

Modernizing Department of Defense Engineering Talent Management

27th Annual National Defense Industrial Association Systems and Mission Engineering Conference

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Office of Systems Engineering and Architecture
Office of the Under Secretary of Defense
for Research and Engineering

Norfolk, Virginia
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Executive Directorate for Systems Engineering & Architecture

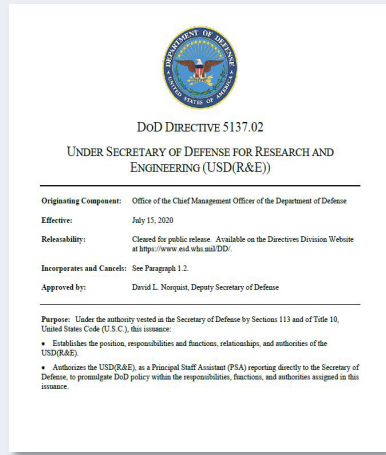


Leader



Thomas W. Simms
Executive Director, SE&A

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<https://www.esd.whs.mil/DD/>

Section 2, Paragraph q:
“ q. ...with key stakeholders, **develops** governing **policy** and **advances practices** and **workforce competency...**” for technical activities, including **engineering, developmental test and evaluation, software development, modeling and simulation, and digital engineering.**

Priorities

Mission Statement

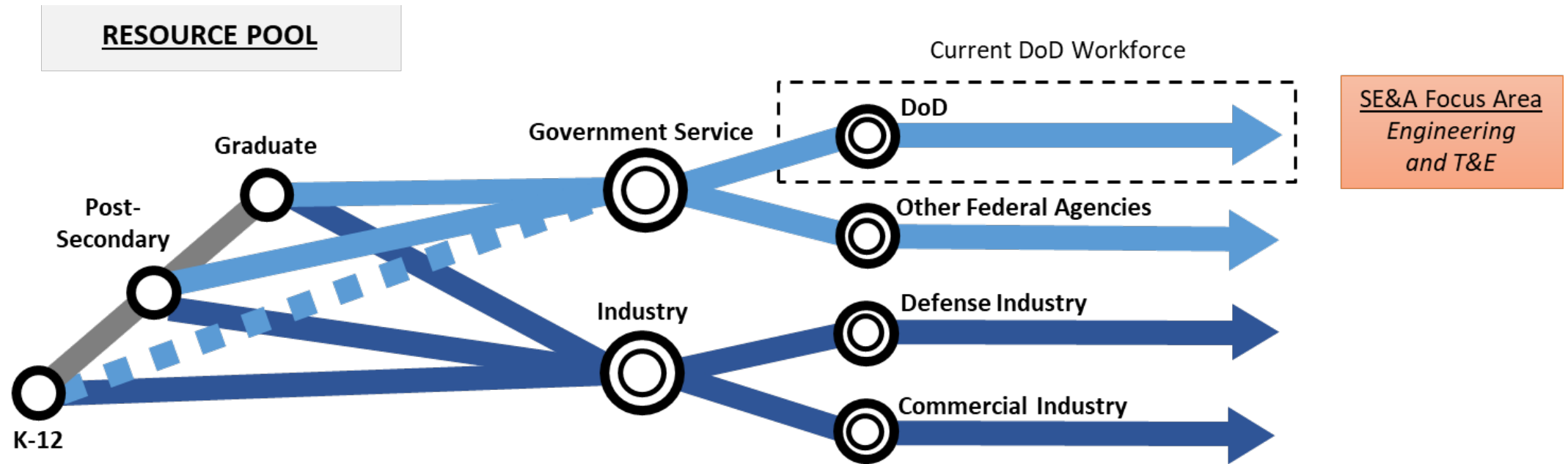
- Develop and promote innovative engineering principles and techniques to advance DoD engineering practice.
- Develop policy, guidance, standards, and best practice resources; manages DoD Standards; facilitates engineering-related communities of practice; and **develop the defense engineering workforce by refining competency models and curricula.**
- Apply engineering and risk management expertise to inform decisions and improve system-of-systems architectures to reduce integration risk in mission-enabling systems.



U.S. Workforce Pathways

“The National Defense Strategy's call to build enduring advantages for the future Joint Force requires investment in the Department's people -our most valuable resource. A critical component of our overall workforce strategy must be the cultivation of innovation skills and talents matched to the demands of our technology-driven era.”

Deputy Secretary of Defense Kathleen Hicks



SE&A is the Functional Area Leader for Engineering and Technical Management (ETM) and Test and Evaluation (T&E), and OSD Functional Community Manager for Engineering (Non-Construction) (ENG(NC)) and Quality Assurance (QA).



DoD Workforce

- Functional Area Leader (FAL) for Engineering & Technical Management and Test & Evaluation Acquisition Workforces (~72,000 personnel)



– Develops certification training and defense acquisition credentials—will be heavily relied upon to ensure a technically competent acquisition workforce

- OSD Functional Community Manager (OFCM) for Engineering (Non-Construction) and Quality Assurance (~97,000 personnel)



– Leads, coordinates, and monitors strategic workforce planning (e.g., workforce analysis, strategies to reduce and close gaps, etc.)

SE&A

ASD(S&T)|S&T Foundations

- ETM and T&E functional areas cover ~45% (~72,000) of Acquisition Workforce (Data Source: OUSD(A&S) Defense Acquisition Workforce Data Mart, Q2 FY2024)
 - ENG(NC) and QA functional communities cover ~12% (~97,000) of DoD Workforce (Data Source: ADVANA DoD Functional Community Dashboard, Q2 FY 2024)



Modernizing Talent Development

Then...

- Training was required early and in bulk
- Employees overwhelmed with training that doesn't apply to what they are doing right now



Now...

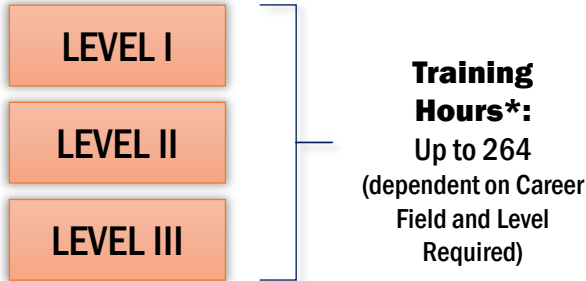
- More streamlined upfront training
- Training is customizable throughout the career
- Elective, job-specific, specialty, and point-of-need training





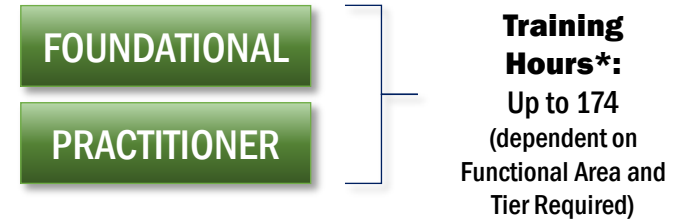
Modernized Framework

Then...



DAWIA CERTIFICATION

Now...



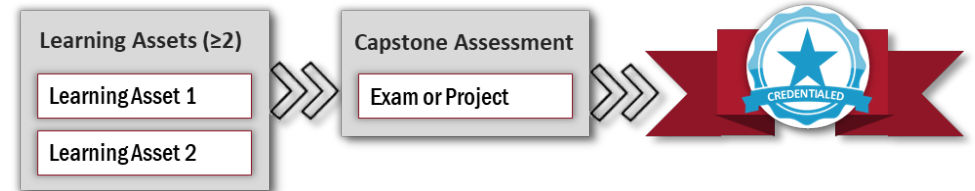
Core Plus

- Limited job-specific, specialty training.
- Selection of courses based on broad career field position categories

CONTINUOUS LEARNING

Defense Acquisition Credentials

- Provide job-specific, specialty, and point-of-need training.
- Allow the workforce to customize their knowledge base throughout their career.
- Are transferable across Components.



Better align training to support lifelong learning and point-of-need training

*Specific to the ETM and T&E functional areas



ETM Certification Training and Credentials

ETM CERTIFICATION TRAINING

FOUNDATIONAL
≥ 1 year relevant ETM experience

TOTAL TRAINING HOURS = 40

ACQ 1010 Fundamentals of System Acquisition Management	ETM 1010 Leading Change Fundamentals	ETM 1020 Mission & Systems Thinking Fundamentals
ETM 1030 Requirements Definition & Analysis Fundamentals		ETM 1040 Technical Management Fundamentals
ETM 1050 Design Considerations Fundamentals	ETM 1060 Product Realization Fundamentals	ETM 1070 Digital Literacy Fundamentals
ETM 1080 Software Literacy Fundamentals	ETM 1090 Technical Perspectives on Defense Contracting Fundamentals	

PRACTITIONER

≥ 4 years relevant ETM experience

TOTAL TRAINING HOURS = 69

ETM 2010 Leading Change for Practitioners	ETM 2020 Mission & Systems Thinking for Practitioners	ETM 2030 Requirements Definition & Analysis for Practitioners
ETM 2040 Technical Management for Practitioners	ETM 2050 Design Considerations for Practitioners	ETM 2060 Product Realization for Practitioners
ETM 2070 Digital Literacy for Practitioners	ETM 2080 Software Literacy for Practitioners	ETM 2090 Technical Perspectives on Defense Contracting for Practitioners

Green = Online Training (OLT) / Blue = Virtual Instructor-led Training (VILT)

AVAILABLE

Digital Focused Training

ETM CREDENTIALS

AVAILABLE

CCYB 001 Program Protection	CCYB 002 Cybersecurity for Program Managers	CCYB 003 Fundamental Secure Cyber-Resilient Engineering	CCYB 004 Intermediate Secure Cyber-Resilient Engineering
CENG 001 Digital Engineering for DoD Consumers	CENG 002A Data Analytics for DoD Acq. Managers	CENG 003 Artificial Intelligence Foundations for the DoD	CENG 004 Agile DoD Team Member
CENG 012 Technology Project Management	CENG 013 Technology Portfolio Management		

IN DEVELOPMENT

CENG 005 Fundamental Mission Engineering	CENG 008 Software Engineering Intermediate	CENG 016 Intermediate SE Requirements & Architecture	CENG 017 Intermediate SE Management
CENG 018 Intermediate SE Product Development	CENG 028 Intermediate Digital Engineering	CENG 031 Basics of DoD Software Management	CENG 032 Intro to DevSecOps Employed in DoD
CENG 033 Strategic Planning for DevSecOps Implementation	CENG 034 DevSecOps Continuous Development in DoD	CENG 035 DevSecOps Continuous Delivery in DoD	
CENG 036 Modern Software Config Mgmt Strategies	CENG 037 Securing the DevSecOps Pipeline		



T&E Certification Training and Credentials

T&E CERTIFICATION TRAINING

FOUNDATIONAL

≥ 1 year relevant T&E experience

TOTAL TRAINING HOURS = 40

- ACQ 1010**
Fundamentals of System Acquisition Management
- TST 1100**
Intro to Systems Engineering for Testers
- TST 102**
Fundamentals of Test and Evaluation

PRACTITIONER

≥ 4 years relevant T&E experience

TOTAL TRAINING HOURS = 134

- ACQ 2020**
Intermediate Systems Acquisition, Part A
- ACQ 2030/V**
Intermediate Systems Acquisition., Part B
- CLE 030**
Integrated Testing
- TST 2040/V**
Test and Evaluation for Practitioners
- TST 2100**
Applied Systems Engineering for Testers

Green = Online Training (OLT) / Blue = Virtual Instructor-led Training (VILT)

AVAILABLE

T&E CREDENTIALS

IN DEVELOPMENT

- CTST 001**
Applying Scientific Test and Analysis Techniques (STAT)
- CTST 002**
Cyber T&E Fundamentals
- CTST 003**
Cyber T&E Intermediate
- CTST 005**
T&E of Artificial Intelligence
- CTST 006**
T&E & Tracking Reliability
- CTST 007**
T&E of Software
- CTST 008**
Evaluating Data
- CTST 009**
T&E Strategy Development & Planning
- CTST 014**
Test Event Planning & Execution

Digital Focused Training



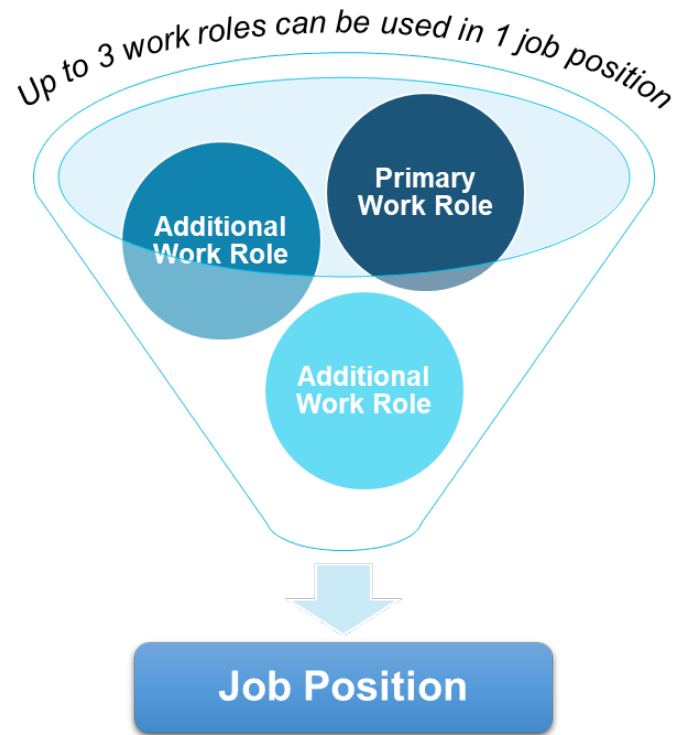
Modernizing Talent Identification: DoD Work Roles

WHAT IS A WORK ROLE?

A Work Role is a collection of competencies and knowledge, skills, abilities, and tasks (KSATs).

Work Roles describe the “hats” employees wear in their day-to-day duties. They build upon existing talent management structures and **are used in conjunction with the existing workforce identifiers** (e.g., Occupational Series).

- Helps DoD recruit, train, educate, and retain a qualified workforce
- Describes the work performed by individuals



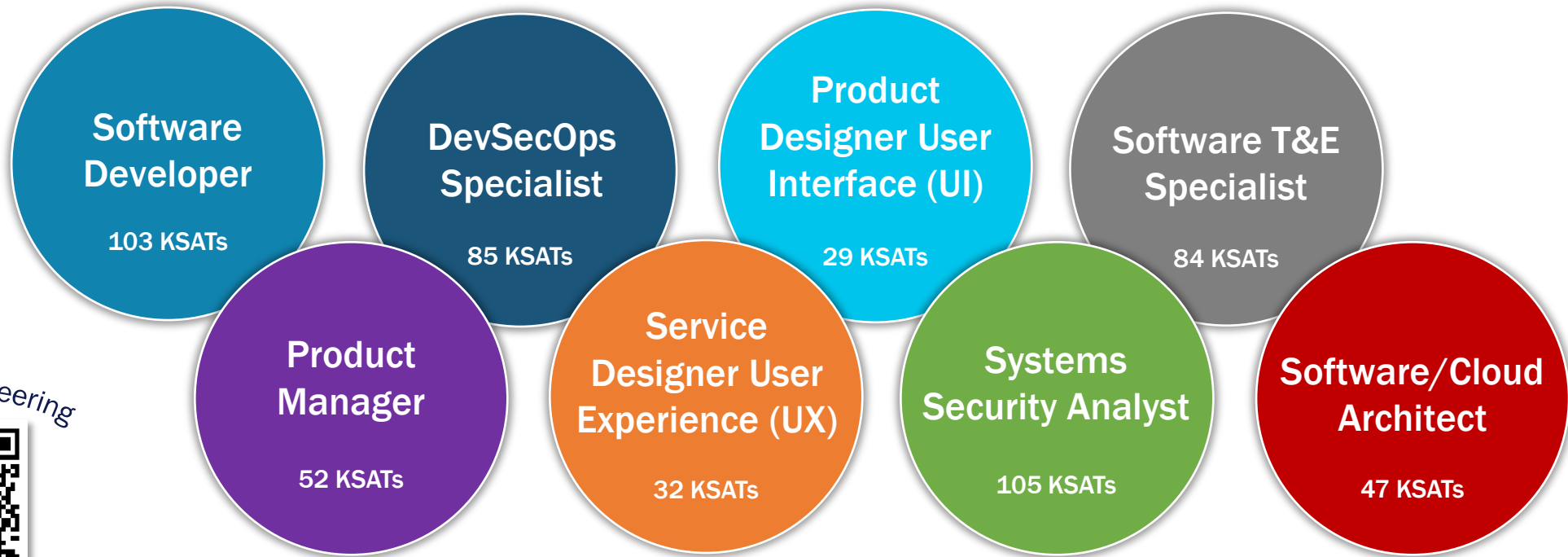
The DoD work roles framework expanded beyond cyber to include software engineering, artificial intelligence, and data.





Software Engineering Work Roles

Personnel who manage and identify program high-level technical specifications, which may include, application design, development, testing, deployment, cloud computing strategy and adoption, and integration of software applications into a functioning system to meet requirements.



Software Engineering

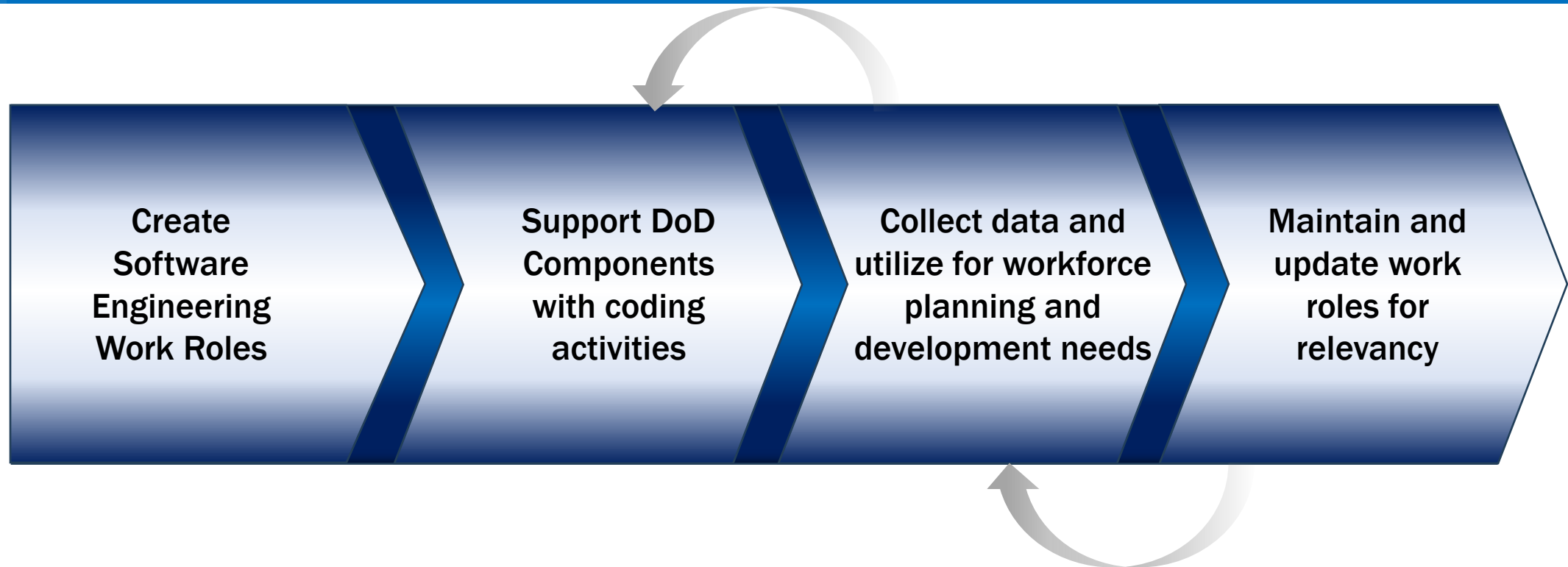


Work Roles



Software Engineering Work Roles Approach

Create and maintain visibility into where DoD software engineering work is performed to customize and target workforce activities to billets (e.g., recruitment, training, development, and retention).

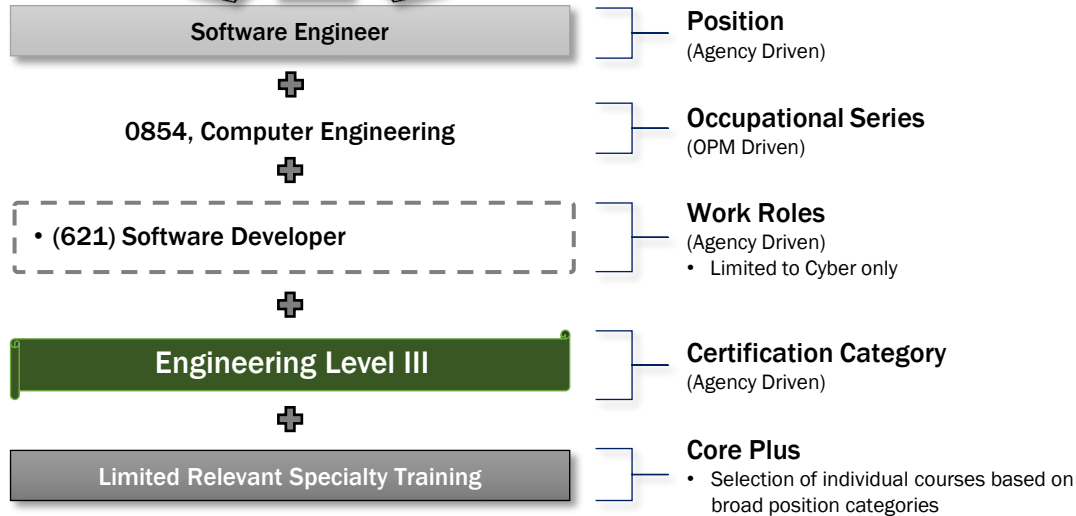


Future plans include exploring work roles for additional workforce functions (e.g., systems engineering, digital engineering)

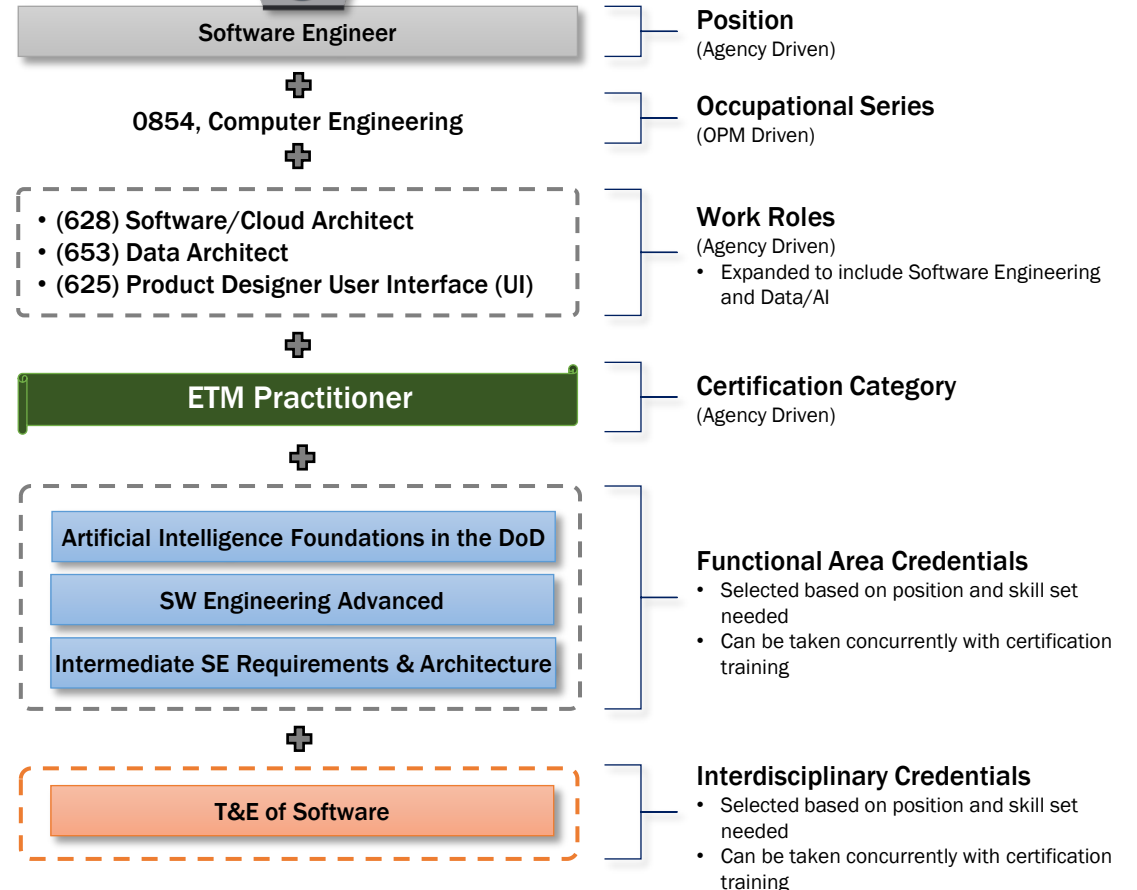


Notional Software Engineer Example

Then...



Now...





Key Resources

SYSTEMS ENGINEERING & ARCHITECTURE

TECHNICAL WORKFORCE HIGHLIGHT: **ENGINEERING & TECHNICAL MANAGEMENT (ETM) WORKFORCE DEVELOPMENT** FEBRUARY 2024

ETM The ETM workforce has a vital role in developing, fielding, and sustaining high-quality, innovative, affordable, supportable, and effective defense systems and ensuring that DoD products are delivered on time, perform as expected, and are cost-effective. The role requires developing and implementing products and services with an integrated technical approach across the total life cycle. The role includes providing the systems, software, and people to satisfy stakeholder needs and expedite transition of technology to the user, as well as early production planning and systematically examining producibility. The ETM workforce has the strategic perspective, technical competence, and critical thinking needed to operate within various product domains and other engineering and technical disciplines.

✦ **WORKFORCE DEVELOPMENT**

The DoD is investing in the existing workforce by developing and modernizing training and education. Training addresses technical skills needed to transition technology into usable capabilities. The Office of the Under Secretary of Defense for Research and Engineering (OUSD/R&E) technical workforce development efforts are guided by Secretary of Defense priorities, OUSD/R&E, ETM workforce leaders from across the Department, and the Defense Acquisition University (DAU) collaborate to develop competencies, training, and credentials for the ETM workforce.

✦ **TRAINING**

The ETM workforce progresses through training based on targeted proficiency levels for ETM competencies. The

ETM TRAINING

FOUNDATION	PROFICIENT
AXQ 1000 Systems and Architecture Management ETM 1000 Learning Change of Paradigm ETM 1001 Learning Change of Paradigm ETM 1002 Mission & Systems Thinking ETM 1003 Requirements Definition & Analysis ETM 1004 Requirements Definition & Analysis ETM 1005 Requirements Definition & Analysis ETM 1006 Requirements Definition & Analysis ETM 1007 Requirements Definition & Analysis ETM 1008 Requirements Definition & Analysis ETM 1009 Requirements Definition & Analysis ETM 1010 Requirements Definition & Analysis ETM 1011 Requirements Definition & Analysis ETM 1012 Requirements Definition & Analysis ETM 1013 Requirements Definition & Analysis ETM 1014 Requirements Definition & Analysis ETM 1015 Requirements Definition & Analysis ETM 1016 Requirements Definition & Analysis ETM 1017 Requirements Definition & Analysis ETM 1018 Requirements Definition & Analysis ETM 1019 Requirements Definition & Analysis ETM 1020 Requirements Definition & Analysis ETM 1021 Requirements Definition & Analysis ETM 1022 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For more information, visit <https://www.cto.mil/sea/workforce/> or email osd.sea@mail.mil ATTN: Workforce

SYSTEMS ENGINEERING & ARCHITECTURE

TECHNICAL WORKFORCE HIGHLIGHT: **TEST AND EVALUATION (T&E) WORKFORCE DEVELOPMENT** FEBRUARY 2024

T&E The T&E workforce is responsible for, or is an integral part of, the conceptualization, initiation, design, development, contracting, testing, and evaluation of defense systems across all commodity areas. T&E professionals develop and optimize test designs, execute testing, and perform evaluations of system performance, interoperability, reliability, maintainability, and cybersecurity posture. They also address the maturity of test planning, deal with T&E infrastructure shortfalls, and offer unbiased information to support design improvements and inform production and fielding decisions.

✦ **WORKFORCE DEVELOPMENT**

The DoD is investing in the existing workforce by developing and modernizing training and education. Training addresses technical skills needed to transition technology into usable capabilities. The Office of the Under Secretary of Defense for Research and Engineering (OUSD/R&E) technical workforce development efforts are guided by Secretary of Defense priorities.

OUSD/R&E, T&E workforce leaders from across the Department, and the Defense Acquisition University (DAU) collaborate to develop competencies, training, and credentials for the T&E workforce.

✦ **TRAINING**

The T&E workforce progresses through training based on targeted proficiency levels for T&E competencies. In July 2023, TST 1100, Intro to Systems Engineering (SE) for Testers, replaced ENG 101, Fundamentals of SE, and in December 2023, TST 2100, Applied SE for Testers, replaced ENG 201, Applied SE in Defense Acquisition, Part I, providing the T&E workforce more tailored SE content.

T&E TRAINING

FOUNDATION	PROFICIENT
AXQ 1000 Systems and Architecture Management ETM 1000 Learning Change of Paradigm ETM 1001 Learning Change of Paradigm ETM 1002 Mission & Systems Thinking ETM 1003 Requirements Definition & Analysis ETM 1004 Requirements Definition & Analysis ETM 1005 Requirements Definition & Analysis ETM 1006 Requirements Definition & Analysis ETM 1007 Requirements Definition & Analysis ETM 1008 Requirements Definition & Analysis ETM 1009 Requirements Definition & Analysis ETM 1010 Requirements Definition & Analysis ETM 1011 Requirements Definition & Analysis ETM 1012 Requirements Definition & Analysis ETM 1013 Requirements Definition & Analysis ETM 1014 Requirements Definition & Analysis ETM 1015 Requirements Definition & Analysis ETM 1016 Requirements Definition & Analysis ETM 1017 Requirements Definition & Analysis ETM 1018 Requirements Definition & Analysis ETM 1019 Requirements Definition & Analysis ETM 1020 Requirements Definition & Analysis ETM 1021 Requirements Definition & Analysis ETM 1022 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SYSTEMS ENGINEERING & ARCHITECTURE

TECHNICAL WORKFORCE HIGHLIGHT: **ENGINEERING (NON-CONSTRUCTION) AND QUALITY ASSURANCE FUNCTIONAL COMMUNITIES** JULY 2024

ENGINEERING & QA A DoD functional community (FC) is a group of one or more civilian occupational series or specialties with common functions, competencies, and career paths. SE&A collaborates with workforce leaders across the Department of Defense (DoD) to advocate for the Engineering (Non-Construction) (ENG(NC)) and Quality Assurance (QA) FCs, a combined workforce of approximately 93,000. The series making up the ENG(NC) FC consists of 0300 Engineering and Architecture series not related to construction and facilities management while the QA FC consists of the 1900 QA-related series.

✦ **OSD FUNCTIONAL COMMUNITY MANAGER**

As the OSD Functional Community Manager (OFM) for ENG(NC) and QA, SE&A collaborates across the Department to develop and implement functional people strategies to deliver the right talent with the right skills at the right place and time.

✦ **TALENT ACQUISITION**

The DoD is focused on attracting the right talent through talent acquisition programs that align with the Secretary of Defense priority to grow talent within the Department.

The civilian Workforce Incentive Fund (CWIF) addresses talent acquisition challenges through civilian recruitment, retention, relocation, and student loan repayment incentive programs aimed at attracting and retaining employees with critical skills in annually designated "hard-to-fill" positions and component mission-critical occupations. For more information, contact <https://www.dcpas.osd.mil/contact>.

The DoD has several Direct Hiring Authorities (DHAs) to expedite the hiring process. DHAs allow DoD Components to non-competitively appoint qualified candidates to competitive service positions in the Department. For more information, visit <https://www.lci.mil/hiringauthorities.html>.

Registered Apprenticeships are a proven workforce leveraging solution that help U.S. federal government agencies recruit and develop well-trained workers in high-demand occupations. Learn more by visiting <https://www.apprenticeship.gov>.

Scholarship for Service Programs provide tuition in exchange for DoD service. Programs DoD participates in include STEM SMART Scholar, Defense Civilian Training Corps, DoD Cyber Scholarship Program, and CyberCorps®.

For more information, visit <https://www.dcpas.osd.mil/contact>.

For more information, visit <https://www.cto.mil/sea/workforce/> or email osd.sea@mail.mil ATTN: Workforce

For a summary of SE&A workforce development efforts, visit <https://www.cto.mil/sea/info-sheets/>



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