

DAY ONE PROJECT

Demystifying Tech Careers:
Industry-Driven Transparency for
Expanding Access to the New Economy

Rebecca Agostino

May 2021

The Day One Project offers a platform for ideas that represent a broad range of perspectives across S&T disciplines. The views and opinions expressed in this proposal are those of the author(s) and do not reflect the views and opinions of the Day One Project or its S&T Leadership Council.

Summary

The White House Office of Science and Technology Policy and/or the National Economic Council and Department of Labor should convene a *Transparent Tech Training Alliance*, a coalition of public and private sector leaders called to expand access to early tech careers by codifying and communicating industry hiring standards. To meet the economy's urgent and growing demand for tech workers, innovative educators have developed tens of thousands of short courses and bootcamps to rapidly upskill workers. But this landscape is complicated to navigate, especially for low-wage workers and small- and medium-sized enterprises (SMEs) who are training and hiring in tech at increasing numbers. Without intervention, this nascent system will exacerbate the divide between the "haves and have nots" of our economy, further endangering the health of our workforce, communities, and businesses.

In response, the Alliance should: (1) make a highly publicized commitment to unprecedented transparency in hiring practices and the annual publication of hiring data; (2) generate a clear, industry-driven guide of certified credentials, career pathways, and funding sources; (3) utilize this guide and more for a prize competition that modernizes CareerOneStop; and (4) reconvene annually to publicize their progress and update resources.

Challenge and Opportunity

America's pool of tech talent will grow too slowly and homogeneously to meet the economy's needs. An estimated 400,000 STEM college students graduate every year, but by 2030 there will still be a shortage of 6 million tech workers in the United States.¹ The accelerated demand for tech workers has driven educators to create innovative training methods, like short-courses and bootcamps. Now, the tech-training space has become crowded and governed by an opaque universe of unwritten rules: Which bootcamps and credentials are reputable? What projects make a compelling portfolio? What types of questions will be asked in an interview?

¹ Indicator 26: STEM Degrees, February 2019,

https://nces.ed.gov/programs/raceindicators/indicator_reg.asp#:~:text=See%20Digest%20of%20Education%20Statistics,fields%20varied%20by%20race%2Fethnicity;

"Digest of Education Statistics, 2019," National Center for Education Statistics (NCES), U.S. Department of Education, 2019,

[https://nces.ed.gov/programs/digest/d19/tables/dt19_322.10.asp;](https://nces.ed.gov/programs/digest/d19/tables/dt19_322.10.asp)

Pedro Nicolaci da Costa, "Tech Talent Scramble," *Finance and Development* 56, no. 1 (March 2019),

<https://doi.org/https://www.imf.org/external/pubs/ft/fandd/2019/03/global-competition-for-technology-workers-costa.htm#:~:text=Global%20shortage&text=The%20United%20States%20and%20Russia,a%20deficit%20of%2012%20million.&text=%E2%80%9CCompanies%20are%20paying%20more%2C%20they,of%20high%2Dskilled%20tech%20workers.>

Those with personal or professional networks in the technology industry have access to information that helps them navigate to the “right” programs and credentials for upskilling. However, those without access to this information risk investing time and financial resources into low-quality training programs with limited guarantees of joining the new economy.

This unnecessarily blocks a new pipeline of workers ready to fill high-demand vacancies, while also cementing the industry’s homogeneous hiring practices and exacerbating racial and gender inequality. Considering their total workforce participation, women and Black and Latinx workers are severely underrepresented along the career spectrum (See Figure 1),² Given the anticipated rapid expansion of jobs in technology, and the compression of jobs in other fields, there is an urgent need to address these gaps and provide access to upskilling for all workers, especially in the technology industry.

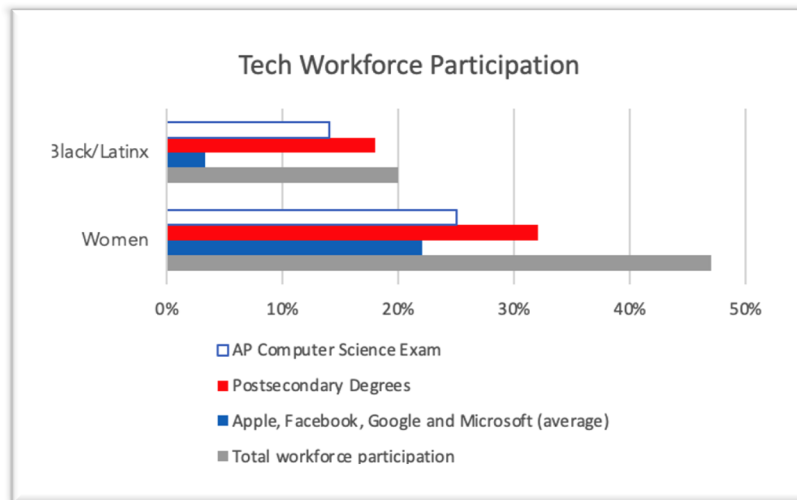


Figure 1: Underrepresentation of Women, Black, and Latinx Worker’s in the Technology Industry

The “alphabet soup” of tech training programs and failures of existing federal tools to guide workers bear large responsibility for the system’s failure.

² “AP Program Participation and Performance Data 2018,” Research, College Board, October 7, 2019, <https://research.collegeboard.org/programs/ap/data/archived/ap-2018>;
 “Digest of Education Statistics, 2019,” National Center for Education Statistics (NCES), U.S. Department of Education, accessed April 8, 2021, https://nces.ed.gov/programs/digest/d19/tables/dt19_318.45.asp;
 Felix Richter, “Infographic: GAFAM: Women Still Underrepresented in Tech,” *Statista*, February 19, 2020, <https://www.statista.com/chart/4467/female-employees-at-tech-companies/>.
 Shelly Banjo, Ian King and Alistair Barr, “From Apple to Facebook, Tech’s New Diversity Pledges Follow Years of Failure,” *The Boston Globe*, June 24, 2020, <https://www.bostonglobe.com/business/2020/06/23/from-apple-facebook-tech-new-diversity-pledges-follow-years-failure/PH9iyyPXfPuXsutNez3vqJ/story.html>.

Alphabet Soup

The tech credential and training space is often referred to as “alphabet soup” to denote the myriad of available options: workers must decide between more than 12,000 cybersecurity, 4,000 IT Helpdesk and 17,000 web programming credential options, and there are many more categories of tech professions.³

On one hand, the saturation of credentialing services indicates educators are innovatively upskilling and reskilling workers to fill in-demand jobs. On the other, it creates a significant challenge of reliability for workers looking for a program or credential that will enable their gainful employment. It also creates a barrier for SMEs, who are rapidly hiring tech talent but may not have the technical expertise to assess highly qualified workers among the universe of credential options. Without clear metrics for quality, both candidates and businesses waste precious time and financial resources navigating this nontransparent process.

Black and Latinx individuals are disproportionately in a position of reliance on short-term tech training such as bootcamps to enter the industry due to lack of equitable access to traditional four-year degree programs. Compared to their representation in the tech industry, Black and Latinx workers are 29% and 38% more likely to use bootcamps, respectively.⁴ Therefore, these already vulnerable workers incur the disproportionate risk created by such a vast, unregulated landscape, exasperating the existing disparities in access to tech careers.

Failures in Existing Federal Tools

The existing federal tool, CareerOneStop, is ill-equipped to support the needs of the growing tech workforce. Outdated and difficult to use, CareerOneStop provides an incomplete picture of the breadth of career and program options available. CareerOneStop also does not provide comparative tools for workers deciding between different careers or educational pathways. For example, it includes over 70 certifications in cybersecurity without information on cost, results, or anticipated wages after their completion. Information on training, jobs and local support are not integrated by industry verticals, making it tedious to compare one’s options. Lastly, the site is entirely literacy intensive, failing to incorporate video footage or other media to reach workers at lower reading levels or different means of accessibility.

³ “Credential Finder: Search,” Credential Finder, accessed April 8, 2021, <https://credentialfinder.org/>.

⁴ Lauren Stewart, “How Coding Bootcamps Can Change the Face of Tech,” Course Report, last updated October 22, 2020, <https://www.coursereport.com/blog/diversity-in-coding-bootcamps-report-2020>.

These features disadvantage both workers and counselors, who rely on CareerOneStop to make high-stakes financial investments in reskilling.

A Call for Transparency to Increase Access and Accountability

To maintain its global competitiveness and support the growing tech needs in businesses across all industries, the United States must rapidly upskill workers into programming, cybersecurity and IT jobs. Clear pathways, quality benchmarks, and program options will not only make these careers more accessible, but also less risky to marginalized populations. There is a crucial opportunity to bring transparency to careers in the new economy while the industry is still nascent and developing.

Plan of Action

The White House Office of Science and Technology Policy and/or the National Economic Council, in close partnership with the Department of Labor’s Employment and Training Administration (ETA), should assemble a *Transparent Tech Training Alliance*, a cross-sector coalition of leaders with a mandate to increase transparency and therefore access and accountability in tech hiring. They should meet in a highly publicized convening in order to make two public commitments:

1. Unprecedented transparency in hiring standards: sharing the “unwritten rules” via accessible documentation that codifies standards and norms in tech recruiting to guide Americans into these careers.
2. Accountability through public data: committing to a method and timeline for publishing their hiring demographics (e.g. race, gender, educational background and training), no more than one year from the convening.

Spearheaded by the ETA, but including representatives from the broader Departments of Labor and Education, a coalition of federal leaders can accomplish these outcomes through the following three steps:

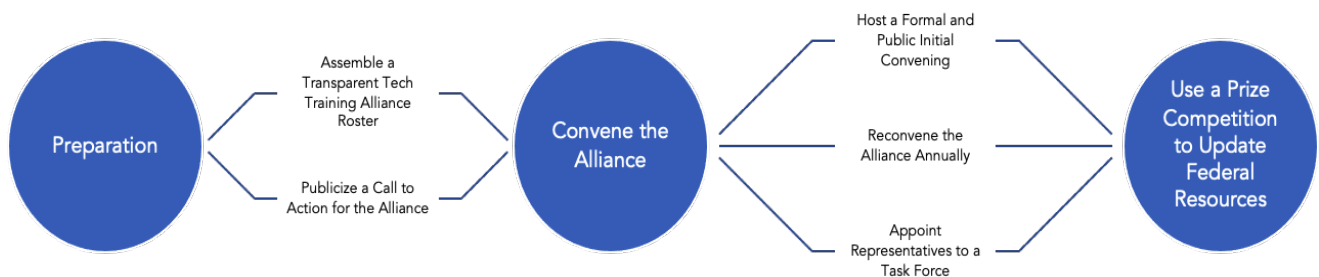


Figure 2: Roadmap for a Transparent Tech Training Alliance

Step I: Preparation

A) Assemble a Roster

First, the ETA should propose a cross-sector *Alliance*, including representatives from major tech companies, large national or regional employers across multiple industries, academia, local government, tech investment and nonprofit organizations that are committed to increasing diversity and inclusion in tech hiring. This will require the ETA to gather research regarding the relevant stakeholders and experts who would have the greatest impact on the group with their attendance whose hiring footprint is either large and growing or most representative of the country's employers.

Outreach should be conducted by a highly visible member of the Department of Labor such as Secretary of Labor Marty Walsh or Chief Innovation Officer Chike Aguh in order to elevate the importance and urgency of the *Alliance*.

B) Publicize a Call to Action for the *Alliance*

The White House Office of Science and Technology Policy and/or the National Economic Council must make a Call for Action to the *Alliance*, drawing an explicit connection between transparency, economic mobility, and equity. This will empower consumers to hold industry accountable for their role in rebuilding the economy justly. In other words, *not* participating should be equivalent to denouncing equity initiatives in tech. Federal government leaders should apply pressure to companies not only to participate, but to follow through on their commitment to transparent data sharing.

Step II: Convene the Alliance

A) Host a Formal and Public Initial Convening

A representative from the White House Office of Science and Technology Policy and/or the National Economic Council or the Department of Labor should open the event with a call to action - clearly connecting access to good jobs with our economic recovery, equity, and global competitiveness. Then, the *Alliance* members would make the two aforementioned commitments: unprecedented transparency in hiring standards and accountability through public data. These should be documented and signed in a highly public fashion, including a social media campaign and press reporting on the event. Awards should be given to the firms that have made the most progress in hiring diversity and inclusivity in the last decade through data and storytelling spotlights. The convening is also an opportunity to announce the prize competition to modernize CareerOneStop (i.e. Step III).

B) Appoint Representatives to a Task Force

The *Alliance* must recommend representatives for a Task Force to accomplish the following goals:

- Create a list of high-demand tech jobs and the pathways to obtain them at various educational levels.
- Identify gaps in the current training systems and invite short-term courses such as bootcamps to fill them.
- Certify reliable credentials that industry uses for hiring.
- Determine to norms for publishing hiring data that increases transparency across the industry and expanding access to jobs in tech through long-term action.
- Convene bi-monthly to re-evaluate the above goals to ensure their current relevance to the industry.

C) Reconvene the *Alliance* Annually to Review Data and Recommit to Transparency

The *Alliance* should meet annually to:

- Formally and publicly share key data points from their hiring systems, such as race, gender, educational background and tech training, and their long-term plans for expanding access to tech jobs for underrepresented groups.
- Recommit to transparency in hiring practices.
- Draw attention to updates in the hiring practices they previously published.
- Create a formal opportunity for industry to communicate their needs to the educational community, ensuring our training systems are driven by demand and informed by actual industry trends.
- Celebrate up and coming educational programs that show promise, and further expand the list of certified credentials.

Step III: Use a Prize Competition to Update Federal Resources

Driven by the ETA, the Department of Labor should launch a prize competition to modernize CareerOneStop, the existing federal career exploration platform. The new platform should spotlight the *Alliance* Task Force's information on transparency on high-demand tech jobs, and the educational levels needed to attain them. It should also clarify pathways between skills, credentials, and jobs on a platform that is user friendly for workers, counselors and small- and medium- business leaders who are hiring in fields like programming, IT and cybersecurity. The best platforms will include resources for integrating the content into other sites such as LinkedIn, a corresponding smart phone application, and multi-language access.

The Prize Competition will also bring attention to the broader initiative, driving both employer and worker traffic to the site upon publication. There should be a monetary prize of

DAY ONE PROJECT

approximately \$100,000 for the winner and runners up, and a multi-year contract for the winner to manage the platform. It should be publicized in the coder community, via tech investors, and publicly on federal sites such as www.challenge.gov.

Conclusion

The potential of the *Transparent Tech Training Alliance* lies in government leaders' "power of the podium" to motivate industry leaders to increase transparency about their hiring practices and data. Equipped with relevant knowledge about the credentials and training experiences industry most values, delivered via a modernized, user-friendly tool, workers can invest their time and financial resources in upskilling and reskilling in tech. By making "insider information" about industry preferences public, the White House and ETA will create opportunities for all Americans to access gainful employment in the technology industry.

Frequently Asked Questions

How is a *Transparent Tech Training Alliance* good for major tech companies?

First and most importantly, companies will benefit from expanded access to tech careers because they will have a wider pool of talented workers from which to draw. By making the training and hiring process more accessible, more talented individuals will enter the tech workforce, increasing both the quality and quantity of great hires in the industry. Second, big tech companies have come under criticism not only for their homogenous teams but also their failure to make progress since 2014 commitments to diversify their shockingly homogenous workforces. Since 2020's racial justice movement, consumers have been putting even more pressure on corporations to address their talent practices, which the *Transparent Tech Training Alliance* gives them the opportunity to do in a public and formal manner.

How is a *Transparent Tech Training Alliance* good for SMEs?

The alphabet soup of credentials is confusing not only for workers, but also SME owners who are hiring into this new and growing field. SMEs account for nearly half of all private jobs and an increasing portion will require talent in programming, IT or cybersecurity in the coming years, and resources that clarify the options and pathways for workers can assist small business owners, too.⁵

What about a more direct intervention, like the creation of federally recognized tech credentials or assessments?

The key stakeholder in broadening access to technology is the employer, so effective solutions require total buy-in from the tech industry. Given the ever-changing nature of technology, nuances between company preferences, and the creative nature of advanced programming, there are strong industry reservations against an industry-wide credential or a standardized assessment. Modernizing our workforce development systems requires a demand-driven approach.

⁵ "Small Businesses Drive Job Growth in the U.S.: The U.S. Small Business Administration," Small Business Administration, accessed April 8, 2021, <https://www.sba.gov/advocacy/small-businesses-drive-job-growth-us>.

Why should the *Alliance* require members to publish hiring data one year from the convening, instead of immediately?

Current indicators of diversity in tech indicate companies have barely made progress in diversifying their workforces since a public commitment to do so in 2014. Asking these companies to publish their data immediately would likely set them up for a public backlash and negative press. Companies can be encouraged to participate by requesting they show growth data in one year, allowing them time to implement the strategies to which they commit at the *Alliance* meeting. This creates potential for the data to be celebratory in nature.

What kinds of commitments might tech companies make?

Based on research, companies might consider commitments to:

- Build apprenticeship programs to widen their pipelines to entry-level and middle-management positions.
- Change incentive structures for internal hiring teams, to encourage recruiters to take bolder steps in finding candidates with diverse experiences and backgrounds.
- Invest in mid-career leadership development for diverse tech workers to move into management positions.
- Build stronger partnerships with HBCUs, state and community colleges to widen the talent pipeline.

Who is the target audience for the resources?

The target audiences would include:

- 39 million workers whose jobs will be disappearing by 2030.⁶
- 3.7 million high school students graduating each year.⁷
- 333,500 school career counselors who support young people in selecting and pursuing early careers.⁸

⁶ James Manika, Jacques Bughin and Jonathan Woetzel, *Jobs Lost, Jobs Gained: Workforce Transitions In A Time Of Automation*, McKinsey Global Institute, McKinsey & Company, December 2017, https://www.mckinsey.com/~media/mckinsey/industries/public%20and%20social%20sector/our%20insights/what%20the%20future%20of%20work%20will%20mean%20for%20jobs%20skills%20and%20wages/mgi%20jobs%20lost-jobs%20gained_report_december%202017.pdf.

⁷ Rick Seltzer, "Birth Dearth Approaches," *Inside HigherEd*, December 15, 2020, <https://www.insidehighered.com/news/2020/12/15/more-high-school-graduates-through-2025-pool-still-shrinks-afterward#:~:text=High%20school%20graduates%20are%20on,in%20the%20Class%20of%202019>.

⁸ "School and Career Counselors: Occupational Outlook Handbook," U.S. Bureau of Labor Statistics, April 9, 2021, <https://www.bls.gov/ooh/community-and-social-service/school-and-career-counselors.htm>.



About the Author

Rebecca Agostino is an MBA Candidate at The Wharton School at the University of Pennsylvania. After graduation, she will be joining the team at Multiverse, which builds apprenticeship programs for tech companies in the US and UK. Previously, she was the founding principal of Freedom Prep High School, a college-preparatory school in Camden, New Jersey, and a special educator in New York City. She is a New Leaders Council Philadelphia Fellow, a School Board Member at New Foundations Charter School, and the author of an Accelerator for America Playbook of Best Practices, “Place-Based Solutions for a Stronger Workforce Ecosystem.” Rebecca graduated as a Robertson Scholar from Duke University with a BS in Economics and earned a Master of Teaching from Fordham University.



About the Day One Project

The Day One Project is dedicated to democratizing the policymaking process by working with new and expert voices across the science and technology community to develop actionable policies that can improve the lives of all Americans. For more about the Day One Project, visit dayoneproject.org.