BUILDING A STRONG CYBERSECURITY PIPELINE

Zia Anderson
July 17, 2019

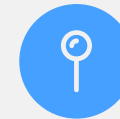# The Cybersecurity Workforce Challenge

Globally

- According (ISC)², the **global cyber workforce shortage** is projected to reach **1.8 million by 2022**
- That's more than **1 new cyber expert needed every minute***

Domestically

There are over **300,000 vacant cyber jobs** in the United States

Locally

- There are over **60,000** vacant jobs in **the D.C. metro area**
- The **top openings are**:
- Cyber Security Engineer
- Cyber Security Analyst
- Network Engineer / Architect

The NICE Framework is the backbone of DHS's future cybersecurity workforce

WHAT?

The National Initiative for Cybersecurity Education (NICE) Framework provides a **common language to describe cyber positions** and helps define professional requirements in cyber.

WHY?

To ensure a robust pipeline of **qualified cybersecurity professionals** meet the demands of cybersecurity need, academia, government, and private sector must work together. The **Framework is the foundation** on which to build curricula, training, and job/workforce structures.

HOW?

Merge disparate efforts across the state to standardize the implementation of the NICE Framework. Standardization enables effective education objectives and knowledge units creating a **cohesive education track**.
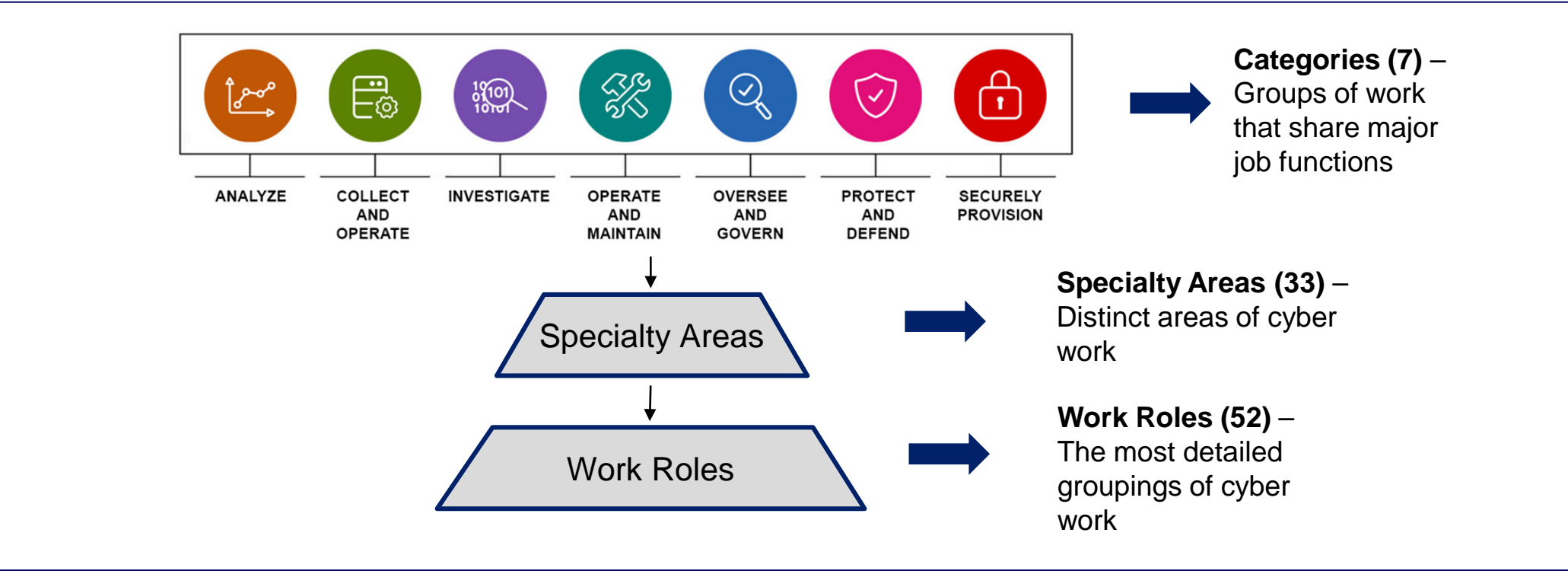Position descriptions and professional development tied to the NICE Framework enables **career progression and mobility** within the cybersecurity field.
Increased clarity and uniformity leads to better **recruitment and retention** across the state.
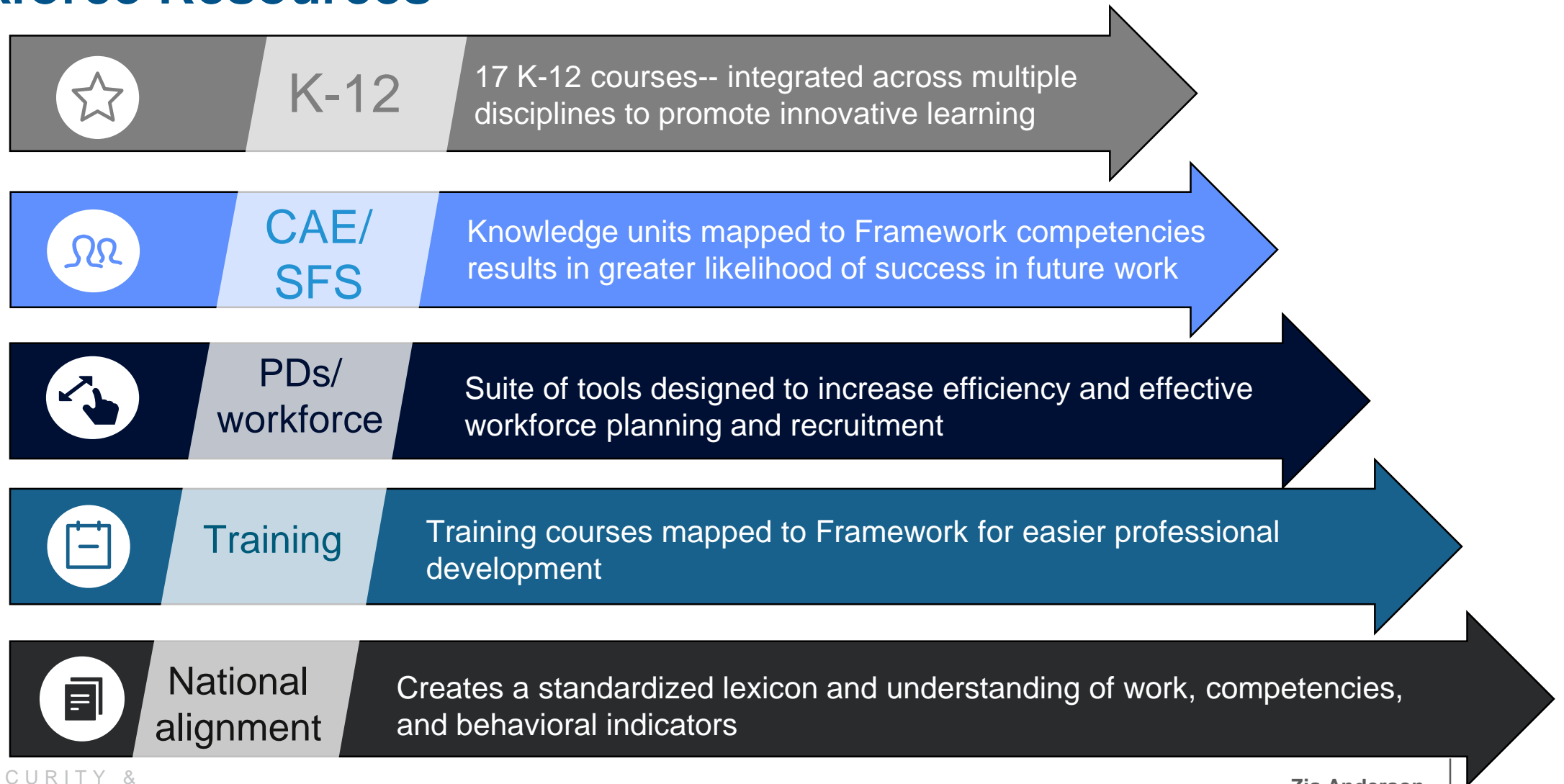
Foundation for the Cybersecurity Workforce

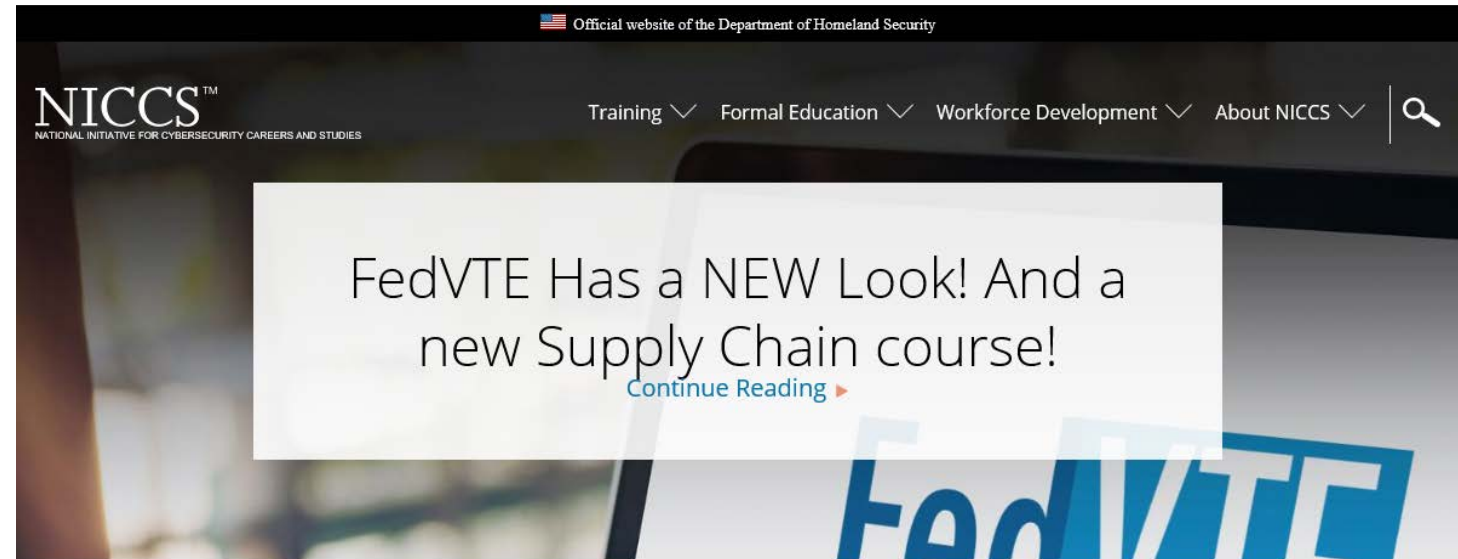The Framework organizes the cyber workforce as outlined below:

ANALYZE | COLLECT AND OPERATE | INVESTIGATE | OPERATE AND MAINTAIN | OVERSEE AND GOVERN | PROTECT AND DEFEND | SECURELY PROVISION

Categories (7) – Groups of work that share major job functions

Specialty Areas

Specialty Areas (33) – Distinct areas of cyber work

Work Roles

Work Roles (52) – The most detailed groupings of cyber work

The Framework is the core of CISA Cybersecurity Education and Workforce Resources

K-12 — 17 K-12 courses-- integrated across multiple disciplines to promote innovative learning

CAE/ SFS — Knowledge units mapped to Framework competencies results in greater likelihood of success in future work

PDs/ workforce — Suite of tools designed to increase efficiency and effective workforce planning and recruitment

Training — Training courses mapped to Framework for easier professional development

National alignment — Creates a standardized lexicon and understanding of work, competencies, and behavioral indicators

It's all on NICCS™

The Nation's One-stop-shop for Cybersecurity Careers and Studies!

✓ 30,000+ visitors per month

✓ 4,000+ courses in the NICCS Training Catalog mapped to the National Cybersecurity Workforce Framework

✓ 100+ links to cybersecurity resources

✓ 15+ tools for managers, including a Cybersecurity Workforce Development Toolkit

https://niccs.us-cert.gov/

Integrating Cybersecurity in the Classroom

Encourage cyber knowledge and interest early with FREE K-12 curricula…

Get on board:

- 17 year-long courses plus modular project-driven content mapped to the NICE Framework
- 2,400+ content hours
- 14,800+ teachers use the curricula impacting more than
- 2,200,000 students across the U.S.
- Workshops for teachers
- Cybersecurity Summer Camps

Download the free curricula:
nicerc.org

- Integrate real world cyber scenarios into science, math, and liberal arts
- Teacher and master notes
- Quizzes, worksheets, assessments
- Student workbooks
- No cybersecurity training needed

Colleges and Scholarships

National Centers of Academic Excellence (CAE) in Cyber Defense (CD) offer cybersecurity-related degree programs designated by DHS and NSA
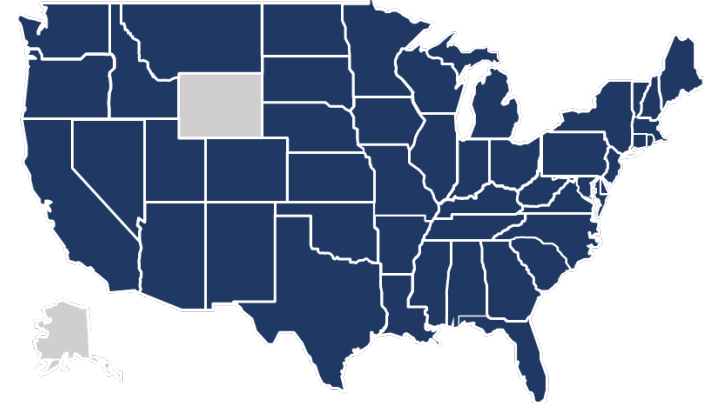
274 CAEs in 48 states, D.C., and Puerto Rico

Share information about the **CyberCorps® Scholarship for Service (SFS)** program with students interested in studying cybersecurity

- ✓ Since 2011, 3,600 students have completed the program at 74 SFS schools
- ✓ SFS graduates have been hired at over 140 government entities

Workforce Development Toolkit and Tools

WORKFORCE DEVELOPMENT TOOLKIT PHASES

PREPARE
- ➤ Assess goals
- ➤ Evaluate readiness

PLAN
- ➤ Inventory workforce
- ➤ Ongoing workforce planning

BUILD
- ➤ Close skill gaps
- ➤ Recruit for key skills

ADVANCE
- ➤ Retain staff
- ➤ Provide continuous development

TOOLS

- o Workforce Planning Capability Maturity Matrix (CMM)

- o Cybersecurity Workforce Planning Diagnostics
- o NICE Framework
- o Workforce Mapping Tool

- o Team Traits/ Interview Questions
- o Recruitment Checklist
- o PushButton PD™ Generator Tool

- o Retention Tips by Level
- o Career Path Template
- o NICCS Training Catalog

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Build the right description to find the right people

NICCS Training Catalog

The NICCS Education and Training Catalog is a central location where cybersecurity professionals across the nation can find over 3,000 cybersecurity-related courses.

Search Courses

Keyword

Location

Location (Zip Code, City, State or Address)

Distance

All Course Locations

Specialty Area

Choose Specialty Area(s)

Provider

Choose Provider(s)

Proficiency Level

Choose Proficiency Level(s)

Available Delivery Methods

☐ Classroom
☐ Online, Instructor-Led
☐ Online, Self-Paced

☐ 🏅 National CAE Designated Institution

[Search]   [Reset]

Show 20 Per Page

Displaying 1 - 20 of 3845 Courses

Course Name	Provider	Location	Delivery Method
(CFR) CyberSec First Responder: Threat Detection and Response (Exam CFR-210)	New Horizons Computer Learning Center Central		Online, Instructor-Led
(CFR) CyberSec First Responder: Threat Detection and Response (Exam CFR-210)	New Horizons South Florida		Online, Instructor-Led

TOP

Visit: https://niccs.us-cert.gov/training/search

Federal Virtual Training Environment (FedVTE)

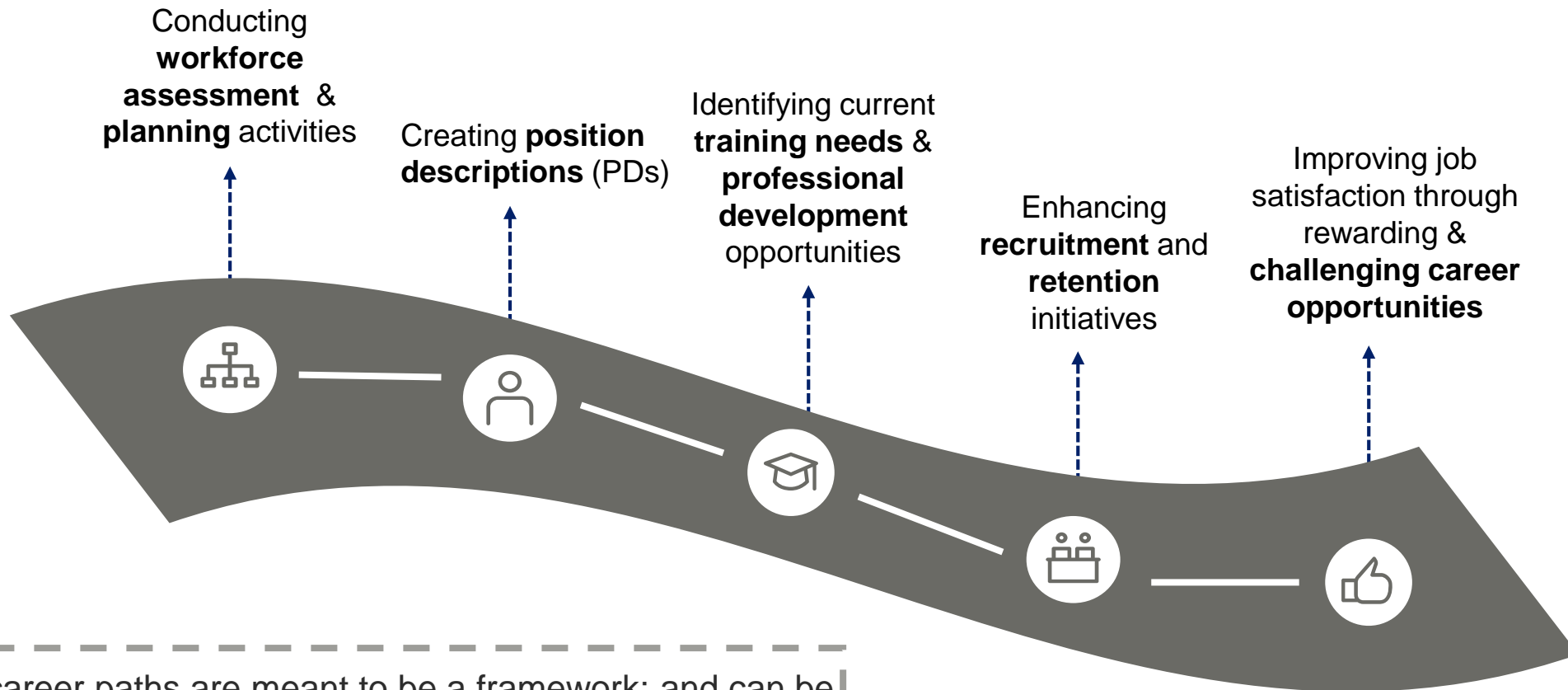**DHS offers <u>free</u> cybersecurity training for U.S. government employees and Veterans!**

✓ Courses range from beginner to advanced levels

✓ 250,000+ registered users

✓ 40,000+ Veteran users (through our non-profit partner Hire Our Heroes™)

✓ Over 60 courses - and growing!

✓ All courses are mapped to the NICE Framework

Fedvte.usalearning.gov

Coming soon: Career Paths

Career paths are designed to support cyber professionals, their supervisors, and human capital professionals with a range of workforce related activities, as outlined below:

Conducting **workforce assessment** & **planning** activities

Creating **position descriptions** (PDs)

Identifying current **training needs** & **professional development** opportunities

Enhancing **recruitment** and **retention** initiatives

Improving job satisfaction through rewarding & **challenging career opportunities**

Note: These career paths are meant to be a framework; and can be tailored to meet the needs of each individual agency's workforce.

Coming soon: Sample Career Path

Competency Model & Career Path

Cyber Workforce Developer and Manager

Primary: Cyber Workforce Developer & Manager (751)
Secondary: Cyber Policy and Strategy Planner (752), Program Manager (801)

Developed By:
The Inter-Agency Federal Cyber Career Path Working Group

Date:
April 2019

2 CAREER PATH – CYBER WORKFORCE MANAGER AND DEVELOPER

2.1 Description

The Cyber Workforce Manager and Developer work role is primarily aligned to one OPM occupational series (GS-2210, Information Technology Management) and is engaged in multiple tasks, as described in Table 1. Cyber Workforce Manager and Developers can conceivably be hired into other OPM occupational series as illustrated in Table 1 below.

Table 1. Cyber Workforce Manager and Developer Work Role Overview

Cyber Workforce Manager and Developer Work Role Overview	
OPM Occupational Series	• 2210, Information Technology Management Series, Information Security (INFOSEC) Parenthetical • 0201, Human Resources Management (Workforce Development Parenthetical) • 0301, Miscellaneous Administration and Program • 0343, Management and Program Analysis
NICE Work Role	**Primary:** • 751, Cyber Workforce Developer and Manager **Secondary:** • 752, Cyber Policy and Strategy Planner • 801, Program Manager **Secondary:** • 711, Cyber Instructional Curriculum Developer • 712, Cyber Instructor • 422, Data Analyst
General Schedule (GS)	• GS-5 through GS-15
Aligned Related Roles	• (IT/Cybersecurity) Workforce Planner • (IT/Cybersecurity) Workforce Development Specialist • (IT/Cybersecurity) Human Capital Specialist • (IT/Cybersecurity) Workforce Planning Analyst • (IT/Cybersecurity) Workforce Development Project/Program Manager • Chief Human Capital Officer • Chief of Staff • Chief Administrative Officer
Role Description	• Establishes and implements the vision, mission, goals, and owns the business case, plans and strategies for a program in alignment with the organizational mission • Aligns the IT/cybersecurity workforce needs and priorities of the organization to strategic and operational workforce planning and talent management efforts • Anticipates and responds to federal personnel management trends that will impact the IT/cybersecurity workforce or planning/analytics activities by reshaping policy/guidelines or programs to enhance workforce performance (e.g., monitoring metrics, noticing changes in regulations)

Coming soon: Sample Career Path

Figure 1. Career Progression and Mobility for Cyber Workforce Manager and Developer
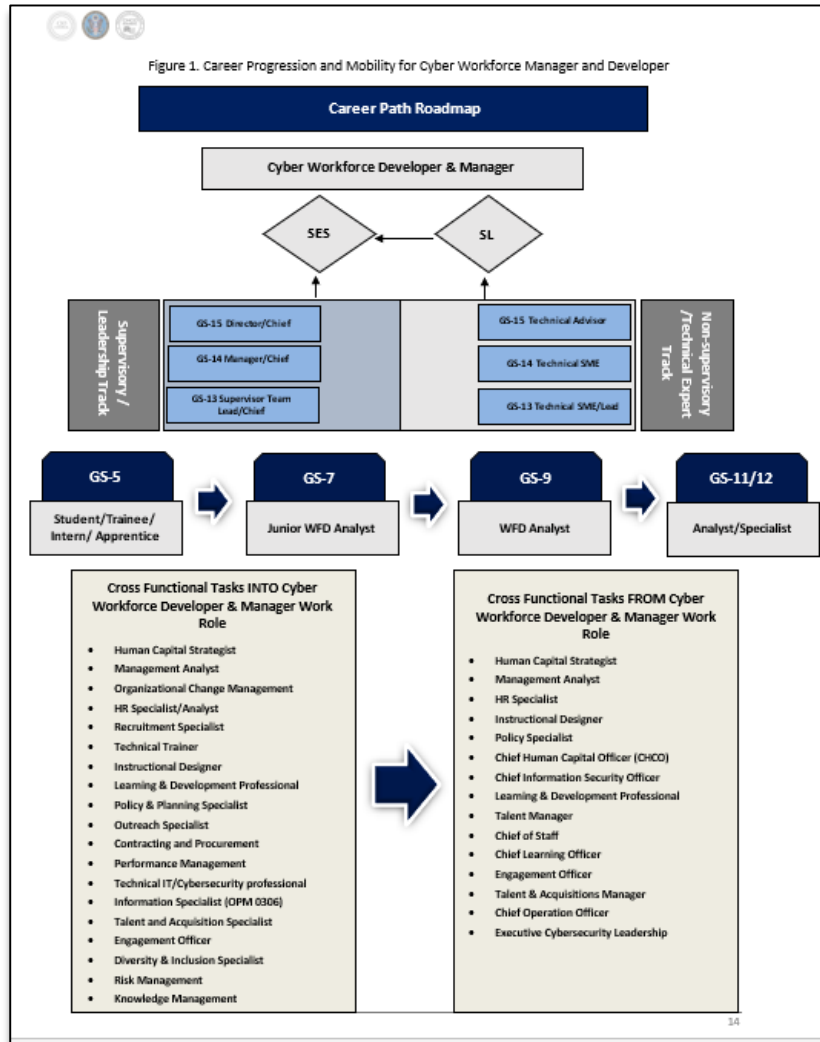
2.5 Proficiency Levels

Each competency has several proficiency levels that map to career levels within the work role (Table 4).

Table 4. Cyber Workforce Manager and Developer Technical Competencies and Proficiency Levels

Cyber Workforce Manager and Developer Technical Competencies and Proficiency Levels					
Technical Competency	GS-5	GS-7/9	GS-11/12	GS-13	GS-14/15
Workforce Management	1	1	3	3	4
Project Management	0	1	2	3	3
Legal Advice and Advocacy	0	1	2	3	4
Risk Management	0	0	2	3	4
Strategic Planning	1	1	2	3	4
Policy Management	1	1	2	3	4
Training Education and Awareness	1	1	3	3	2

I have one question left for you

Will you be a part of the solution?

To close the cybersecurity skill gap, we need everyone working towards the same goals. Here's how you can help:

- Train the basics
- Use the NICE Cybersecurity Workforce Framework
- Work with partners across the education pipeline to increase knowledge and interest in cybersecurity
- Spread the word

Contacts

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