NICE Cybersecurity Workforce Framework Use Cases and Success Stories
March 18, 2020
Improves communication about how to identify, recruit, develop, and retain cybersecurity talent.

Categorizes, organizes, and describes cybersecurity work.

Can be used by:
- Public and Private Sector Employers
- Education Providers
- Technology Developers
- Current and Future Cybersecurity Workers
- Training and Certification Providers
- Policymakers
## Cybersecurity Workforce Categories (7)

### Specialty Areas (33) – Distinct areas of cybersecurity work

### Work Roles (52) – The most detailed groupings of IT, cybersecurity, or cyber-related work, which include specific *Knowledge, Skills, and Abilities (KSA’s)* required to perform a set of *Tasks*.

### NICE FRAMEWORK - NIST Special Publication 800-181

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NICE FRAMEWORK USE CASES

Use Cases describe specific situation in which the NICE Framework can be used.

- Development of Position Descriptions
- Performing Workforce Assessments
- Talent Management
- Creation of Learning Outcomes for Courses
- Validation of Knowledge, Skills, and Abilities for Awarding Credentials
- Career Pathway for Learners and Job Seekers
The NICE Framework Resource Center offers a variety of resources for different stakeholders:

**101 Resources**
- Search the NICE Framework
- One Pager
- Video Tutorial

**Employer Resources**
- DoD Cyber Workforce
- Position Description Tool
- Capability Indicators

**Education/Training Provider Resources**
- Course/Curriculum Mappings
- Certification Mappings
- Training Catalog

**Learner Resources**
- Pathways
- Career Profiles
- Hands-on Activities

Visit [nist.gov/nice/framework](nist.gov/nice/framework) for more information.
iQ4 Mission

**iQ4 Corp** is creating a supply demand skills marketplace

**Finding and Fueling Growth … Transforming the Learning Economy**
- optimizing investment in finding, developing and retaining talent.
- disrupting the status quo of buying a talent pipeline … by building one at scale, using our tooling, models and content
- fulfilling potential of our enterprise, academic and student engagements.
- fixing the skills gap that exists internally within the enterprise, public sector and schools is at the core of our company and social markets …
JPMC is rolling out iQ4’s skills passport to 250,000 employees...
Establish three beachheads

- **Industry/Education** – Virtual Apprentice Challenge
- **Enterprise** – JPM Chase
- **Students** – National Student Clearinghouse
Transforming the talent economy

Talent Pipeline and Pathways platform, life-long learning, learner empowered mobility, education skills-gap curriculum, enterprise source/build/retain talent.
The SHAPE
“My T”

Mehialc izzoR - Business Analysis Associate
iQ4 Learner Passport
Multi – Source Assessment
Skills Analytics
**STUDENT DASHBOARD**

- Auto generation of competencies, knowledge, skills, abilities, credentials, educational verification, work experience, personal interests.
- Analytics to understand skills gap, course recommendation, Career Pathways and jobs
- Life long learning 5Ps - measure and capture skills proficiencies (multi source), progression, pathways, potential and purpose in a “Digital Persona”

**EDUCATION DASHBOARD**

- Ability to define course to competency to skills mapping, using NICE as the core standards taxonomy framework and data model
- Supply / Demand career pathways gap analytics for curriculum and student development
- Define job families, role profiles, competencies, knowledge, skills, ability, credentials, proficiencies based on standards-based taxonomy

**ENTERPRISE PIPELINE DASHBOARD**

- An Analytics Pipeline Dashboard to discover talent, assess skills, identify skills gaps, recommended learning and development
- A Talent Search Engine to source, assess and build talent, suggest courses for individuals and academic institution development
- Define job families, role profiles, competencies, knowledge, skills, ability, credentials, proficiencies based on standards-based taxonomy

**ENTERPRISE RE-SKILLING DASHBOARD**

- Learner dashboard to suggest courses leading to performance improvement, career pathways to retain talent and “T-Shaped” data visualization to speed use of the tool and effectiveness in user experience (Net Promoter Score: 8)
- Analytics Dashboard to optimize supply and demand of skills to roles, leverage strengths for agile and gig economy, and support development to drive productivity.
IQ4 SKILLS MANAGEMENT PLATFORM - VALUE PROPOSITION TO INDUSTRY

**RE-SKILLING**
ROI is the cost and time from training using internal Apprenticeship & Taxonomy Vs cost of restructuring. Some value to reputation cost plus any additional recruitment to build numbers.

**INTERNAL MOBILITY**
ROI is cost of attrition Vs improvement through more career opportunities (#1 or 2 reasons why people leave). 10 basis points.

**LEARNING REQUIREMENTS & BUDGET**
Greater precision of training requirements & costs. ROI is P&L impact through budget accuracy.

**SKILLS REPOSITORY**
Knowledge of available skills and capabilities. ROI will depend of value of the knowledge.

**COST OF NEW HIRES**
ROI through broader talent pool using Virtual Apprenticeship will increase available pool of.

**INTERNAL PROMOTION**
Promote 1st, Hire 2nd. ROI = Average rem cost of newly promoted employee Vs Average cost of new hire (25%)

**INDIVIDUAL LEARNING PLAN & PATHWAYS**
ROI is the current cost of wasted training Vs cost of wasted training using Taxonomy & KRA model to pinpoint required training. (20%-30%)

**POTENTIAL ASSESSMENT**
What makes a High Potential employee using Graph Analytics & skills progression. ROI is value placed on increasing the number & predictability of HiPot employees.

**RECRUITMENT – COST OF ATTRITION**
Normal attrition level of new hires in first 2 years Vs Attrition using the Virtual Apprenticeship & Mentoring model. ROI is cost of improving 2 year attrition – 10 basis points.

**RECRUITMENT – TIME TO PRODUCTIVITY**
Normal Average time to productivity Vs T2P using Virtual Apprenticeship. ROI is the employment & training costs.

**Key business metrics impacted will be:**
1) Attrition – This deals with the main reasons for leaving: Lack of training, progression, internal sponsorship Career
2) Average costs of employment
3) Cost of training – Cost, non-productive time, wasted training

ROI is cost of attrition Vs improvement through more career opportunities (#1 or 2 reasons why people leave). 10 basis points.
STUDENT DASHBOARD

Academic Records, Portfolio, Skills, Pathways

- Auto generation of competencies, knowledge, skills, abilities, credentials, educational verification, work experience, personal interests.
- Analytics to understand skills gap, course recommendation, Career Pathways and jobs.
- Life long learning 5Ps- measure and capture skills proficiencies (multi source) , progression, pathways, potential and purpose in a “Digital Persona”
EDUCATION DASHBOARD

Supply / Demand Skills Gaps Analytics

- Ability to define course to competency to skills mapping, using NICE as the core standards taxonomy framework and data model

- Supply / Demand career pathways gap analytics for curriculum and student development

- Define job families, role profiles, competencies, knowledge, skills, ability, credentials, proficiencies based on standards-based taxonomy
ENTERPRISE PIPELINE DASHBOARD

Finding & Building talent

- An Analytics Pipeline Dashboard to discover talent, assess skills, identify skills gaps, recommended learning and development
- A Talent Search Engine to source, assess and build talent, suggest courses for individuals and academic institution development
- Define job families, role profiles, competencies, knowledge, skills, ability, credentials, proficiencies based on standards-based taxonomy
ENTERPRISE RE-SKILLING DASHBOARD

Internal Re-Skilling

- Learner dashboard to suggest courses leading to performance improvement, career pathways to retain talent and “T-Shaped” data visualization to speed use of the tool and effectiveness in user experience (Net Promoter Score: 8)
- Analytics Dashboard to optimize supply and demand of skills to roles, leverage strengths for agile and gig economy, and support development to drive productivity.
Q & A
Workforce Transformation

Leveraging the NICE Framework to Build Effective Cybersecurity Training
ABOUT US

CyberVista is a cybersecurity workforce development company.

Founded in 2016, CyberVista’s mission is to build and strengthen organizations by providing cybersecurity professionals with the knowledge, skills, and abilities needed to drive growth and defense.
NICE Framework

**Benefits**

- Robust
  - Over 1,600 KSATs
  - 50+ Roles
- Good at helping define job descriptions or inventory roles

**Limitations**

- Unmanageable
  - Over 1,600 KSATs
  - 50+ Roles
- Doesn’t provide bridge to upskill/provide effective or measurable training
- Some KSAT’s are not well defined
  - K0015: Knowledge of computer algorithms
Steps

- Define the common core of cyber domains
- Organize the content based on
  - Subject
  - Prerequisite / Dependency
  - Levels
- Create Learning Objectives
- Match against the NICE KSAT’s
Training Development

Our work allowed us to define seven critical knowledge areas required across all cybersecurity roles. This formed the basis to develop an assessment and training program designed to ensure that cybersecurity teams are proficient in foundational concepts and skills across those skill categories.

These knowledge and skill areas were selected and aligned directly to the NICE Cybersecurity Workforce Framework (NCWF).
Every organization is different and has different goals. It’s important to work with organizations to understand their objectives and build training initiatives around their unique situations.
Workforce Audit

A Workforce Audit is an excellent entry point for organizations looking to determine what roles and skills your organization needs to achieve your goals.

SKILLS NEEDED:
- Voice Communications
- Mobile
- Cloud Computing
- Security
- Languages / Coding
- Network Components
- Architectures
- Vulnerability Analysis
- Password Auditing
- Exploitation Tools
- Sniffing & Spoofing
- Programming / Development
- Vulnerability Management

Entry Level
- Cybersecurity Specialist/Technician
- Cyber Crime Analyst
- Incident Analyst/Responder
- IT Auditor

Mid Level
- CS Specialist/Technician
- Cyber Crime Analyst
- Incident Analyst/Responder
- IT Auditor
- CS Analyst

Advanced
- CS Analyst (Management)
- CS Consultant (Management)
- CS Analyst (Specialist)
- CS Consultant (Specialist)
- Penetration/Vulnerability Tester (Man.)
- CS Architect
As the saying goes, you can’t improve what you don’t measure.

Within the Skills Gap Analysis, participants complete efficient assessments to identify specific strengths and weaknesses.
Training Deployment

Upskill, cross-skill, and reskill top talent.

- Mitigate immediate weaknesses across fundamental cybersecurity knowledge and skill areas
- Efficiently improve knowledge, skills, and abilities within specific roles
- Bolster career pathways for long-term retention and employee satisfaction

Our detailed taxonomy is aligned to the National Cybersecurity Workforce Framework from the National Initiative for Cybersecurity Education (NICE) led by NIST.
Action Report

‘Where do we go from here’ is clear.

The action report phase includes a written report packed with actionable takeaways that can drive immediate change within your cybersecurity and cyber-enabled workforce.

- Initiative prioritization based on end-state knowledge, skills, and abilities
- Training recommendations for filling remaining skills gaps
- Organizational structure, role, and career pathing recommendations
- Talent hiring plan for future growth
Accelerating the Sales Cycle Through Cyber Training at Palo Alto Networks

**Challenge:**
Palo Alto sought a comprehensive and fundamental training program to establish a base level of cybersecurity competency for their System Engineers (SE) team.

**Applying Critical Knowledge:**
CyberVista was able to deliver a Top Performer Analysis (TPA) to SE top performers so to inform PANW leadership of optimal content configuration. Once a knowledge baseline was established, the same diagnostic assessment was delivered to the rest of the SEs.

**Results:**
Over the course of eight weeks of live online instruction, the average score between the initial diagnostic exam versus the final completed at the end of the course, increased by 15.9 percent.
Cyber Talent Initiative

What we’re looking to accomplish...
By mitigating immediate weaknesses and reducing ambiguity across fundamental cybersecurity knowledge and skills, we will provide an actionable solution to recruit and train a world-class cybersecurity workforce.

- **Consistency**: Consistent training base of knowledge and skills, regardless of agency placement.
- **Measurable Results**: Data-driven outcomes, capturing trends and key metrics the Federal Government can use to evaluate staff.
- **Recruitment and Training**: Build a true baseline of necessary skills in order to make better informed decisions when gauging future talent.
Contact Us

Simone Petrella  
Chief Executive Officer  
703-345-6418  
simone.petrella@cybervista.net

Jung Lee  
Chief Product Officer  
703-345-6399  
jung.lee@cybervista.net

Enterprise Sales Inquiries  
844-55-VISTA (844-558-4782)  
sales@cybervista.net
Q & A
Thank You for Joining Us!

Upcoming Webinar: “The Role of the School Counselor in Promoting Cybersecurity Career Opportunities”

When: Wednesday, April 15, 2020 at 2:00pm EDT


[nsit.gov/nice/webinars](https://nist.gov/nice/webinars)