



**United States House of Representatives
Committee on Small Business
Subcommittee on Innovation and Workforce Development**

“Mind the ‘Skills’ Gap: Apprenticeships and Training Programs”

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Introduction: The Transition to the Digital Economy

Chairman Crow and Ranking Member Balderson, on behalf of the Computing Technology Industry Association (CompTIA), thank you for having me here today. By just about every measure, technology continues to shape the world around us in ever more profound and sometimes unexpected ways. Driven by waves of innovation over the years, our economy, our workforce, and our day-to-day lives are more digital, more connected, and increasingly, infused with more intelligent technology. Against this backdrop, CompTIA works with companies, academia, workforce development groups, government and more to understand and influence the forces shaping the information technology industry, its workforce, and its business models.

CompTIA is the leading voice and advocate for the \$1.6 trillion U.S. information technology ecosystem, and the more than 11.5 million American information technology (IT) professionals who design, implement, manage, and safeguard the technology that powers the world’s economy.¹ Through education, training, certifications, advocacy, philanthropy, market research and membership programs, CompTIA is the hub for advancing the tech industry and its workforce.

Since its founding, CompTIA has been at the forefront of credentials, training, professional development, growing, and diversifying the tech workforce. CompTIA is the global leader in vendor-neutral IT certifications having issued more than 2.7 million certifications to tech professionals around the world. CompTIA certifications serve as the bedrock for those working fields such as IT support, network engineering, cloud computing, cybersecurity, and more.

Small and Medium-Size Businesses Place a High Priority on Technology

Small businesses are commonly described as the lifeblood of the U.S. economy. This is not hyperbole as SMBs (small and medium-size businesses) account for the vast majority of the nation’s business entities, while serving as a key accelerator of job growth and entrepreneurial vitality. Two-thirds of SMBs indicate technology is now a primary factor in pursuing their business objectives². This prioritization translates to investment, as seen in the estimated \$186

¹ CompTIA *Cyberstates*, 2019

² CompTIA *Tech Trends Among Small and Medium-Size Businesses* study, 2019

billion spent annually on technology by U.S. SMBs³. In many ways, technology has never been more accessible. The emergence of cloud computing and 'as-a-service' delivery models now put enterprise-level technology in the hands of the smallest of businesses, helping them to operate more efficiently, tap into new customers, and compete against larger rivals.

Businesses Contend with the New Normal of Cybersecurity

At one time, cyberattacks were just a backend "IT problem" that featured such nuisances as defaced websites, occasional viruses that made the lives of IT workers miserable, or the odd hacked e-mail account or two. Conditions have changed dramatically in recent years. As noted previously, an already interconnected digital economy – which will become even more connected with the proliferation of the Internet of Things (IoT) and other emerging technologies, means the security arms race will continue in perpetuity.

As CompTIA research suggests, cybersecurity issues have grown in size and scope, becoming more sophisticated, harder to detect and more widespread⁴. Beyond profit-seeking hackers, attacks aimed at the pillars of society – government agencies, critical infrastructure, financial systems, and voting systems, threaten the underpinnings our democratic processes and society.

Cybersecurity Skills Gap Is Especially Problematic

"Skills gap" has become a catch-all term to describe a range of workforce concerns. At the most basic level, the skills gap can be characterized as the variance between the performance employers desire from their workforce and what workers can or choose to deliver. While the notion of a skills gap is a seemingly straightforward concept, below the surface, there are many nuances to the story. Skills gap may be unintentionally used to describe gaps in soft skills, location-labor mismatches, market pay rate disconnects, awareness gaps, confidence gaps, and even generational work style gaps⁵.

With that being said, in a world defined by digitization and interconnectivity, shortcomings in cybersecurity expertise and experience make for an ever-more precarious situation, especially among SMBs. Organizations rank data security as the most pressing cybersecurity skills gap domain, reflecting the growing importance of data across every industry sector of the economy⁶.

³ IDC *Blackbook*, 2010-2026

⁴ CompTIA *The Evolution of Cybersecurity Skills* study, 2018

⁵ CompTIA *Assessing the IT Skills Gap* study, 2017 | CompTIA *Role of Confidence Gap in Tech Career Development* study, 2018

⁶ CompTIA *Assessing the IT Skills Gap* study, 2017

Cybersecurity skills gap concerns manifest themselves in two ways. The first way is the direct referencing of expertise or experience shortcomings that pertain to some aspect of cybersecurity. Importantly, this is not limited to technical skills. The people and process aspect of security are just as critical, which may mean addressing foundational knowledge gaps in the C-suite or boardroom⁷.

The second way is indirectly through practices or pursuits that inevitably have a cybersecurity component. For example, 6 in 10 organizations report skills gap challenges that inhibit the integration of different applications, data sources, platforms, or devices. This is a critical step for organizations seeking to modernize through business transformation or move into emerging areas such as IoT.

The Multifaceted Nature of Training, Pipeline, and Skills Gaps Require an Equally Diverse Set of Solutions

The pace of technological change seems to quicken with each passing year. Anything, anywhere, anytime is now the default expectation among customers and constituents. Businesses face more pressure than ever to operate with agility and quickly respond to the customer needs of today, while anticipating the needs of tomorrow.

Compounding the challenges of shifting workforce skills needs is the extremely tight labor market for tech talent. As of April 2019, the unemployment rate for IT occupations stood at 2.4 percent, nearly a full percentage point below the national unemployment rate⁸. This means employer demand in many regions of the country and for many skills routinely outpaces the supply of workers. For small businesses seeking to keep up, competing for scarce tech talent can be incredibly trying. The bottom line, there is much work to be done on multiple fronts to ensure a healthy, vibrant, and sustainable tech workforce.

CompTIA works closely with public sector and private sector entities through a highly rigorous ISO-accredited process to ensure our certifications validate the knowledge domains and expertise required in the market. Through performance-based testing, CompTIA certifications validate more than “book knowledge,” ensuring holders of CompTIA’s A+, Network+, Security+, or other certifications are job ready⁹.

Through our Academy Partner Program, CompTIA supports high schools, career and vocational centers, two-year and four-year college programs, government-funded educational agencies, Department of Labor educational agencies, and correctional facilities in helping to enhance the

⁷ CompTIA *Building a Culture of Cybersecurity: A Guide for Corporate Executives and Board Members*, 2018

⁸ U.S. Bureau of Labor Statistics

⁹ <https://certification.comptia.org/certifications>

career opportunities of students. In addition to discounts on certifications, the program provides a range of instructional resources, including CompTIA-approved learning materials, training courses, career roadmaps, and more¹⁰.

CyberSeek: Leveraging Data to Connect the Dots

Given CompTIA's unique role in the cybersecurity workforce ecosystem, we saw firsthand the challenges in not only coming to grips with a rapidly changing threat environment, but simply trying to keep up in understanding the many moving parts of the cybersecurity landscape. This was the catalyst for the creation of the cyber workforce analytics tool and career pathways planner called CyberSeek. The platform was developed through a partnership of CompTIA, Burning Glass Technologies, and the U.S. National Institute of Standards and Technology's National Initiative for Cybersecurity Education (NICE) initiative¹¹. CyberSeek grew out of the need to provide public and private employers, job seekers, educators/trainers, and policy makers better visibility into cybersecurity workforce dynamics.

CyberSeek is a unique tool designed to decode the relationship between job seekers and employers hiring for in-demand cybersecurity skills¹². This one-of-a-kind interactive set of maps, tools, and career pathways aligns to the NICE Workforce Framework and is an important step towards addressing one of the most critical workforce challenges of our time. CyberSeek has been widely used by government and private industry alike since its launch.

CyberSeek supports the NICE Strategic Plan goal to “guide career development and workforce planning,” specifically implementing the objective to “identify and analyze data sources that support projecting present and future demand and supply of qualified cybersecurity workers.” Additionally, it supports a value articulated in the NICE Strategic Plan to “seek evidence – inform actions and decisions with data and pursue objective and reliable sources of information.”

In other words, tools such as CyberSeek are needed to help support making smart, data-driven decisions as it relates to developing and maintaining a best-of-class cyber workforce.

Creating IT Futures: Building and Sustaining the Pipeline

Certifications are one leg of the proverbial stool. The other two are training and work experience. CompTIA's philanthropic arm, the 501(c)(3) charity, Creating IT Futures, works hand-

¹⁰ <https://partners.comptia.org/become-a-partner/academy-partner>

¹¹ <https://www.nist.gov/itl/applied-cybersecurity/nice>

¹² <https://www.cyberseek.org/heatmap.html>

in-hand with us, often acting as our de facto innovation laboratory for workforce development programs¹³.

The mission of Creating IT Futures is to create on-ramps for more people to succeed in technology careers. The organization gives special attention to encouraging a pathway for demographics often under-represented in tech, such as women, people of color and veterans. A quick scan of the Creating IT Futures' success stories page confirms the degree to which IT-Ready truly transforms lives¹⁴.

Creating IT Futures' flagship program is the IT-Ready bootcamp. Launched in 2012 with two locations and now grown to seven U.S. cities, the program is designed to take individuals with no or limited prior IT experience, and through technical and soft skills training, and certification, place graduates in a meaningful IT job, where median wages exceed most comparable occupations¹⁵. Typical first jobs out of IT-Ready include roles in tech support, networking, quality assurance and cloud support. It's important to keep in mind the stackable nature of skills and capabilities, beginning with a solid foundation and progressing into higher levels of expertise or specialization, such as cybersecurity¹⁶.

How IT-Ready Works

The core IT-Ready bootcamp program is an 8-week, classroom-based, instructor-led course that teaches the requisite technical skills, along with the increasingly important soft skills, such as teamwork and collaboration, needed for career progression. In addition to the IT-Ready training locations found in Charlotte, Chicago, Minneapolis, Phoenix, Portland, San Diego, and San Antonio, a 12-week online program recently launched in partnership with the Wounded Warrior Project¹⁷.

In-person and online classes are held five days a week, Monday through Friday. Instructors utilize a range of training techniques, training materials, certification exam prep tools, and student engagement to present the material.

While the IT-Ready program does not guarantee a job, the staff work closely with local employers to connect students to jobs. After students graduate from IT-Ready, they may apply for these jobs, whereby the vast majority (86 percent) of IT-Ready graduates are able to secure

¹³ <https://www.creatingitfutures.org/>

¹⁴ <https://www.creatingitfutures.org/resources/blog/-in-tags/tags/successful-graduates>

¹⁵ CompTIA *Cyberstates*, 2019

¹⁶ <https://certification.comptia.org/docs/default-source/downloadablefiles/it-certification-roadmap.pdf>

¹⁷ <https://www.creatingitfutures.org/about/news/details/cognizant-us-foundation-gives-4-5-million-to-help-america-s-wounded-warriors-transition-into-digital-economy-careers>

full-time employment in the IT industry within a few months of their completing the program and earning certification.

The IT-Ready bootcamp program is underwritten by grants and financial donations, so there is no cost to students. While our classes are offered free to enrolled students, the program costs donors about \$6,000 per student.

The Role of Apprenticeships

Continuing the thread of the need for multi-faceted solutions to address our complex workforce challenges, CompTIA views apprenticeships as another critical piece. We actively engage with industry, academic and training partners, government entities, and others to work towards expanding apprenticeships for employers and students who previously may not have considered it as an option. As it relates to federal policy, CompTIA strongly supports H.R. 1733/S. 777, the Championing Apprenticeships for New Careers and Employees in Technology (CHANCE in Tech) Act. The CHANCE in Tech Act would make commonsense reforms to the Department of Labor's registered apprenticeship program and generate job and economic growth. The proposal would create technology apprenticeships and help forge public-private partnerships to serve as intermediaries between employers participating in the registered apprenticeship program, industry, training partners, and government entities. We urge members of this committee who have not done so already to cosponsor this bill and for Congress to pass this legislation.

Conclusion

Thank you for the opportunity to participate in this hearing. Undoubtedly, many of the topics covered in this testimony are complex. Developing new approaches, rethinking longstanding practices, or changing mindsets takes time, creative problem solving, and resources. CompTIA is committed to working with stakeholders – from students to parents, and private sector to public sector entities, to meet our workforce challenges head on. As our economy and society become even more digital in the coming years, it's imperative that we develop the education, training, certification, and career pathway options that build upon the best of what currently works well, and then address the gaps where shortcomings clearly exist. Again, thank you for the opportunity to participate in this hearing and we look forward to further engagement with the Committee.

Respectfully,

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