FEDERAL CYBERSECURITY WORKFORCE WEBINAR

Welcome and Overview

Karen A. Wetzel
Manager, NICE Framework
National Initiative for Cybersecurity Education (NICE)

Today's Speakers

- **April Davis**
  Director of Classification & Assessment Policy for Talent Acquisition & Workforce Shaping,
  Employee Services
  U.S. Office of Personnel Management
- **Liz Edenfield**
  HR Manager
  HR Solutions
- **Megan Caposell**
  Associate Chief, Workforce Planning and Strategy
  Cybersecurity and Infrastructure Security Agency (CISA)
- **James Ashley**
  Lead Engineer and Project Manager, NICE Challenge Project
  University Enterprises Corporation, California State University, San Bernardino
- **Tony Coulson**
  Executive Director, Cybersecurity Center and Professor
  California State University, San Bernardino

EO 13932 - Modernizing and Reforming the Hiring and Assessment of Federal Job Candidates for Cyber Positions

April Davis

Director, Classification and Assessment Policy

Talent Acquisition and Workforce Shaping, Employee Services

July 2021

E.O. 13932 - Sec. 2 – Scale back use of education

Competency-Based Hiring Practices

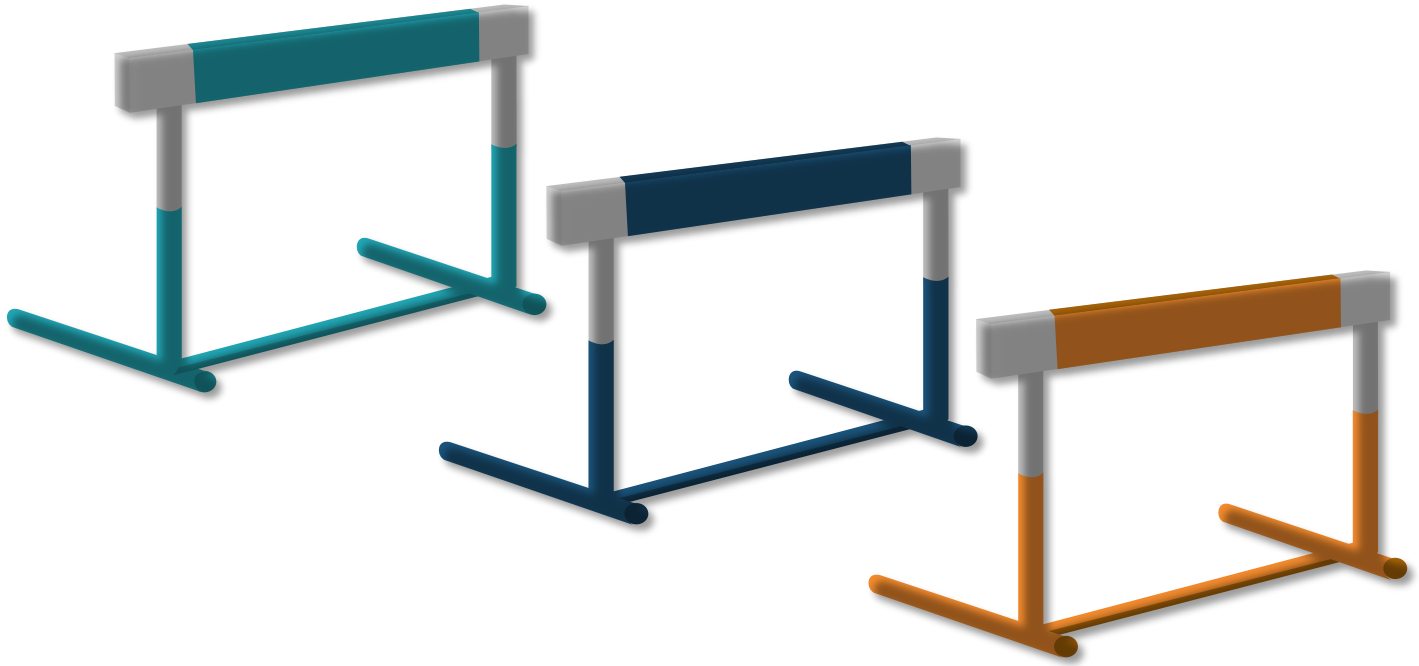
Identify key competencies based on job analysis and position descriptions. Collaboration with HR, SMEs, and IOPs

Include in job announcements competencies and specific experience

Utilize valid assessments of job-related skills and competencies

SMEs – Subject Matter Experts
IOPs – Industrial/Organizational Psychologists

E.O. 13932 - Sec. 3 – Use valid competency-based assessments



- ❑ Analyze via job analysis positions to determine the skills and competencies necessary for success
  - *Should involve subject matter experts*
- ❑ Develop or update position descriptions and job opportunity announcements
- ❑ Identify the best assessment strategy, which may include a combination of assessments (i.e., multiple hurdles)

  - *Should involve subject matter experts*
- ❑ Evaluate the effectiveness of assessment options and strategies

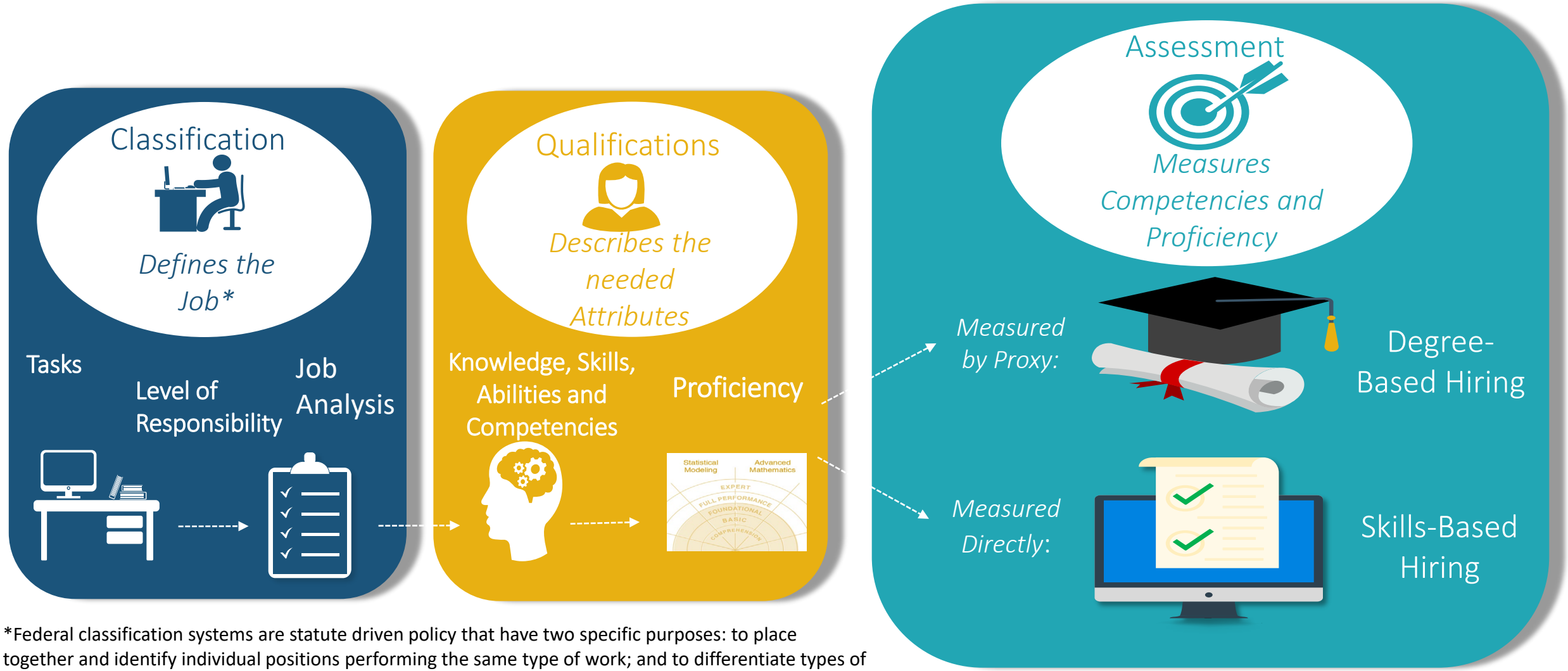
Types of Assessments:	• Structured Interview • Situational Judgment Test • Work Sample or Job Simulation • Cognitive Ability Test • Computer-Adaptive Tests

OPM Interim Guidance (May 7, 2021)

- Extension for implementation until December 31, 2021, to allow for additional time for the development to your agency assessment strategy
  - Refrain from relying solely on candidate self-assessments.
  - Applicants must clear other assessment hurdles to be considered qualified in examination and eligible for preference and referral.
  - Agencies evaluate the effectiveness of different assessment strategies to ensure the quality and integrity of the hiring process.

- Policy
- Guidance
- Stakeholder Engagement
- Briefings
- Webinars
- Tools
- Resources

Foundation of Hiring



*Federal classification systems are statute driven policy that have two specific purposes: to place together and identify individual positions performing the same type of work; and to differentiate types of work according to the character, difficulty, responsibility and qualifications of the work. Errors made in position classification directly impact recruitment and human resources processes.

Qualifying for Cybersecurity IT 2210 Positions

Education, experience or a combination of both can be used to qualify for a Federal position*:

Education

and/or

Experience

	Education	Experience: General	Experience: Specialized
OPTION A	For research positions: Doctoral or equivalent degree	None	1 year equivalent to the next lower grade
OPTION A	Doctoral degree or 3 years of graduate education	None	1 year equivalent to the next lower grade
OPTION A	For research positions: Master's degree	None	1 year equivalent to the next lower grade
OPTION A	Master's or Equivalent degree as specified in standards or 2 years of graduate education	None	1 year equivalent to the next lower grade
OPTION A	Bachelor's Degree plus Superior Academic Achievement** or 1 year of graduate education	None	1 year equivalent to the next lower grade
OPTION A/B	4 academic years leading to a Bachelor's Degree or a Bachelor's degree	Up to 2-3 yrs***	1 year equivalent to the next lower grade
OPTION A/B	2 academic years above high school or an Associate's degree	1 year	None
OPTION A/B	1 academic year above high school	6 months	None
OPTION A/B	High school graduation or equivalent	3 months	None
OPTION A/B		None	None

*Requirements vary by job family, type of work and occupation.
This is a generalization of education and experience requirements.

**Superior Academic Achievement is based on a GPA of 3.0 or higher out of a possible 4.0; class standing in the upper third of graduating class; or election to membership in a national scholastic honor society
***Years of generalized experience is based on the type of work. Voluntary experience is credible experience.

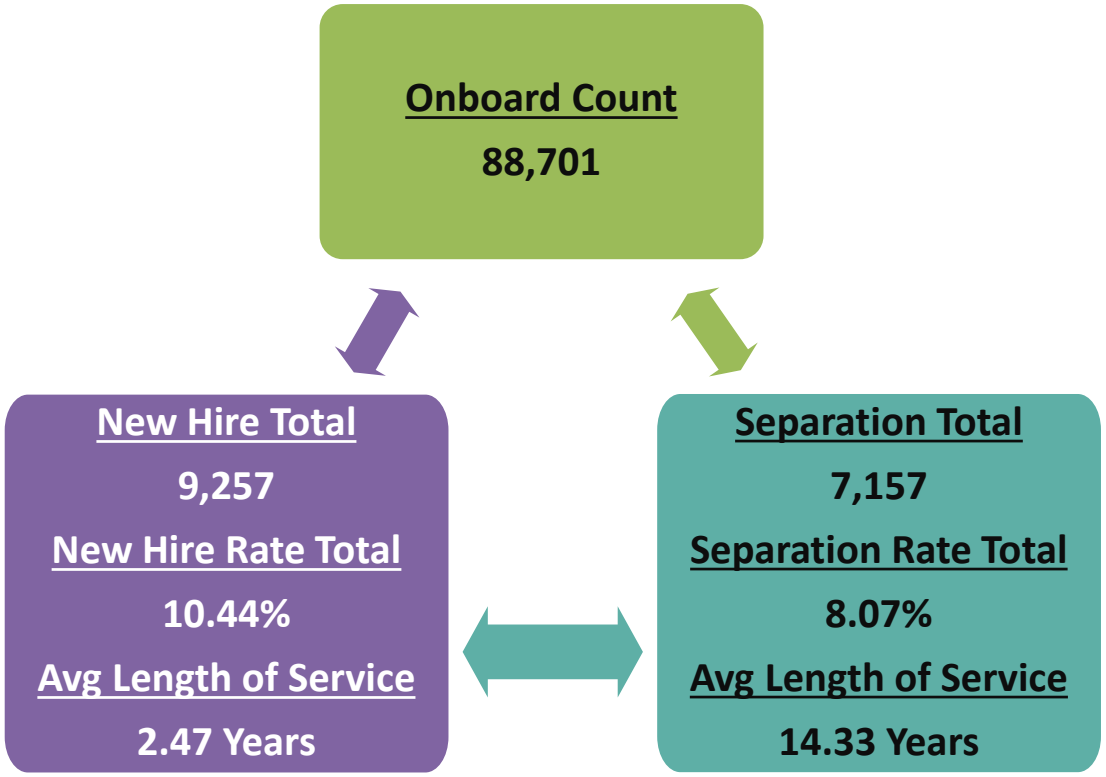
Top 10 Administrative Occupations by Fiscal Year based on 2019 New Hire Total

OCCUPATION	2019			2018			2017		
	Onboard	New Hire Total	New Hire Rate Total	Onboard	New Hire Total	New Hire Rate Total	Onboard	New Hire Total	New Hire Rate Total
0301-MISCELLANEOUS ADMINISTRATION AND PROGRAM	103,496	12,666	12.24%	106,129	13,744	12.95%	102,170	10,989	10.76%
2210-INFORMATION TECHNOLOGY MANAGEMENT	88,701	9,257	10.44%	86,168	7,306	8.48%	85,337	6,088	7.13%
0343-MANAGEMENT AND PROGRAM ANALYSIS	77,487	4,870	6.28%	75,506	3,532	4.68%	75,005	3,347	4.46%
0201-HUMAN RESOURCES MANAGEMENT	32,705	3,491	10.67%	31,130	2,926	9.40%	30,365	2,303	7.58%
1801-GENERAL INSPECTION, INVESTIGATION, ENFORCEMENT, AND COMPLIANCE SERIES	40,382	2,618	6.48%	39,006	1,615	4.14%	38,224	1,783	4.66%
0025-PARK RANGER	5,136	2,237	43.56%	5,098	2,268	44.49%	5,016	2,336	46.57%
1811-CRIMINAL INVESTIGATION	43,285	2,119	4.90%	43,267	1,810	4.18%	43,545	1,812	4.16%
1810-GENERAL INVESTIGATION	2,663	2,005	75.29%	2,621	394	15.03%	2,517	322	12.79%
0080-SECURITY ADMINISTRATION	15,921	1,851	11.63%	14,954	1,421	9.50%	14,650	1,164	7.95%
0346-LOGISTICS MANAGEMENT	22,198	1,745	7.86%	21,443	1,782	8.31%	20,544	1,099	5.35%

Top 10 Administrative Occupations by Fiscal Year based on 2019 Separation Total

OCCUPATION	2019			2018			2017		
	Onboard	Separation Total	Separation Rate Total	Onboard	Separation Total	Separation Rate Total	Onboard	Separation Total	Separation Rate Total
0301-MISCELLANEOUS ADMINISTRATION AND PROGRAM	103,496	11,156	10.78%	106,129	13,081	12.33%	102,170	11,762	11.51%
2210-INFORMATION TECHNOLOGY MANAGEMENT	88,701	7,157	8.07%	86,168	7,043	8.17%	85,337	6,423	7.53%
0343-MANAGEMENT AND PROGRAM ANALYSIS	77,487	5,654	7.30%	75,506	5,163	6.84%	75,005	4,965	6.62%
0201-HUMAN RESOURCES MANAGEMENT	32,705	3,590	10.98%	31,130	3,302	10.61%	30,365	3,071	10.11%
1811-CRIMINAL INVESTIGATION	43,285	2,734	6.32%	43,267	2,617	6.05%	43,545	2,421	5.56%
1801-GENERAL INSPECTION, INVESTIGATION, ENFORCEMENT, AND COMPLIANCE SERIES	40,382	2,357	5.84%	39,006	1,808	4.64%	38,224	1,808	4.73%
0025-PARK RANGER	5,136	2,274	44.28%	5,098	2,390	46.88%	5,016	2,547	50.78%

Challenge: Significant new hire demand, Significant separation total



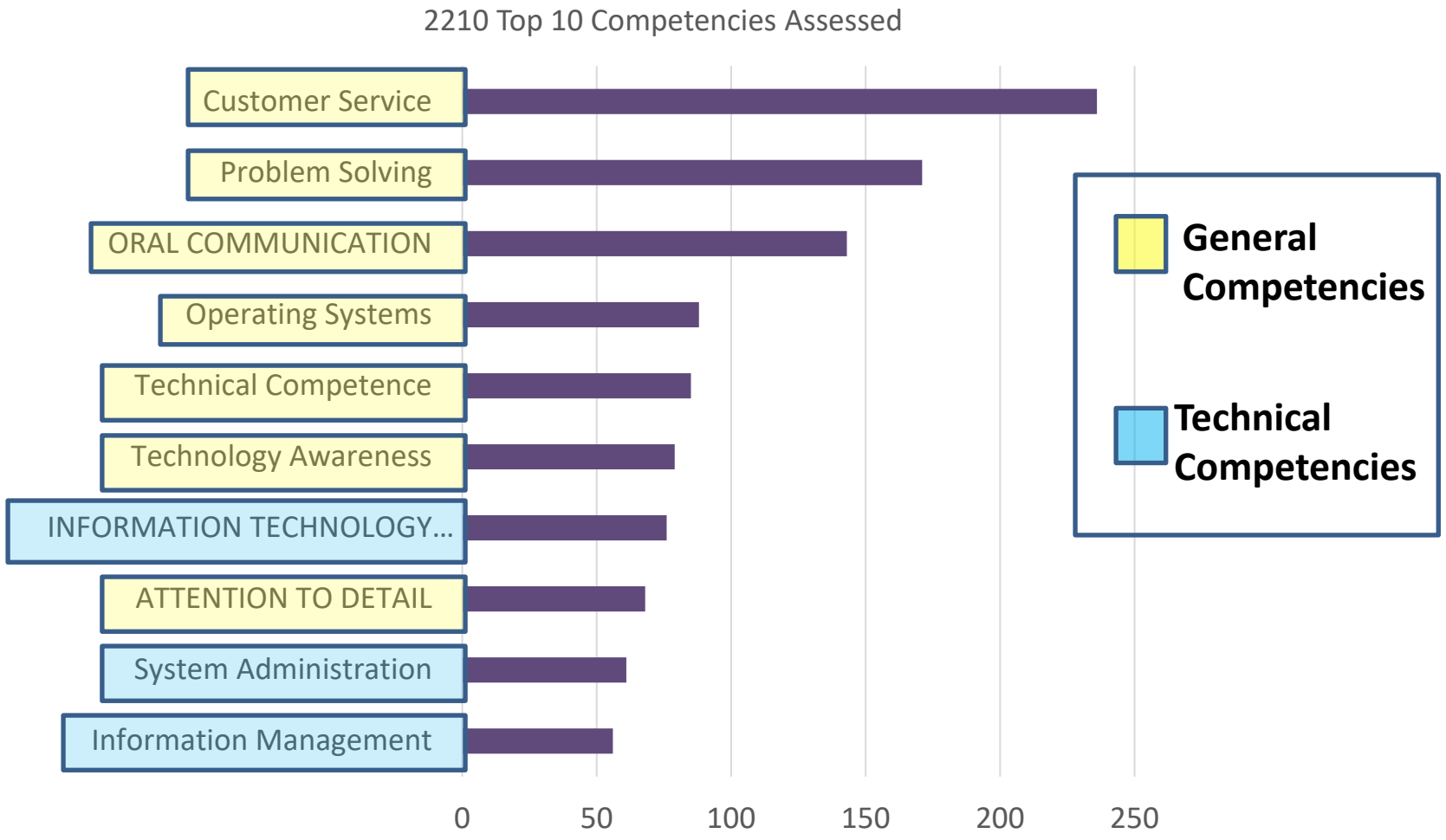
Solution:

Expanding the use of valid, competency-based qualifications and assessments can help:

(1) Yield a high return-on-investment by meeting the governmentwide demand for skilled IT professionals for new hire positions

(2) Negate the volume of separations by ensuring IT professionals hired have the competencies needed to be successful

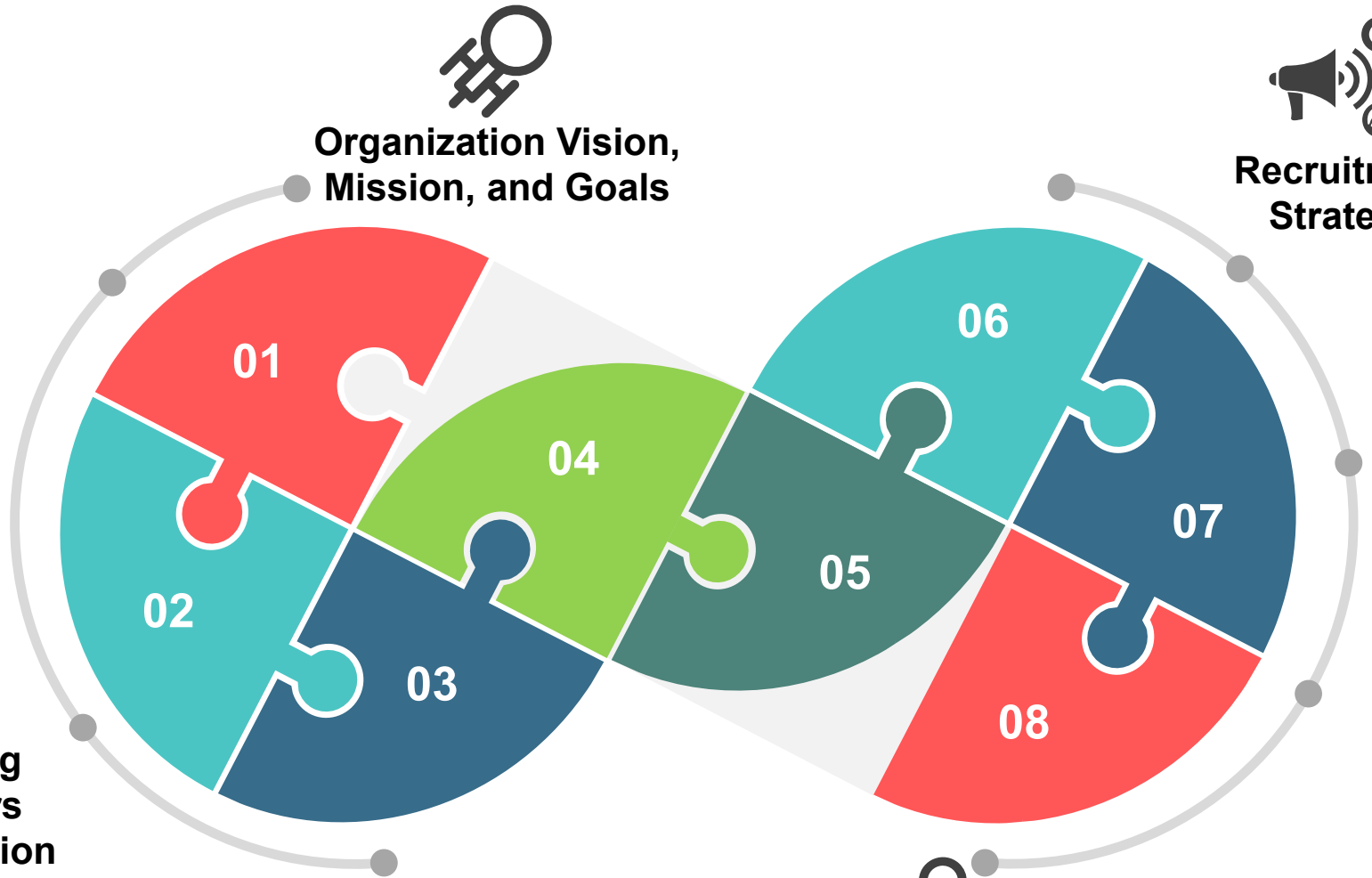
Top 10 2210 Competencies Assessed



The State of Competency Assessment

- For the highest volume positions, agencies are under assessing for competencies.
- Average Competencies Rated Per Opening*
  - **0343—4.08**
  - **2210—3.96**
- The vast majority of the competencies assessed were the general **(70%)** competencies, not technical.
  - Due to the lack of multiple hurdle assessments, the majority of bulk hire positions, are not assessing for technical competencies.
- A more robust, multi hurdle, competency-based assessment process would assess a higher number of competencies, as well as assess for technical (more job-specific competencies).
- A multi hurdle process would also likely increase the number of competencies assessed, increasing the quality of hires.
- Agency hiring can be improved utilizing valid assessments based on competency models.

Cybersecurity Human Capital Strategy



Organization Vision, Mission, and Goals

Recruitment Strategy

Talent Management Process

Competency Based Assessments and Hiring

HR/Hiring Managers Collaboration

HR/IT Business Intelligence

Community of Practice

Reskilling and Upskilling

Cyber Security Direct Hire Authority

Agencies must identify and use proper assessment tools for the positions being filled with these direct hire authorities to determine who is qualified for the covered positions. Agencies should not conduct additional rating to determine relative degrees of qualifications when using this authority. Qualified candidates with veterans' preference should be selected as they are found, just as any qualified non-preference eligible candidate would be.

Government-wide Direct Hire Authority for Information Technology Management (Information Security and Cybersecurity), GS-2210-09 through GS-2210-15; 5 U.S.C. 3304(a)(3), 5 CFR part 337

Position Title	Occupational Series	Grade Levels
Computer Engineers (Cybersecurity)	GS-0854	12-15
Computer Scientists (Cybersecurity)	GS-1550	12-15
Electronics Engineers (Cybersecurity)	GS-0855	12-15
IT Cybersecurity Specialist**	GS-2210	12-15

***These positions must require IT knowledge and IT competencies, the work must be coded to include cybersecurity functions as supported by the job codes in the Guide to Data Standards and the NICE Cybersecurity Workforce Framework, 2017, and the cybersecurity work must be performed the majority of the time.*

Competency Based Qualification Standard

Qualification Standard
Information Technology Management, 2210
Alternative A

Table of Contents

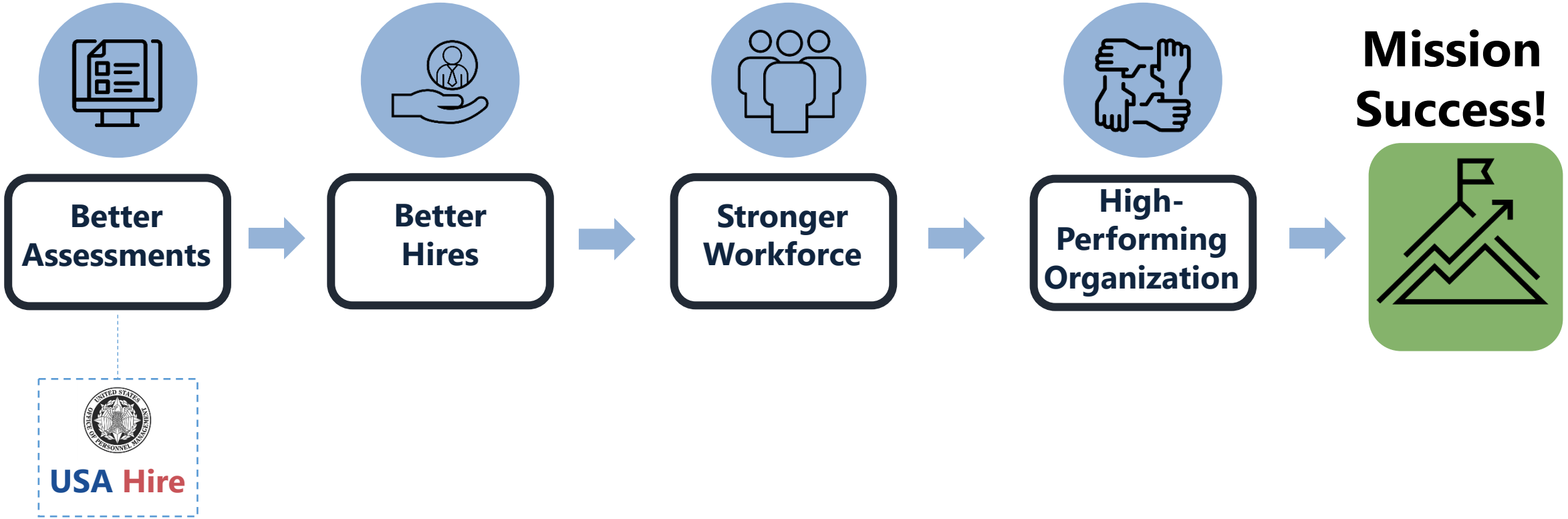
Aptitude Assessments

- *Coding challenges, work samples, biodata, cognitive ability tests, knowledge tests, personality assessments, interest inventories, and other types of assessments*
- *"The whole person approach should incorporate a mix of assessments that evaluate both cognitive and interpersonal competencies, as well as technical cybersecurity related knowledge, skills, and abilities."*

USA Hire℠

Transforming Government One Hire At A Time

USA Hire Can Help Identify Top Talent



USA Hire Standard GS-2210 Assessment

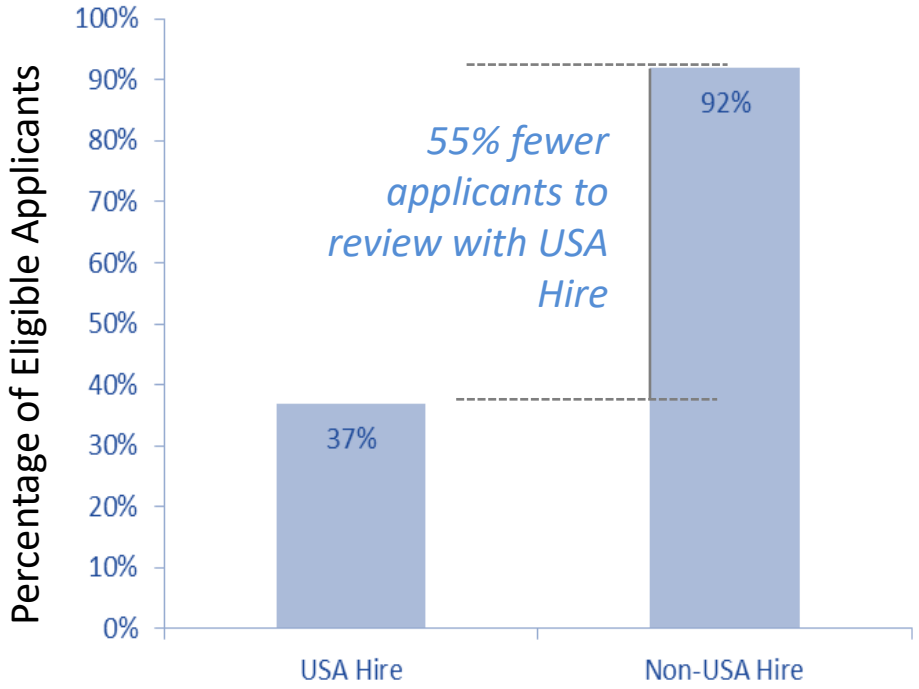
- Online, valid, high-quality assessments with cutting edge technology, designed with Fed HR & Assessment Experts
- Ready “off-the-shelf” & easy to implement
- Supports increased speed of hiring
- Easily administered to large volumes of applicants
- Applicant Satisfaction
- May be combined with a technical assessment

Range of General Competencies Assessed for the 2210

- Accountability
- Attention to Detail
- Customer Service
- Decision Making
- Flexibility
- Influencing/Negotiating
- Integrity/Honesty
- Interpersonal Skills
- Learning
- Reading
- Reasoning
- Self-Management
- Stress Tolerance
- Teamwork

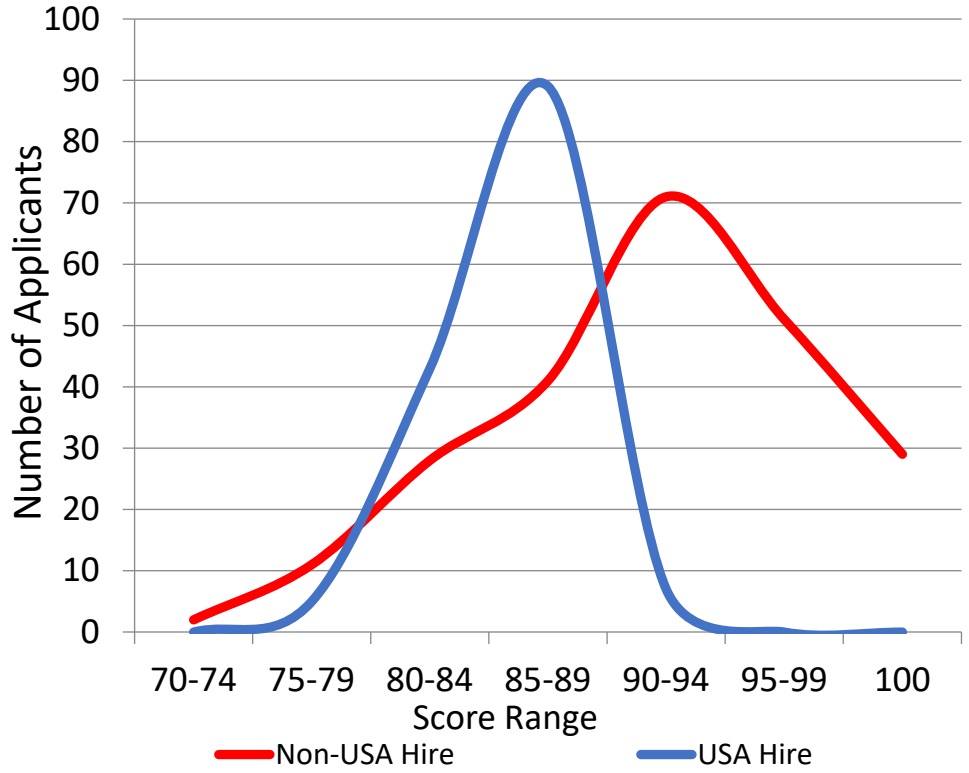
Case Study: USA Hire vs. Non-USA Hire

% Best Qualified After Assessment



Findings: USA Hire results in significantly fewer applicants for HR review, **reducing the time required to review applicants by 10 hours.**

USA Hire/Non-USA Hire Score Distribution



USA Hire provides a **more 'normal' score distribution**.
Self-assessment skews scores to high end of range.

USA Hire℠
Transforming Government One Hire At A Time

Future State of Assessments

SIOP White Paper Series

SIOP SOCIETY for INDUSTRIAL and ORGANIZATIONAL PSYCHOLOGY
SCIENCE FOR A SMARTER WORKPLACE

Artificial Intelligence in Talent Assessment and Selection

Neil Morelli

- classification: assigning things to a group based on their similarity to previously labeled groups;
- clustering: determining potential groups from unlabeled data;
- regression: predicting a number based on a known relationship;
- identifying patterns between variables: experimenting with potential relationships within data to discover patterns.

	Supervised	*Unsupervised*
Categorical	Classification	Clustering
Continuous	Regression	Identifying patterns

Figure adapted from Soni (2018)

Q&A

Contact Information

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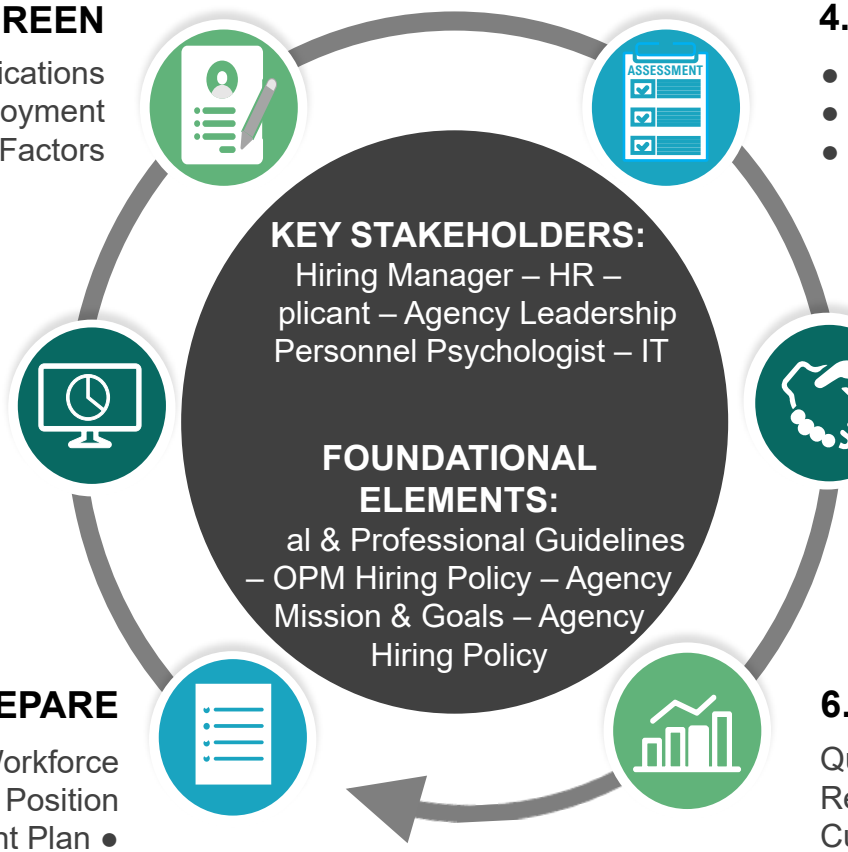
Additional Slides

OPM's 6-Point Assessment Strategy



3. SCREEN

- Minimum Qualifications
- Conditions of Employment
- Selective Placement Factors

4. ASSESS

- General Competencies
- Technical Competencies
- Multiple Hurdles

2. ATTRACT

Agency Website ● Job Opportunity Announcements ● USA Jobs ● Job Fairs/Recruiting Events ● Realistic Job Previews ● Internet Searches (e.g., Google) ● U.S. Department of Labor CareerOneStop/O*NET Online

5. SELECT

- Verification
- Best Fit

1. PREPARE

Strategic Planning ● Workforce Planning ● Job Analysis ● Position Description ● Recruitment Plan ● Assessment Plan ● Assessment Development ● Evaluation Plan

6. EVALUATE

Quality of Hire ● Time to Hire ● Resources/Cost to Hire ● Turnover ● Customer Satisfaction ● Employee Engagement ● Diversity ● Organizational Performance

Key Assessment Considerations:

- Position(s) being filled
- Applicants anticipated
- Competencies assessed
- Future use of assessment(s)
- Cost of a bad hiring decision
- Satisfaction with current hires
- Prior litigation
- Union involvement
- Hiring authority
- Hiring manager/SME involvement
- Time and resources available

Guiding Assessment Principles:

- Applicant friendly
- Quality focused
- Time efficient
- Cost effective
- Inclusive

Sample Assessment Options:

- Structured Interview
- Knowledge Test
- Work Sample/Writing Assessment
- Occupational Questionnaire
- Reference Check

Designing an Assessment Strategy

Job Analysis - *A systematic examination of the tasks performed in a job and the competencies required to perform them.*

Occupational Questionnaire - *Task- and competency-based self-report questionnaires used to screen and rank applicants based on their training and experience.*

Accomplishment Record - *Applicants provide a written description of a situation to illustrate their proficiency in critical job-related competencies. Evaluated by a panel of trained raters against competency-based benchmarks. These can also be used as writing samples.*

Structured Interview - *Panel interview where all candidates are asked the same job-related questions (often competency-and behavioral-based). Interviewers use detailed rating scales, evaluating all candidates according to the same standards.*

Job Knowledge Test - *Comprised of specific questions developed to determined how much the candidate knows about particular job tasks or responsibilities. An example is the HackerRank Code Challenge.*

Situational Judgment Test - *Presents applicants with a description of a work problem or critical situation, and asks them to identify how they would deal with it (can be paper, computerized, or video-based format). An example is USA Hire.*

Step 1: COLLABORATION WITH HR, SMEs, AND IOPs TO IDENTIFY *WHAT* TO ASSESS (A.K.A., the Job Analysis)

- What work (tasks/duties and responsibilities) is performed on the job?
- What competencies (KSAs) are needed to do the work?

Step 2: DESCRIBE YOUR HIRING SITUATION

- What is the available budget, timeframe, and volume of applicants for assessment?
- Will you develop your own customized assessment tool or purchase from a vendor?
- What level of expertise is available to develop and to implement the assessment process?

Step 3: DETERMINE HOW TO ASSESS

- Choose the job-related competencies you will assess (based on Step 1)
  - Focus on the most critical competencies required upon entry
- Review assessment tools that are already available or can be developed to assess the competencies with Assessment expert (I/O Psychologists)
  - Some tools are better than others for measuring specific competencies
  - Make sure the assessment tool is reliable and valid

Step 4: BUILD AN ASSESSMENT PROCESS

- Decide how to score the assessment(s). *Assessments used with a direct hire authority should be pass/fail and should not be used to rate and rank candidates*
- Choose the order in which the assessments will be administered

Step 5: EVALAUTE ASSESSMENT PROCESS

- Evaluate the effectiveness of the assessment used and hiring manager satisfaction. Make any needed changes to your assessment approach

Cybersecurity Direct Hire Authority FAQs

24. How do the new qualification and assessment policy impact filling positions under direct hire authorities?

There is no change to how agencies use direct hire authority. Appointments to competitive service positions must be made from individuals who meet OPM qualifications, with limited exceptions. When filling positions under direct hire authorities, agencies must follow the specific requirements of the authority being used. Agencies must ensure selectees meet the qualification requirements of the position through meeting the education and/or experience requirements described in the OPM Qualification Standard for the occupation at the grade level of the position being filled. Agencies have the option to verify, through use of a passing grade assessment, that an individual has the right competencies/KSAs to be successful in the position. This additional assessment is optional. Under direct hire authority, further assessment for rating and ranking is not done.

USING THE CYBER CAREER PATHWAYS TO INFORM RECRUITMENT

Presented By: Megan Caposell, DHS/CISA

Federal Cyber Workforce Management and Coordinating Working Group Tri-Chairs:
Megan Caposell (DHS CISA)
Matt Isnor (DoD)
Chris Paris (VA)

July 27, 2021

Federal Cyber Workforce Management & Coordinating Working Group

Who?

Working Group of cyber workforce representatives from **22 of 24 CFO Act Federal agencies**

What?

The WG operates with the ultimate intent of collectively

- Developing baseline cyber workforce requirements and career resources
- Merging disparate federal cyber workforce efforts
- Developing and promoting cyber workforce guidance and best practices
- Standardizing federal implementation of the NICE Framework.

Why?

Federal cyber workforce development is complicated, uneven in its focus, and lacking foundational principles and access to common resources…encouraging the current practice of reinventing competing cyber workforce development strategies in various stovepipes.

- Cyberspace Solarium Commission, “Growing a Stronger Federal Cyber Workforce”

Practical Implementation of Cybersecurity Workforce Framework – A New Way for Business

Workforce Planning

Position Descriptions

Data Analytics and Manpower

Classification

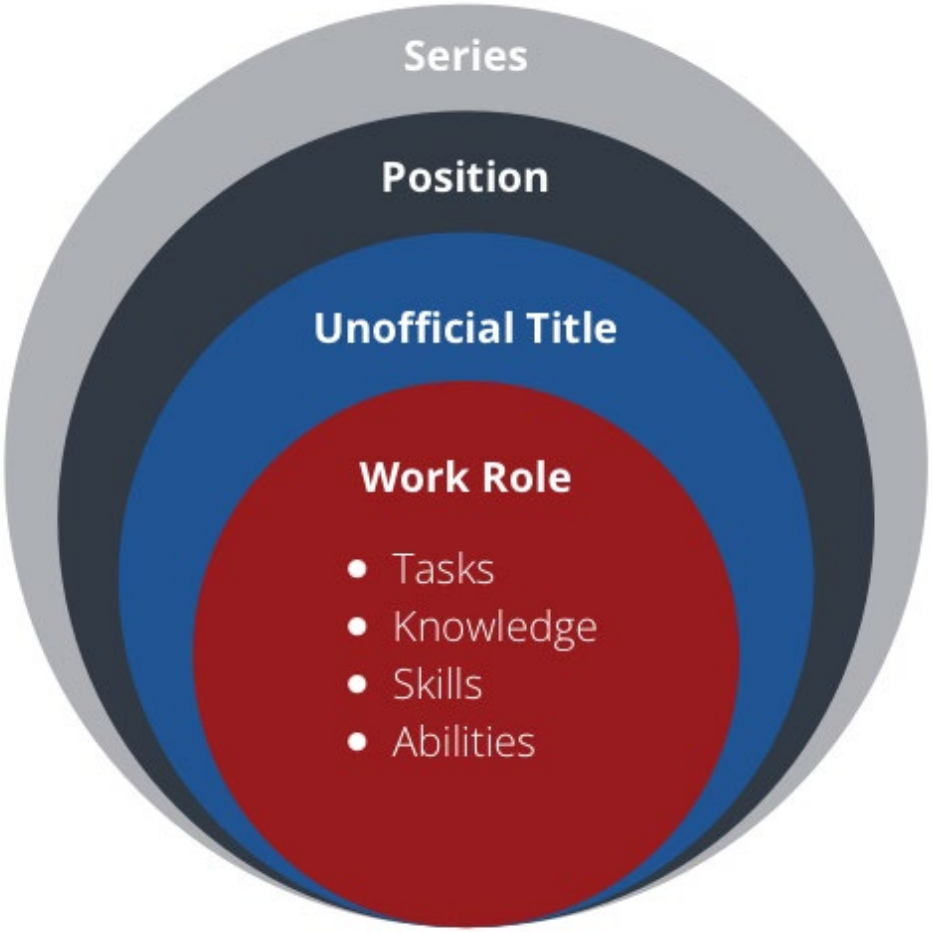
Training and Professional Development

Recruitment Marketing and Outreach

Skills Readiness Assessments

Aptitude Assessments

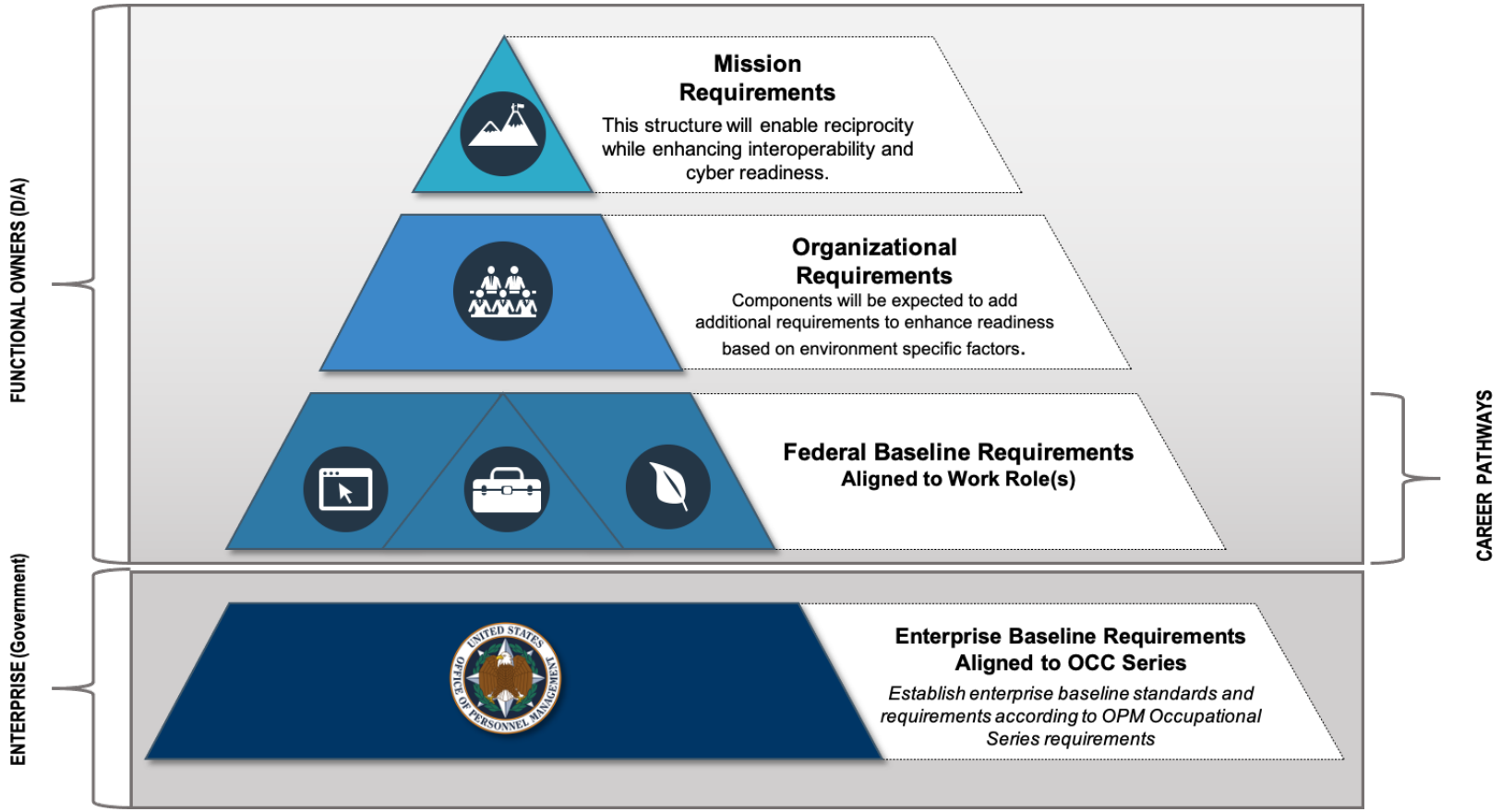
Why are Work Roles important?



Work Roles provide insight and requirements beyond what's currently offered in existing Occupational Series, Parentheticals, and official Position Titles.

This insight paves the way for targeted recruitment, training, career development, retention strategies, and more.

Building Federal-wide Standards



Position Description

OF-8

Cyber codes aligned to PD

Major Duties

Work role definition and specific tasks employed by position.

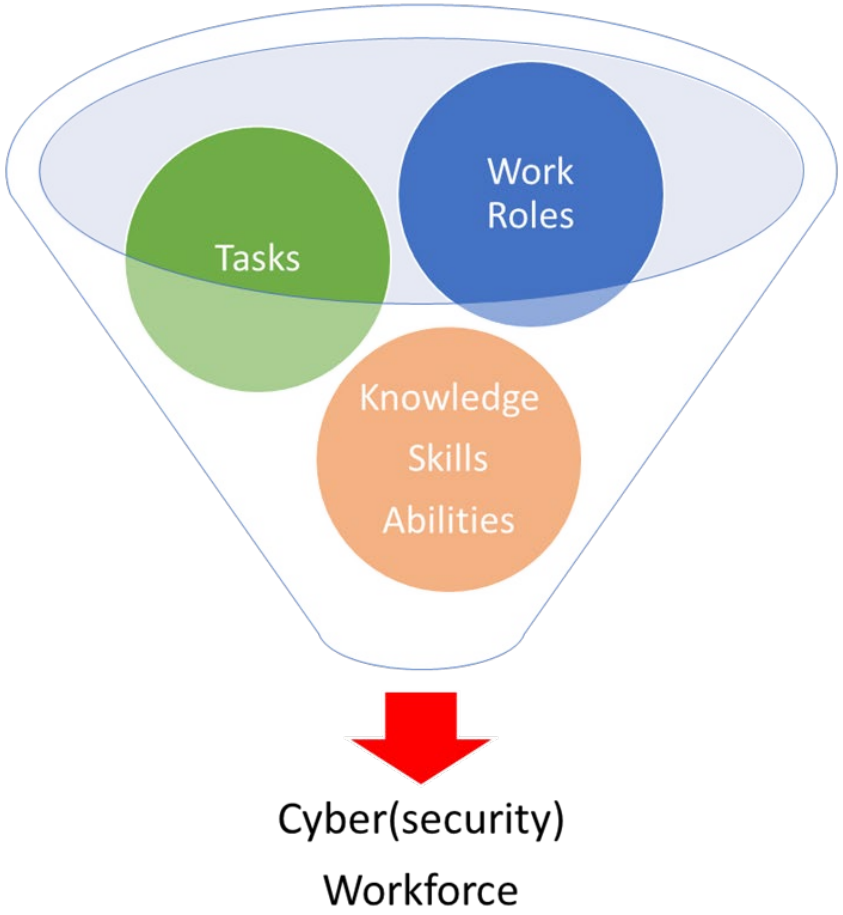
Knowledge Required

Specific Knowledge, Skills, and Abilities employed by the position.

NICE Framework

The NICE Framework is a nationally focused resource that establishes a **lexicon** for categorizing and describing **work** and **work roles** that require **integrated cybersecurity responsibilities** and **education**.

Using common terms and language helps to organize and communicate the work to be done and the attributes of those that are qualified to perform that work. In short, it helps us **identify the Cyber Workforce.**



What are Work Roles?

Work roles describe a distinct set of activities and attributes needed for the successful execution of work. A person may perform one or more work roles within their assigned position, billet, or contracted service requirement.

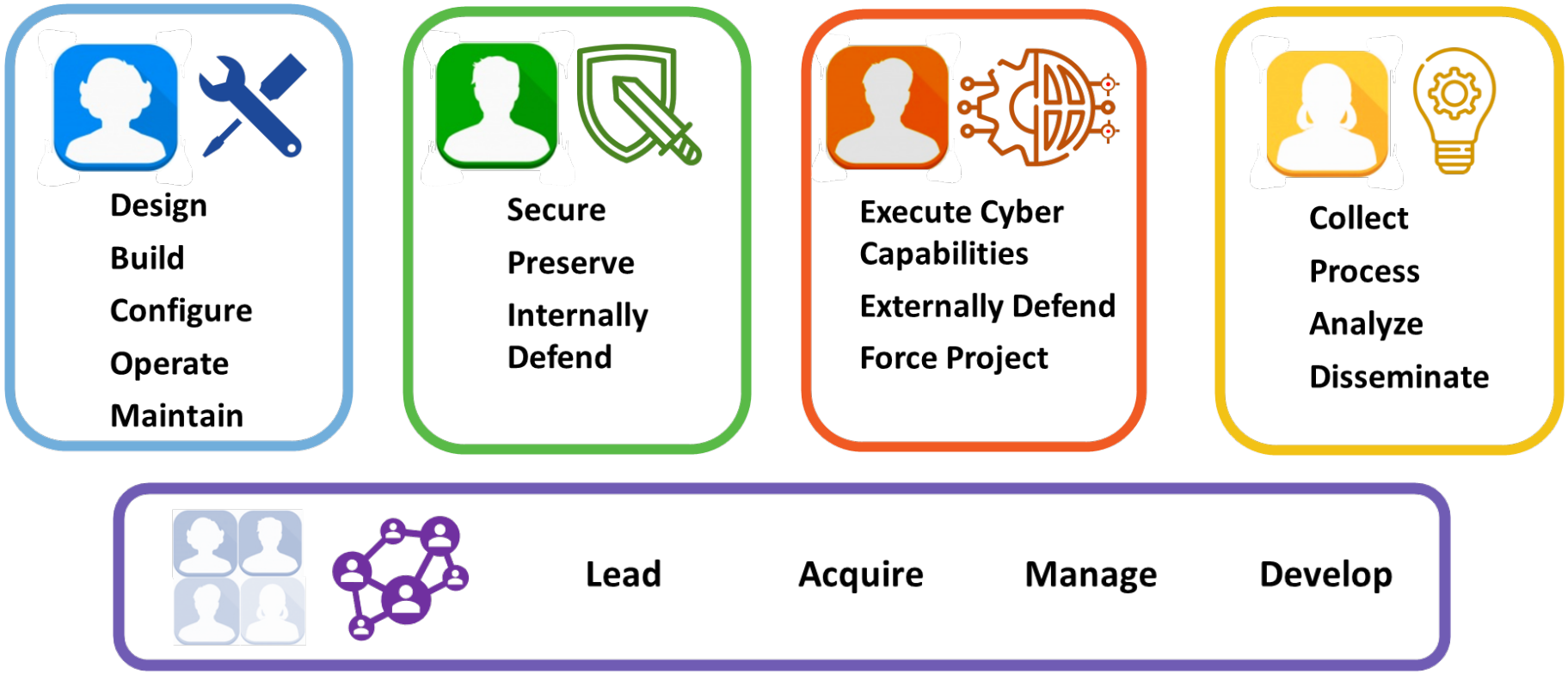
Work Roles are comprised of:

- Knowledge
- Skills
- Abilities
- Tasks

Cyber Workforce Skills

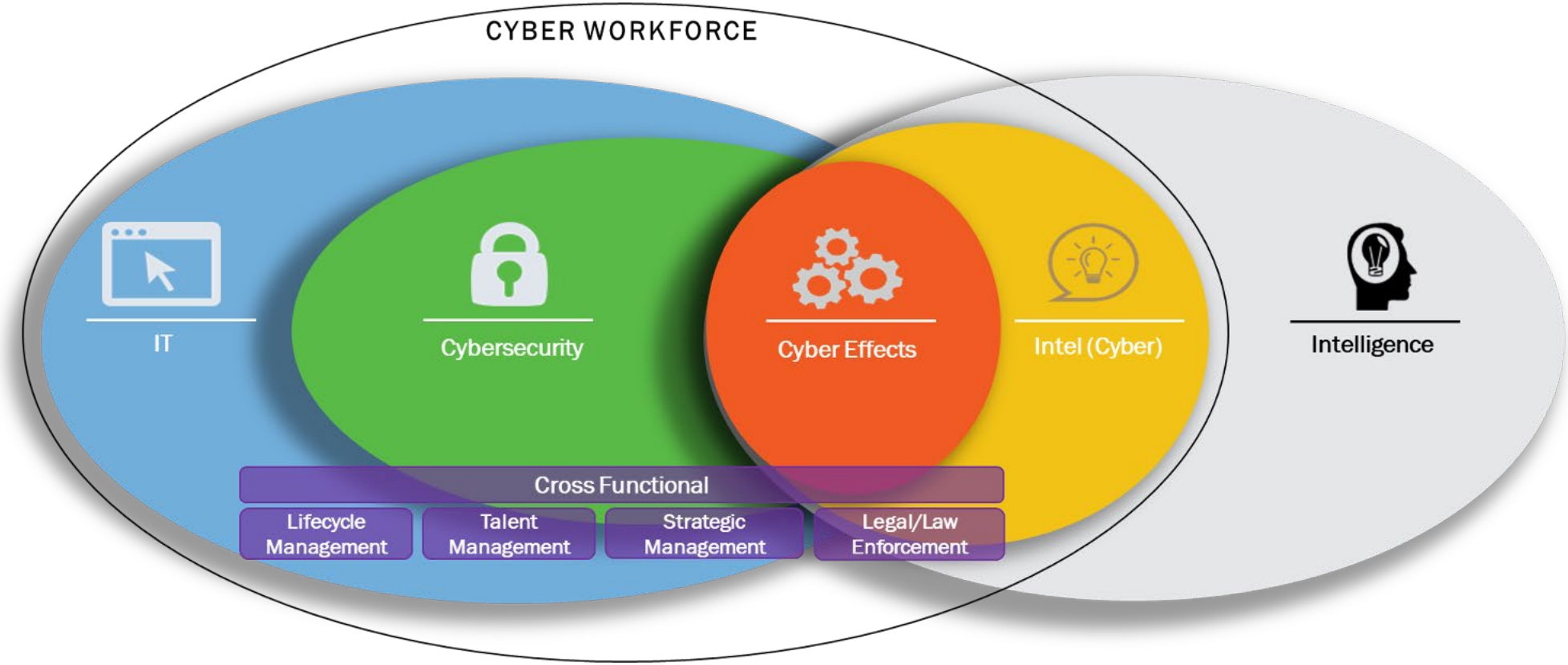
Work roles and content included in the NICE Framework do not only apply to those fully embedded in the cybersecurity domain.

Work Roles encompass the skills needed to:



Cyber Workforce - Skill Communities

The Cyber Workforce is comprised of five (5) primary skills communities: Information Technology (IT), Cybersecurity, Cyber Effects, Intel (Cyber), and Cross Functional.



Cyber Workforce - Work Roles

IT

- Data Analyst (422)
- Database Administrator (421)
- Enterprise Architect (651)
- Knowledge Manager (431)
- Network Ops Specialist (441)
- Requirements Planner (641)
- R&D Specialist (661)
- Software Developer (621)
- System Administrator (451)
- Systems Developer (632)
- Tech Support Specialist (411)
- Sys T&E Specialist (671)

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Cybersecurity

- Authorizing Official (611)
- COMSEC Manager (723)
- Cyber Defense Analyst (511)
- Cyber Def. Forensics Analyst (212)
- Cyber Def. Incident Res. (531)
- Cyber Def Infra. Spt. Spec. (521)
- Info Sys. Sec. Developer (631)
- Info Sys. Sec. Mgr. (722)
- Secure SW Assessor (622)
- Security Architect (652)
- Security Control Assessor (612)
- Systems Security Analyst (461)
- Vulnerability Analyst (541)

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Cyber Effects

- Cyber Operator (321)
- Cyber Ops. Planner (332)*
- Exploitation Analyst (121)*
- Partner Integr. Planner (333)
- Mission Assess. Spec. (112)
- Target Network Analyst (132)
- Target Developer (131)
- Threat/Warning Analyst (141)*

REQUIRED: USC Title 10/32/50

**May be used by Title 5 Department/Agencies for defensive purposes within a SOC.*

8

Intel (Cyber)

- All Source Analyst (111)*
- All Source Collection Mgr. (311)
- All Source Collection Reqs. Mgr. (312)
- Cyber Intelligence Planner (331)
- Multi Disc. Language Analyst (151)

REQUIRED: USC Title 50

*May be used by Title 5 Department/Agencies for defensive purposes within a SOC.

5

Lifecycle Management: IT Invest/Portfolio Mgr. (804), IT Project Mgr. (801), Product Support Mgr. (803), IT Program Auditor (805)	5
Talent Management: Cyber Instructor (712), Cyber Instr./Curriculum Dev. (711), Cyber WF Development & Mgr. (751)	3
Strategic Management: Cyber Policy/Strat Planner (752), Executive Cyber Leadership (901), Privacy Compliance Mgr. (732)	3
Legal/Law Enforcement: Legal Advisor (731), Cyber Crime Investigator (221), Forensic Analyst (211)	3

Career Pathways

Cyber Defense Analyst (511)

Role Overview ☑
- Description
- Occupational Series
- Pairings
- Related Titles
- General Schedule

Progression & Mobility ☑
- On / Off Ramps

Suggested Qualifications ☑
- Education
- Certifications

Cyber Defense Analyst (511)

- Core Tasks ☑
- Core KSAs ☑
- Core Competencies ☑
- Task to KSA Mapping ☑
- Task Permutations ☑

Career Pathways Tool

NICCS™
NATIONAL INITIATIVE FOR CYBERSECURITY CAREERS AND STUDIES

Training | Formal Education | Workforce Development | About NICCS

Workforce Development » Cyber Career Pathways Tool

Cyber Career Pathways Tool

Welcome to the Cyber Career Pathways Tool!

This tool presents a new and interactive way to explore work roles within the Workforce Framework for Cybersecurity (NICE Framework). It depicts the Cyber Workforce according to five distinct, yet complementary, skill communities. It also highlights core attributes among each of the 52 work roles and offers actionable insights for employers, professionals, and those considering a career in Cyber.

The Cyber Career Pathways Tool User Guide provides additional information on tool features and functionality.

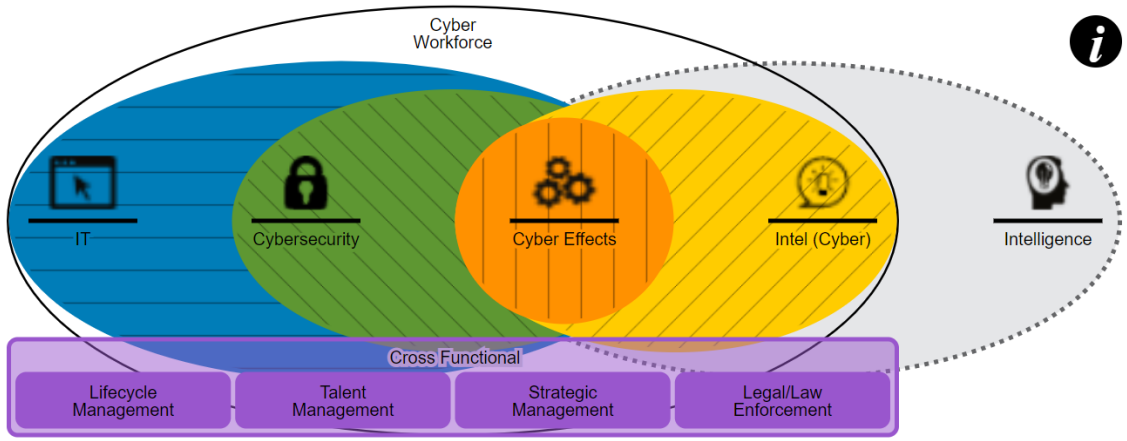
To start, select a work role below, or enter keywords in the search bar.

All | Federal Core Relationships

Toggle the top 5 relationships based on all or core shared tasks, knowledge, skills, and abilities.

Select a work role

Begin typing to search work role names.



Future Plans

V1 (Released in August 2020)
- Cyber Skill Communities and their alignment to work roles
- Relational views between work roles and the ability to compare roles based on overlapping Knowledge, Skills, Abilities, and Tasks (KSAT)
- Core KSAT

V2 (Released in February 2021)
- Alignment to Federal Occupational Series
- Work Role Pairings
- On/Off Ramps
- Related functional and position titles

Future Releases
- Aligned Training and Certifications
- Core Competencies
- Core Task Behavioral Indicators at Entry, Intermediate, and Advanced proficiency levels
- Choose Your Path career planning functionality
- Links to open federal announcements aligned to work roles

Federal Cyber Workforce Initiatives for CY21

- ☐ Cyber Career Quiz
- ☐ USAJOBS Announcements by Work Role
- ☐ Open Opportunities by Work Role
- ☐ Work Role-specific Learning Objectives
- ☐ PD/JOA Guidance and Templates
- ☐ Behavior-based Interview Questions and Assessments
- ☐ Criteria and Requirements for Aptitude / Skills-based Assessments
- ☐ Best Practices Whitepaper for Implementing the NICE Framework
- ☐ Standardized Federal Cyber Coding and Mapping Guidance

Stay Connected

For more information on the Federal Cyber Workforce Management and Coordinating Working Group, visit the OMB Max page at:

https://community.max.gov/x/uJ37YQ

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NICE Challenge Project

The Workforce Experience Before the Workforce

Bridging the Academia & Cyber Workforce Gap

Dr. Tony Coulson, & James Ashley III

NICE Challenge Project @ CSUSB

Generalities Disclaimer…

Some academic institutions work aggressively to reduce the gap between academia and the cyber workforce.

For example, academic institutions who participate in…

- ✓ CyberCorps®: Scholarship for Service (SFS) Program
- ✓ National Centers of Academic Excellence in Cybersecurity (NCAE-C) Program

The Academia & Cyber Workforce Gap

What is "the gap"?

*The time between when a student graduates to when they can **competently** perform **tasks** in a **work role**.*

What contributes to "the gap"?

When students have minimal to no…

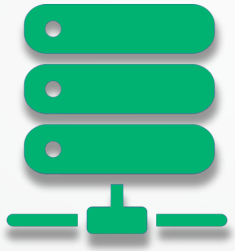
- *Challenging/Stimulating Hands-On Experiences*
- *Culminating Hands-On Experiences*
- *Awareness of the Cyber Workforce Landscape (i.e., Work Roles, Job Types, Associated Tasks)*

NICE Challenge PROJECT

NICE Challenge Project

Platform

- We manage the hardware, hypervisors, and software at no cost to U.S. EDU
- Powerful cross platform web application, no downloads required
- Deploy challenges, access VM consoles, manage user accounts, & review results



Environments

- Full scale context rich business environments tailored around NICE Framework Categories
- Fictional business organizations & employees
- Virtualized networks, servers, desktops, & specialized equipment

Challenges

- Competency based assessments focused on real world problems & context
- Maps to NICE Framework Tasks, Work Roles, KSA, & CAE KUs
- Designed to capture useful data for actionable metrics & analytics

Competency Measurement through Real-World Challenges

Challenge Design Process

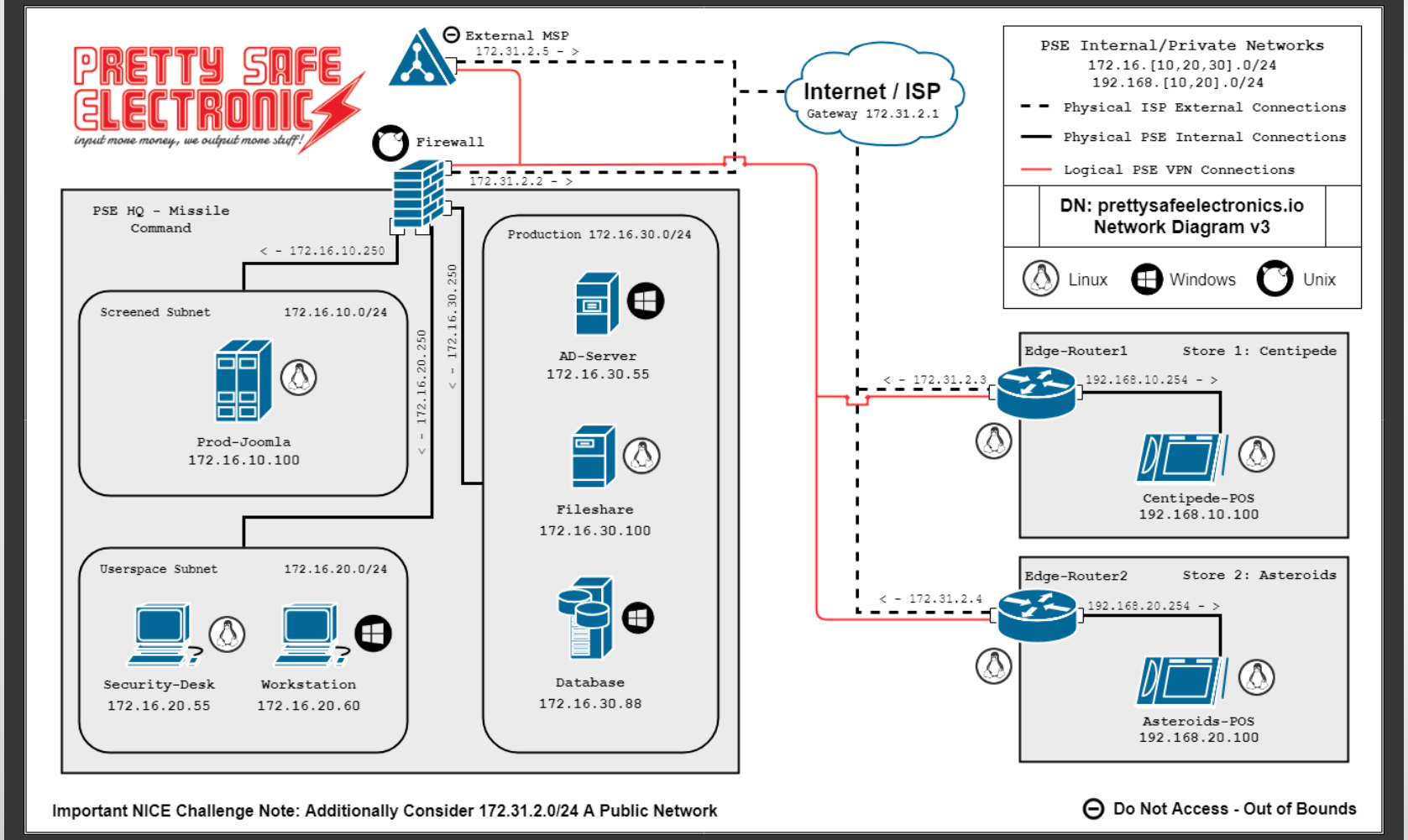
Each challenge is designed by using a **work role** as a lens to view a **task** in which a professional must be **competent**.

Example: How would a ***systems administrator*** experience ***install, update, and troubleshoot systems/servers*** in their daily work?

Challenge Competency Measurement

Each challenge takes place in a contextualized environment where a student attempts a **task** as a **work role** in a real-world scenario and generates useful data.

The instructor, using this data, then decides if the student navigated the challenge **task competently** as that **work role**.



Protect & Defend

- Big Box Retailer with Self-Hosted Ecommerce Website
- HQ + Two Retail Locations
- 25 Employees
- 10 Direct Co-Workers (Business Owner – Online Customer Support)
- 6 Interconnected Networks
- Site-to-Site Encrypted VPN Tunnels
- Automated Attack Engine
- Managed Service Provider Health Checks
- Transaction Generators*


Ricardo Cortes
Business Owner


Jacqueline Smith
General Manager


Mitch Anderson
Assist. Manager


Shawn O'Keefe
Bookkeeper


Naomi O'Keefe
Human Resources


Ashley Steele
Sr. Systems Eng.

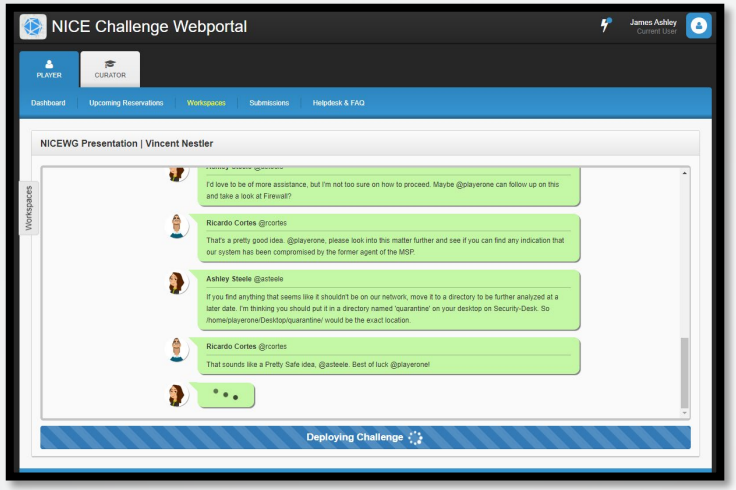

Jacques Raffin
Internal IT/Support


Jan Cortes
Online Customer Support

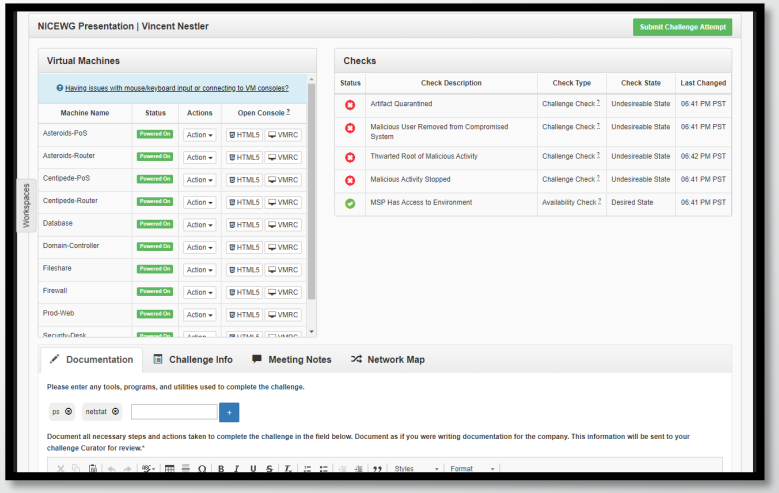

Tim Clark
Online Customer Support

Core NICE Challenge Workflow

Deploy Challenge



Attempt Challenge



View Results/Curator Feedback

How Are the NICE Challenges Used?

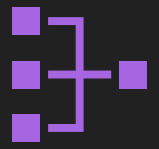
- **Capstone Experiences/Exams** - Work role based experiences for students approaching graduation to determine if they are ready for the workforce
- **Challenge Labs** - Next-level labs for upper-division course work, extra credit, and all-star students
- **Competition Preparation** - Exercises for teams and individuals preparing for cybersecurity competitions
- **Free Play** - A wide selection of work role based experiences for students to try out and see what suits them
- **Instructional Aid** - A visual and functional aid in class for showing students real-world issues and how to handle them
- **Competitions** - The content of and evaluation system for small scale competitions

NICE Challenge Progress

485+ Educational Institutions

850+ Educational Faculty Sign-Ups

100+ Unique NICE Challenges



12 NICE Framework Work Roles

Cyber Hires Research Pilot

Interested in Using the NICE Challenges for New Cyber Hires?

Contact Dr. Vincent Nestler at
vnestler@csusb.edu

Pilot Note: Participants must be within the United States

Contact Us

James Ashley – jashley@nice-challenge.com

Dr. Tony Coulson – tcoulson@csusb.edu

Dr. Vincent Nestler – vnestler@csusb.edu

NICE Challenge Project – www.nice-challenge.com

2021 Federal Cybersecurity Workforce Webinar Series

Tuesday, October 26, 2021, 1:30-3:00 p.m. ET

"Introducing Cybersecurity Apprenticeships in Federal Environments"

Tuesday, January 25, 2022, 1:30-3:00 p.m. ET
Topic to be determined

2022 Federal Cybersecurity Workforce Summit

SAVE THE DATE

Tuesday, April 26, 2022

- https://www.surveymonkey.com/r/JJKHWXD