Chris Inglis
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Via e-mail: workforce@ncd.eop.gov

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Dear Mr. Inglis,

BSA | The Software Alliance[1] applauds your commitment to seeking input from the private
sector on efforts to strength the US cyber workforce – a concern BSA and its members
share and have been working to address.

BSA is the leading advocate for the enterprise technology sector. Our members are among
the world's most innovative companies and help to drive digital transformation by providing
the solutions that make businesses and governments more competitive and effective.
These services include cloud computing, customer relationship management, human
resources management, identity and access management, data analytics, manufacturing,
and infrastructure tools and services.

BSA shares your concern about the cyber workforce deficit, and in fact included cyber
workforce as a priority in [Enhancing Cyber Policy, Advancing Digital Transformation: BSA'S
2023 Global Cyber Agenda](#) in which we recognize that "the challenge of developing the
workforce of the future is also an opportunity to provide good-paying jobs, not just for
people with graduate or post-graduate degrees, but to people of all ages and
backgrounds." We also recommend policymakers "make significant investments in
broadening opportunities, promoting alternative paths (e.g., apprenticeships, boot camps,

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[1] BSA's members include: Adobe, Alteryx, Atlassian, Autodesk, Bentley Systems, Box,
Cisco, CNC/Mastercam, CrowdStrike, Databricks, DocuSign, Dropbox, Graphisoft, IBM,
Informatica, Intel, Kyndryl, MathWorks, Microsoft, Okta, Oracle, Prokon, PTC, Salesforce,
SAP, ServiceNow, Shopify Inc., Siemens Industry Software Inc., Splunk, Trend Micro,
Trimble Solutions Corporation, TriNet, Twilio, Unity Technologies, Inc., Workday, Zendesk,
and Zoom Video Communications, Inc.

retraining programs), improving training programs, and expediting the development of the diverse workforce necessary to secure our shared future."

BSA recognizes the key role of the Office of the National Cyber Director (ONCD) in raising the profile of this challenge and shares your goals. BSA suggests that ONCD lead the development and implementation of the National Cyber Workforce Strategy (including coordinating and deconflicting) but that, to the extent practicable, ONCD task agencies with leading the efforts contained in the National Cyber Workforce Strategy. While agencies could not increase the profile of these issues or coordinate the entire federal enterprise in the same way ONCD can, agencies will be in a better positioned to complete the efforts.

To ensure the National Cyber Workforce Strategy is a success, BSA advocates ensuring investments in the Nation's cyber workforce are commensurate with the challenge, which BSA and ONCD agree is large and growing.

Finally, below, BSA provides example of programs that are currently working to address the challenges you identify in this RFI. BSA would be happy to discuss these and other programs and invites the US Government to partner (or continue to partner) with BSA and its members on these programs.

## I. Cyber Workforce

Most private sector entities have been investing in cyber workforce for years but given the 700,000-worker shortfall, still find it challenging to meet their growing needs. Even if all public and private sector entities perfected their recruitment and hiring, career development and retention, and data collection, there are simply not enough workers today with the skills employers need. BSA looks forward to working with US Government, state, local, tribal, and territorial governments, as well as other stakeholders, to increase the supply of workers.

### A. Recruitment and Hiring

Three good examples of recruitment and hiring programs are CrowdStrike's Return to Work Program and its partnership with American Corporate Partners as well as SAP's NS2 Serves Program.

CrowdStrike's Return to Work Program specifically promotes consideration of candidates that have gaps in their work histories, such as caretakers or those who have changed careers. CrowdStrike has found that this program attracts people from communities that are underrepresented in cybersecurity and provides them with opportunities to join the cyber workforce. It also presents opportunities for reskilling or upskilling, and improving pathways to careers in cybersecurity, including internships and apprenticeships.

CrowdStrike, along with other organizations, has partnered with American Corporate Partners (ACP), an organization that provides US veterans with career guidance as they transition back to civilian life, addressing the challenge of enabling veterans to more easily transition into the cyber workforce. With the help of professional mentor volunteers, ACP's program offers veterans important tools for long-term career development and the chance to create a better post-service life. CrowdStrike also partners with Hire Military which helps veterans find careers after retirement and offers internship opportunities. Additionally, CrowdStrike is a partner with Operation Motorsport which finds educational and industry opportunities for medically retiring Service Members that aid their recovery and rehabilitation. In total, approximately 7% of CrowdStrike's employees have a military service background.

SAP launched its NS2 Serves Program to help support veterans and address the cyber workforce challenges like those identified in this RFI. The NS2 Serves Program empowers veterans and supports integration into civilian life by providing free information technology training and employment assistance. Through this program, SAP provides students of all technical levels 8-12 weeks of intensive, world-class software solutions training and certifications, which lead to good-paying careers.

## B. Sub-Area: Career Development and Retention

### 1. Develop or align to commonly-accepted work roles and related competency areas (model career pathways)

The National Institute of Standards and Technology (NIST) Special Publication 800-181, Workforce Framework for Cybersecurity (NICE Framework) contains commonly-accepted work roles. Work roles and competency areas continue evolve and ONCD should consider directing NIST to engage with industry to determine if NIST should update or streamline the document.

### 2. Improve education and training and the assessment of cyber knowledge and skills

BSA suggests the US Government require all colleges and universities that receive federal funds and that provide instruction on software development, to include in their software development curriculum appropriate instruction on secure software development processes, secure capabilities, and secure lifecycle management. This recommendation would address, if only in part, the [NSTAC Report to the President on Software Assurance in the Information and Communications Technology and Services Supply Chain](#), which found that "security is foundational for computer science, so that before something is envisioned, designed, or coded, the developer understands the threats the resulting software needs to meet, architects it to mitigate those threats, and keeps the code free (or largely free) of coding errors that can compromise security."

Incorporating secure design fundamentals as a core component in college and university education is critical to addressing a root cause of the cybersecurity workforce shortage. As software continues to proliferate across all industries, sectors, and civil society, we only exacerbate the cybersecurity workforce shortage if the software coders are not properly trained in secure-by-design principles.

## II.    Area: Diversity, Equity, Inclusion, and Accessibility (DEIA)

The enterprise technology sector has been working to improve DEIA. It is not just the right thing to do, but it is good for business. Of course, this is not to claim that the enterprise technology sector has found a silver bullet, that a silver bullet exists, or that there is not room for improvement; simply that we have known about this challenge and have been trying to address it. And like enterprise technology improves with each iteration, DEIA efforts have improved.

Four examples of recent commitments to improve DEIA are Adobe and IBM's partnerships, SAP's Neurodiversity at Work program, and ServiceNow's RiseUp program.

Adobe recently selected three minority serving institutions (Bowie State University, Winston-Salem University, and San Jose State University) to receive $1 million as part of a multi-year, growing effort to make digital skills education more equitable.

IBM recently announced it collaboration with 20 historically Black colleges and universities to help them establish Cybersecurity Leadership Centers. Students at participating schools will have access to coursework, lectures, immersive training experiences, certifications, IBM Cloud-hosted software, and professional development resources, all at no cost.

SAP founded the first commercial Neurodiversity at Work program in 2013 and views neurodiversity as a competitive advantage. SAP's program leverages the unique abilities and perspectives of neurodiverse colleagues to foster innovation, support neurodiverse candidates during the hiring process, and offer a variety of resources to facilitate the success of neurodiverse employees once they are on the job. The program has provided returns both to employees and SAP.

ServiceNow, just last month, announced a new global program: RiseUp with ServiceNow, which aims to skill one million people on the ServiceNow platform by 2024, including by training and supporting marginalized communities, non-traditional talent, and members of the military and their spouses. The program provides free access to more than 600,000 courses and expands the understanding of who is considered to have "tech talent" by emphasizing whole-person competencies such as critical thinking, interpersonal communication, and creativity.

### III. Training, Education, Awareness

The core challenge both the public and private sectors face is a lack of cyber workers. As noted above, this challenge is truly an opportunity to connect people of all ages and backgrounds with good-paying jobs.

### A. Sub-Area: Training and Postsecondary Education

Training and postsecondary education remains an integral part of the solution to grow the size of the US cyber workforce. The private sector is working on its own, and in collaboration with the US Government and other stakeholders, to further those efforts. Four examples of training and postsecondary education efforts that are expanding opportunities and delivering workers are the Cisco Networking Academy, IBM's apprenticeship program, and the Cybersecurity Talent Initiative, which is supported by Microsoft and Workday, among others, and Microsoft's year initiative focused on growing the community college talent pipeline.

The Cisco Networking Academy, which recently celebrated its 25th anniversary, has set a new goal of providing digital and cybersecurity skills training to 25 million people across the world over the next 10 years. This effort builds on Cisco's commitment to train 200,000 students in the US over the next 3 years. As one of the longest standing IT skills-to-jobs programs in the world, Cisco Networking Academy proudly partners with 49 percent of US community and technical colleges and 48 of the Nation's 107 historically Black colleges and universities as well as non-profits, military bases, prisons, and community centers.

IBM's apprenticeship program offers 27 different career tracks and is currently operating in 17 different states. IBM recently announced two additional technology apprenticeship programs which each earned official recognition from the American Council on Education. These apprenticeships allow people to obtain 45 or more college credits – or 80% of those credits required for an associate's degree and are accepted by more than 1,700 colleges and universities, associations, and other organizations in the US and abroad. Notably, these programs place an IBM apprentice on a debt-free track to an associate's or bachelor's degree.

Microsoft and Workday, along with others private sector organizations and nearly a dozen US Government agencies, are part of the Cybersecurity Talent Initiative, which provides opportunities for recent graduates in cybersecurity-related fields to help jumpstart careers and provide the training and experience needed to lead the Nation's cyber defenses. The Initiative guarantees participants a two-year placement at a US Government agency. Before conclusion of their federal service, participants will be eligible for full-time positions with the program's private sector partners, and then receive up to $75,000 in student loan assistance.

Microsoft recently launched a four-year initiative focused on growing the community college talent pipeline. This initiative includes: providing scholarships and additional resources to community college students and veterans pursuing cybersecurity education; providing training for new and existing faculty in partnership with the National Cybersecurity Training & Education Center (NCyTE) as well as helping these institutions attain the Center of Academic Excellence in Cyber Defense (CAE-CD) designation; launching a community of practice with the American Association of Community Colleges (AACC) to help empower 42 education institutions to accelerate cybersecurity programs through grants which will provide financial and technical assistance; and making curriculum and teaching materials available free of charge to all of the Nation's public community colleges (and all higher education institutions) through Microsoft Learn for Educators.

### B. Sub-Area: K-12 Education

BSA agrees that investments in early education will pay dividends and are worth pursuing. Three examples of investments in K-12 education are Oracle Academy, the Oracle Education Foundation, and Girls Who Code.

Oracle Academy provides institutions and teachers free curriculum, classroom learning resources, software, cloud technology, and practice environments, among other resources. These resources keep up with ever-changing technologies and software and help prepare students for the cyber workforce.

The Oracle Education Foundation, which is a non-profit funded by Oracle and staffed by Oracle employees, helps "young people develop the technical acumen and creative confidence to design outstanding solutions to people's needs and the world's problems." While broader than cybersecurity, this effort aims to ensure these young people have a solid technical foundation, which is a critical step in developing cybersecurity skills.

Software.org, BSA's foundation, works each summer with Girls Who Code to introduce a class of young women to coding and the possibilities of technology. In response to the COVID-19 pandemic and the closing of physical classrooms, Software.org harnessed the power of technology BSA members provide and opened its classroom virtually to students wherever they were.

On its own, no single organization, not even the US Government, can solve the issues identified in this RFI, including those in K-12 education; but if every organization does it part, through programs like Girls Who Code, together we can solve these issues.

### C. Sub-Area: Digital Awareness and Online Safety

BSA agrees that the entire digital ecosystem would be well served by the types of activities considered in this section, e.g., "identify and foster core skills, knowledge, and lifelong

learning opportunities all Americans must have to thrive in our digital ecosystem." However, ONCD should consider addressing these issues through another workstream which would enable a National Cyber Workforce Strategy to remain narrowly focused on activities that will be most impactful to addressing the challenges identified in the RFI.

## IV.    Conclusion

BSA looks forward to working with ONCD to continue these successes and build the cyber workforce needed to enable digital transformation and strengthen the entire digital ecosystem.


Henry Young
Director, Policy