Technical Agenda
 - TSAPP Enablement Efforts
- Open Questions & Answers

Biography & Background



Ms. O’Hearn is a Software Engineer and Program Manager who has held various engineering and human capital assignments within the Department of Defense and Industry. As a DoD Civilian she worked for two different services, had positions in five different series, and worked in three different states. She is a proud graduate of the Eisenhower School and the Defense Senior Leader Development Program (DSLDP). Ms. O’Hearn is married with two daughters and one granddaughter and currently lives in Virginia.



CAREER CHRONOLOGY

- ❖ Dec 2021 – present: Software Engineering Institute (Software Solutions Division); Senior Software Acquisition Innovation Specialist, Arlington, VA
- ❖ Feb 2021 – December 2021: USN Civilian (0343); NH-IV/GS-15, Deputy Chief Human Capital, F-35 Joint Program Office, Arlington, VA
- ❖ Feb 2018 – Feb 2021: USAF Civilian (1101); NH-IV/GS-15, Chief Software Officer, Deputy Air System Integrator, and Software Integrated Product Team Lead, F-35 Joint Program Office, Arlington, VA
- ❖ Jul 2017 – Feb 2018: USAF Civilian (0855); NH-IV/GS-15, DSLDP Experiential Assignment, Software Lead Engineer, SAF/AQR, Pentagon, Washington, DC
- ❖ Aug 2016 – Jul 2017: USAF Civilian; Student, National Defense University, Eisenhower School, Ft McNair, Washington, DC, Concentration: DAU Senior Acquisition Course, Industry: Space
- ❖ Dec 2013 – Aug 2016: USAF Civilian (0301); GS-14, Chief, Scientist and Engineer Career Field Team, HQ Air Force Personnel Center, Joint Base San Antonio Randolph, TX
- ❖ Feb 2010 – Dec 2013: USAF Civilian; GS-14, Director, 577th Software Maintenance Squadron, 402d Software Maintenance Group, WRALC, RAFB
- ❖ Feb 2007 – Feb 2010: USAF Civilian; YF-02/GS-14, Director of Staff, 402d Software Maintenance Group, WRALC, RAFB
- ❖ Dec 2005 – Feb 2007: USAF Civilian; GS-13, Computer Scientist, Technical Lead of Business Development Office, Software Engineering Division (MASW/402d Software Maintenance Group), and Chief Group Control Center, WRALC, RAFB
- ❖ Feb 2004 – Dec 2005: USAF Civilian; GS-13, Computer Scientist & Technical Lead, Engineering Directorate, WRALC, RAFB
- ❖ Dec 2001 – Feb 2004: USAF Civilian (1550); GS-12, Computer Scientist, Software Developer and Project Manager on C-141 and C-5 Operational Flight Programs (OFP), Software Engineering Division (LYS/MAS), Warner Robins Air Logistics Center (WRALC), Robins Air Force Base, GA (RAFB)
- ❖ April 1996 – December 2001: Non-Federal Service; Computer Scientist, Software Developer and Project Manager C-141 Avionics Maintenance Station, ARINC, Warner Robins, GA

EDUCATION

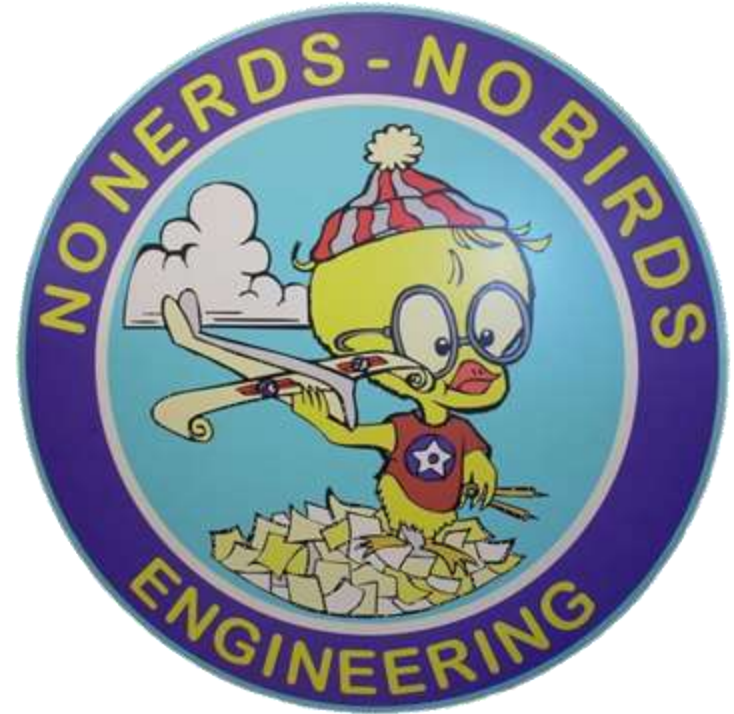
- 2016-2019: Defense Senior Leadership Development Program
- 2017: MS, National Resource Strategy & Senior Acquisition Course, Eisenhower School, Ft. McNair, Washington DC
- 2010: MS, Logistics Management, Georgia College & State University, Milledgeville, GA
- 2009: United States Air Force Air War College, Air University (correspondence)
- 1996: BS, Computer Science, Mercer University, Macon, GA

Insights and lessons learned from a career in SwEgr, PM, and HC

Insight on Agile, Digital Acquisition and Human Capital Topics

TOPIC 1: Progress observed in Govt career in acquisition policy related to lean/agile, particularly less well-known actions that I think had long term effects

- Strong software and process improvement expertise in Government software depots influencing program offices and ultimately policy
 - 2001 – present: Witnessed in AFMC vs AFPC, SAF/AQ, NAVAIR, SEI
- Influence of Special Operations Forces / Rapid Capabilities Office approach to acquisition (innovation and risk acceptance):
 - 2016 – present: Witnessed in NDU/Eisenhower School, SAF/AQ, NAVAIR, F-35, SEI
- Leadership understanding & support of software at Air Force, Navy, and OSD levels
 - 2016 – present: Witnessed in NDU/Eisenhower School, SAF/AQ, NAVAIR, F-35, SEI



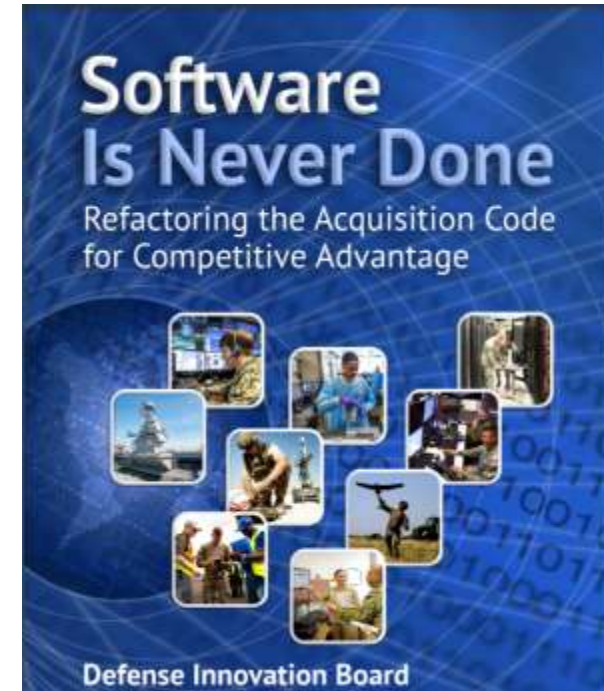
TOPIC 2: What I think is feasible in the next five years in terms of reaching some of Congress'/OSD's goals for acquisition innovation and what I think the barriers are to going further

Recent DoD and NDAA focus areas have become enablers for services and program offices (experience in SAF/AQ & F-35):

- 2017: Focus on Agile, Open Systems, Digital Engineering, and Cyber
- 2018: F-35 began Agile transformation
- 2019: SWAP Study – created paths within DoD and Industry; F-35 began Systems Engineering Transformation (Digital Engineering), Software Modernization (Depot Standup) and DevSecOps/Dev*Ops
 - While still early, these initiatives will accelerate requirement to field and affordability goals will improve over time
- 2020: Adaptive Acquisition Framework & Software Acquisition Pathway; F-35 focus on data rights & agile contracting methods (LOE); improved software metrics, increased collaboration
- 2021: Software Color of Money (BA8) pilots
- 2022+: PPBE Commission (FY22 NDAA Section 1004)
- 2023: Multiple pathfinders to improve acquisition speed

Feasible: Continued expansion of the above to improve acquisition innovation efforts

Barriers: Funding constraints, data rights, workforce/culture particularly in certification areas



TOPIC 3: Thoughts on posts in human/capital workforce development and where the successes and barriers are, from my viewpoint, of the Government achieving an effective digital workforce

- Workforce:
 - Success: STEM Recruiting, new hires & internships witnessed while working at AFPC and SAF/AQ
 - Barriers:
 - Salary, series & career paths across DoD (3R incentives provide some help)
 - Lack of change management expertise/adoption across DoD
 - Speed of culture change across DoD
- Training/development:
 - Success: Symposiums/collaborations (more virtual options); DAU/Digital University courses; Workforce development (CDE, NDU programs, PPTE, etc)
 - Barriers: Dedicated time for professional development



Insights and lessons learned from a career in SwEgr, PM, and HC

Program Office Perspective:
**Agile Transformation of Large Legacy
Weapon System Programs**

Agile Transformation of Legacy Systems

Program Office Challenges



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- Existing waterfall processes often take 3-10 years to deliver a capability
- Program offices often operate on oversight instead of collaboration
- Stakeholder involvement is less frequent
- Personnel have little experience or training in modern software and/or digital transformation methods
- Organizations are not resourced or organized for Agile

Agile Transformation of Legacy Systems

Program Office Best Practices



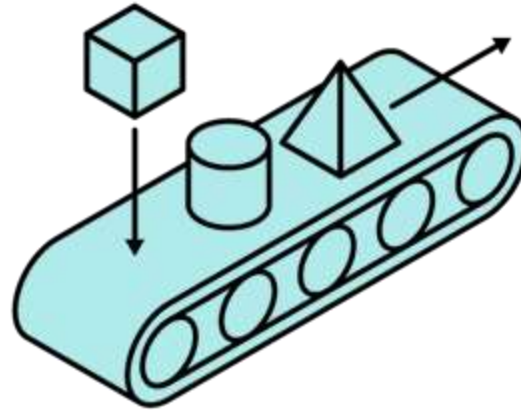
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- Identify minimum viable processes
 - Shift from oversight to insight
 - User engagement and feedback
 - Decompose/prioritize requirements into deployable partial capabilities
 - Continuous modernization
- Resourcing, organization, training
 - Partner to resource the team
 - Team alignment vs organizational assignment; culture initiatives
 - Training with hands-on experience
 - Embed personnel where needed

Agile Represents a Major Requirements Transition – Different Acquisition Objectives

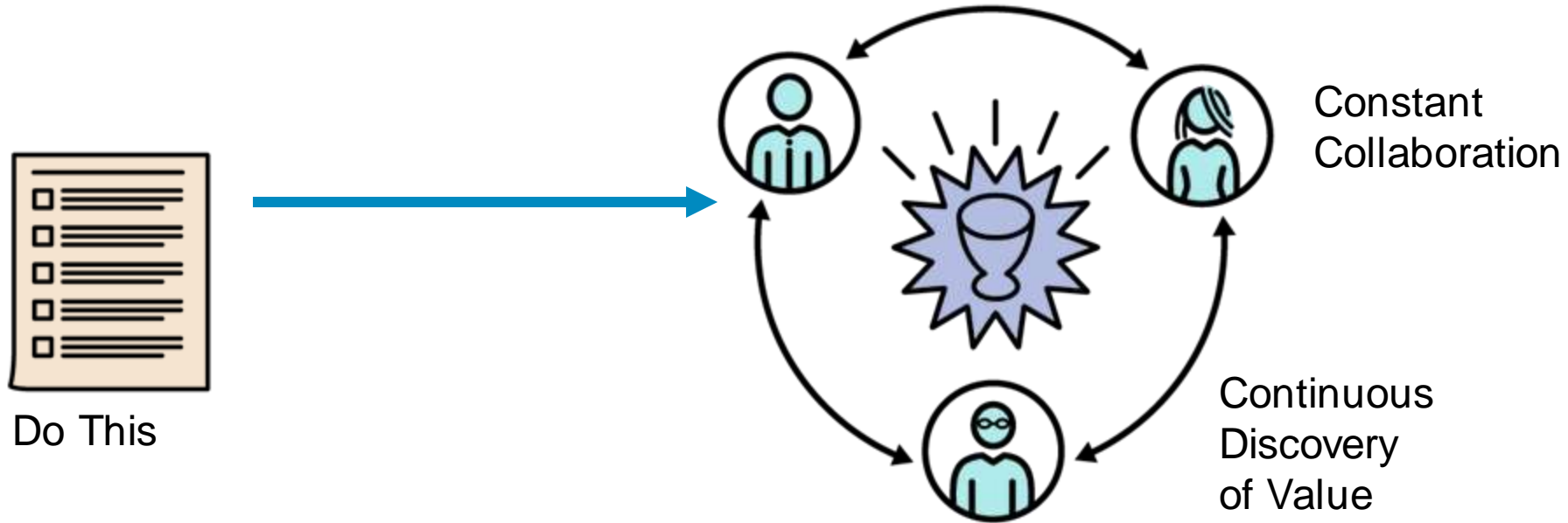


Buying a
Box

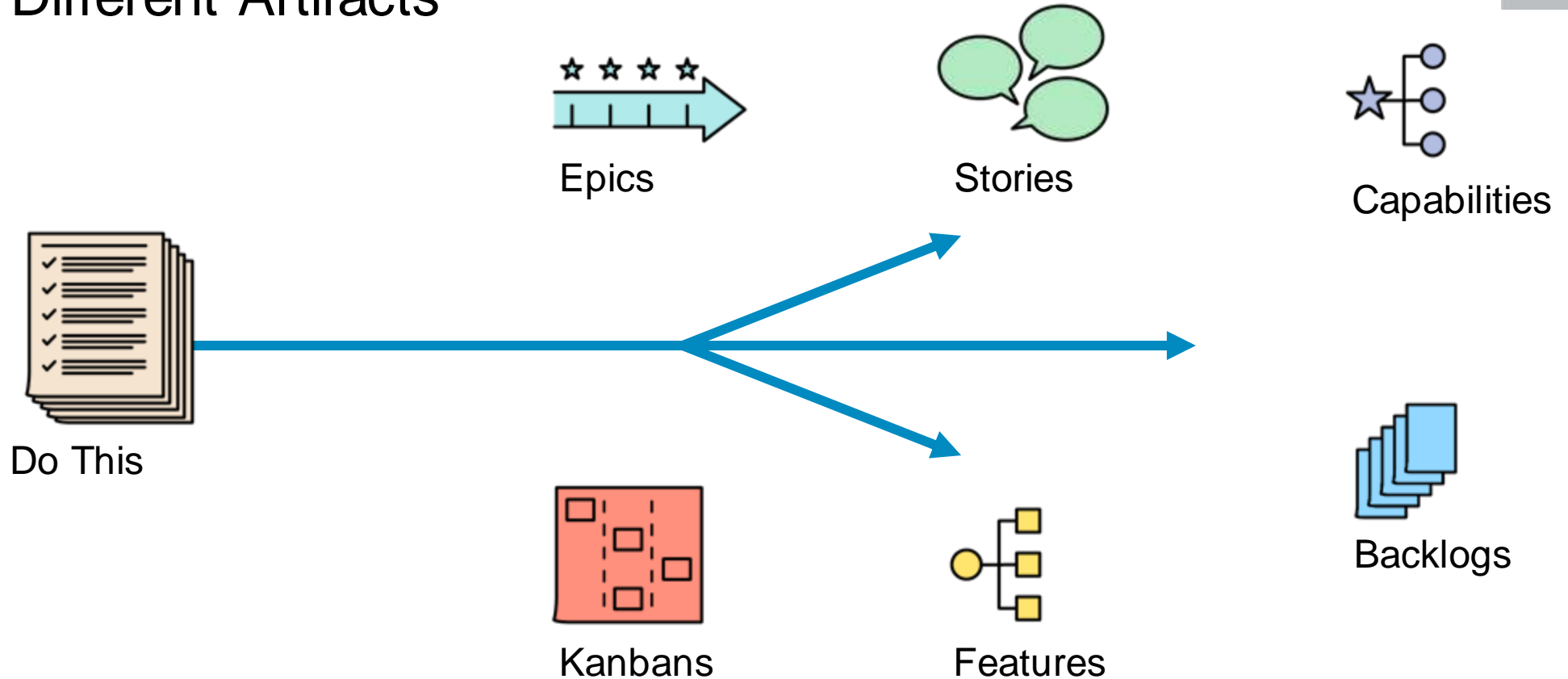


Buying an ongoing
delivery stream

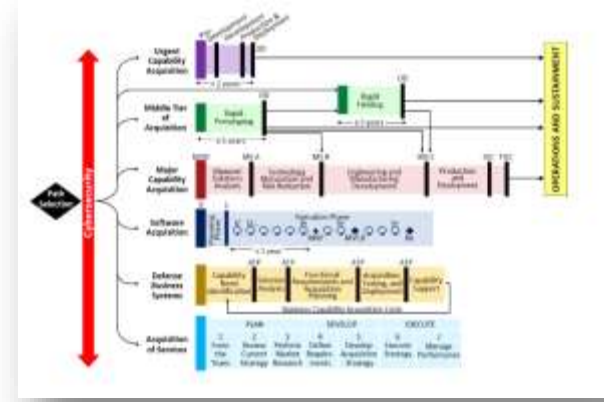
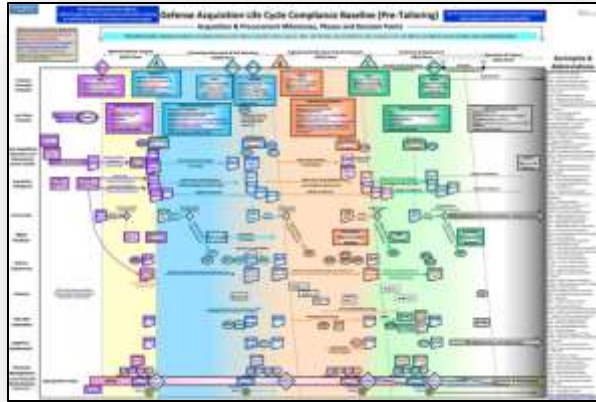
Agile Represents a Major Requirements Transition – Different Acquisition Objectives



Agile Represents a Major Requirements Transition – Different Artifacts



Agile Represents a Major Requirements Transition – Different Practices for Requirements Management

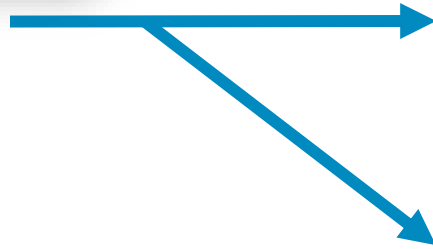


New ways of acquiring systems.

Note the Software Acquisition Pathway (SWP) for software-dominant products.

<https://aaf.dau.edu/>

Date-based Milestones



Increment-Based Demos

Definition of Done



Team Increment



System Increment



Solution Increment



Release

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Program Office Perspective:
**Aircraft Platforms with Common
Hardware & Software**

Aircraft Platforms with Common Software

Program Office Challenges



[Source: DVIDS <https://www.dvidshub.net/about/copyright>]

- Multiple models or variants
 - Different aerodynamics
 - Different versions of avionics
- Multiple users
 - International partners
 - Foreign military sales
 - Several US military services
 - Unique missions
- Multiple vendors
 - Interface & integration challenges

Aircraft Platforms with Common Software

Program Office Best Practices



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- Contract requirements:
 - Modern hardware & software approaches
 - Digital engineering
- Stakeholder engagement:
 - Transparent governance
 - Robust processes (requirements, funding, prioritization, etc.)
- Multiple vendors:
 - Lead systems integrator
 - Modular open systems approach
 - Automated integration & test; hardware in the loop labs; modeling

Insights and lessons learned from a career in SwEgr, PM, and HC

Enablement by SEI's Transforming Software Acquisition Policy & Practice (TSAPP) Directorate

TSAPP Technical Agenda

- **Acquisition Policy:** Develop strategies and methods to enable evolving software acquisition, modernization, sustainment (A/M/S) policy
- **Acquisition Practice:** Speed the insertion & adoption of new technology & methods into A/M/S programs
- **Data and Analytics:** Enable programs and agencies to capitalize on business/sensor/intel/performance data

TSAPP Enablement Efforts

- Software Pathway Policy and Guidance:
 - Program enablement
 - Roadshows with programs or PEOs
 - Advise programs on specific areas within SWP or help to adopt SWP best practices
 - Assist in leading OSD/ADA “Ask Us Anything” meetings with programs and services: monthly topics and Q&A
 - Leading Weapons Ignite effort for OSD/A&S:
 - Regular working group across the services dedicated to helping embedded weapon system programs
 - Toolkit under construction: Memo with Implementation Considerations for Embedded Sub-path and Vignettes of best practices
 - Campaign to Scale cATO & RMF Reciprocity
 - Led the FY22 NDAA Section 835 Independent Study on Technical Debt in Software-Intensive Systems; report to Congress due 1 November

TSAPP Enablement Efforts

- Working with test and evaluation community to update Policy and Guidance:
 - DoD Instruction 5000.89 (Test and Evaluation)
 - DoD Manuals and Companion Guides for T&E of software and cyber; includes updates for AAF pathways
 - DoD Enterprise Guidebook: Acquisition of Services chapter
 - Risk acceptance level of test (RALOT) working to update 2010 Memo (focused on business systems) to help shift testing left and expand to other domains



TSAPP Enablement Efforts

- Software Engineering Measurement & Analysis:
 - Improving software estimation via DoD-funded research
 - On-going research on collecting metrics from DevSecOps pipelines
 - Analysis of programs on request through Independent Technical Assessments
- Workforce:
 - Digital talent management forum
 - Helped to develop new software work roles for the DoD cyber workforce framework
 - Providing feedback on training and credentialing for software acquisition roles

Contact



Brigid O'Hearn
Senior Software Acquisition
Innovation Specialist

Email: info@sei.cmu.edu

Questions?

