Innovation lives here.

Doubling Virginia's Tech-Talent Pipeline

The centerpiece of Virginia's proposal for HQ2 was a performance-based, statewide investment in computer science and related programs to more than double Virginia's tech-talent pipeline, which will benefit tech employers across the Commonwealth.

UNIVERITY OF VIRGINIA

VIRGINIA TECH

NORFOLK STATE UNIVERSITY

Vision

To strengthen the tech-talent pipeline across Virginia, the Commonwealth will make performance-based investments in public higher education institutions statewide. The effort will produce 25,000 to 35,000 additional degrees in computer science and related fields – roughly split between bachelor's degrees and master's degrees – over the next two decades, in excess of current rates. Existing degree production levels will more than double as a result.

The Tech-Talent
Landscape in Virginia

Virginia is one of America's top states for tech. For example, according to the Computing Technology Industry Association (CompTIA), Virginia has the third highest concentration of technology workers in the country. Northern Virginia is part of a region whose tech workforce has much higher proportions of women and African Americans than that of Silicon Valley. Virginia also is home to a dynamic roster of software companies, including industry leaders Amazon Web Services, Appian Corporation, CGI, Cvent, Leidos, MicroStrategy, PowerSchool, and SAIC, as well as many innovative startup firms.
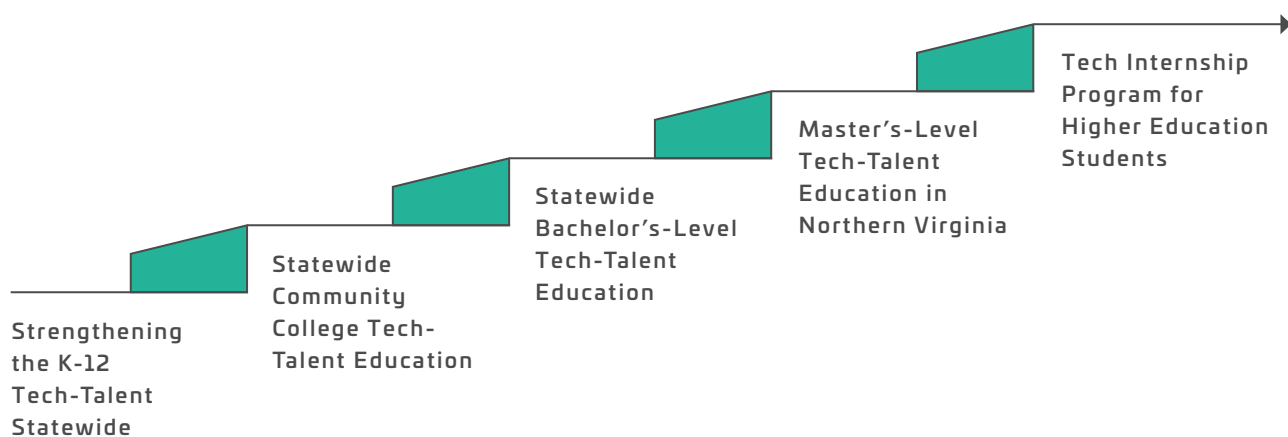
The Virginia Economic Development Partnership (VEDP) completed a Strategic Plan for Economic Development of the Commonwealth in 2017 that identifies the tech sector as the largest traded-industry employment growth opportunity for the Commonwealth of Virginia over the next decade (and likely beyond). However, the Strategic Plan also emphasized that Virginia's potential growth in tech would be constrained (or enabled) by its pipeline of tech talent, as the Commonwealth, like other states, currently isn't producing enough tech grads to keep up with demand.

Amazon's September 2017 RFP for HQ2 highlighted the importance of tech talent as well as educational programs in computer science. Roughly half of the employment at Amazon's new headquarters in Virginia is expected to be in technology positions, with a particular focus on software development, engineering, machine learning and artificial intelligence, user experience design, and user interface design. While college graduates working in such jobs hold degrees in many fields of study, the most common degrees they hold by far are in computer science and related fields (e.g., computer engineering). Likewise, graduates in computer science and related fields represent a critical source of tech talent for hundreds of existing Virginia employers, such as Alarm.com, Appian, Capital One, CGI, and Northrop Grumman.

The growing tech-talent needs of existing tech firms in Virginia, in combination with the HQ2 RFP, led Virginia to make a tech-talent pipeline initiative the centerpiece of its proposal for HQ2.

Program Design

Subject to performance-based agreements to be negotiated with each public community college, four-year college, and university across Virginia that wants to participate, state funding will be provided to recruit faculty, address capital needs, and provide ongoing enrollment support necessary to more than double existing levels of degree production in computer science and closely related fields. The overall program includes five components: (1) a K-12 tech-talent pipeline initiative; (2) a community college program; (3) bachelor's-level education; (4) master's-level education; and (5) a tech internship program for higher education students.

Strengthening the K-12 Tech-Talent Statewide

Statewide Community College Tech-Talent Education

Statewide Bachelor's-Level Tech-Talent Education

Master's-Level Tech-Talent Education in Northern Virginia

Tech Internship Program for Higher Education Students

Components:

Strengthening the K-12 Tech-Talent Pipeline Statewide.

Building the tech-talent pipeline starts with a public K-12 system that includes an integrated STEM and computer science curriculum at every grade for every student. Virginia led the nation by adopting computer science standards across the K-12 continuum, and the Commonwealth is continuing to equip teachers to implement them effectively. However, in order to meet the growing needs of Amazon and other high-tech employers, additional investments are needed to bring high-quality STEM and computer science teaching and learning to scale. Therefore, over the next 20 years, Virginia will invest $25 million statewide in new funding in the K-12 STEM and computer science experience for students and teachers. This investment will enable the Commonwealth to provide ongoing professional development to current and future teachers; create, curate, and disseminate high-quality curriculum and resources; support summer and after-school programming for students; and facilitate meaningful career exposure and work-based learning opportunities in high-demand fields.

Statewide Community College Tech-Talent Education.

Community colleges across Virginia play an essential role in preparing students for technology jobs, including both degree and certificate programs that lead directly to well-compensated IT positions as well as transfer programs that enable completion of bachelor's degrees in computer science and related fields at a reduced cost compared to attending only a four-year institution. State leaders will collaborate with the Virginia Community College System (VCCS) and community college leaders to craft performance-based community college tech-talent programs that will complement the bachelor's- and master's-level tech-talent education programs described below.

Statewide Bachelor's-Level Tech-Talent Education.

With General Assembly approval, the Commonwealth will establish a performance-based tech-talent investment fund through which

higher education institutions across Virginia can receive startup funds for faculty recruitment, state capital investment (where required), and enrollment funding necessary to expand the number of bachelor's degrees they confer annually in computer science and closely related fields (e.g., computer engineering). Participating institutions will enter into memorandums of understanding (MOUs) that detail their plans for growth, state funding commitments, annual reporting requirements, and future funding parameters associated with performance. The total new state investment to grow bachelor's-level tech-talent education will be determined in part by how much of the growth in computer science and related fields is associated with an overall increase in college graduates and how much relates to a shift in the degree-field mix that may occur at some institutions. The bachelor's-level tech-talent education program will represent the largest state investment of the five components.

Master's-Level Tech-Talent Education in Northern Virginia.
The Commonwealth also plans investments of up to $375 million for academic space and operational support to increase master's degree production in computer science and related fields in Northern Virginia over the next 20 years. These performance-based, master's-degree-level investments will be provided on a dollar-for-dollar matching basis for philanthropic funds raised by George Mason University for its Arlington campus and Virginia Tech University for a new graduate-level Innovation Campus expected to be located in Alexandria. Master's degrees offer advanced, ongoing professional development; dramatically reduce the total cost for additional credentials; can be produced more quickly than bachelor's degrees; and lend themselves to customization.

Tech Internship Program for Higher Education Students.
The State Council of Higher Education for Virginia (SCHEV) will develop a higher education program to ensure that all students in baccalaureate programs in computer science and related fields have access to high-quality work-based learning, such as internships, apprenticeships, research experiences, and cooperative education programs. The Commonwealth will invest at least $25 million in this program over the next 20 years. To ensure efficiency and consistency in meeting the needs of students and businesses, the General Assembly may choose a single entity to oversee the allocation of funds dedicated to the program.

What's Next

Additional program implementation details will be developed in advance of the forthcoming session of the Virginia General Assembly. Institution-specific MOUs will be developed following the conclusion of the legislative session, with implementation expected to begin in Fall 2019 (FY2020).