EXECUTIVE SUMMARY:

The Problem: The Skills Gap

America’s labor market is plagued by a massive and widening skills gap: our current systems of education and workforce development aren’t adequately preparing Americans with the skills employers are seeking. As a result, our workforce is showing numerous symptoms – exits from the workforce, wage stagnation, underemployment, lack of diversity, and social upheaval – while over 7 million jobs, many middle and high-skilled, remain unfilled, restricting growth in industries critical to the country’s economic future.

The Solution: Last-Mile Training

Last-Mile Training takes a Design Thinking approach to the skills gap: designing backward from good entry-level jobs rather than forward from high school. In particular, “employer-down” Last-Mile Training models are demonstrating their ability to close the skills gap at scale by adding entry-level talent recruitment and training onto already-scaled intermediaries, such as staffing companies and business service providers providing “Outsourced Apprenticeships” across a wide range of skill gap areas.

The Proposal: Federal Funding for “Employer-Down” Last Mile Training

Federal support for postsecondary education focuses on degrees, not jobs. Redirecting existing funding streams to Last-Mile Training and paying only for real outcomes in placing disadvantaged candidates into full-time, high-earning, career-track jobs in growing industries will accelerate the growth of frictionless career pathways for millions of Americans in greatest need of economic advancement.

Vision for Impact

The recent success of Last-Mile Training models, as well as bipartisan support for expanding apprenticeships beyond traditional building and industrial trades, have created the necessary conditions to implement the proposed funding model. At scale, federal funding for Last-Mile Training will support pathways for unemployed and underemployed Americans to achieve not only today’s 7 million unfilled jobs, but also the millions of new jobs that will be created over the next decade – from the 1.4 million unfilled software jobs expected by 2020, to the growth from still-nascent fields like blockchain, Robotic Process Automation, telemedicine, and others. State and local leaders can take action now to launch the first successful models of public-private partnerships for “employer-down” Last-Mile Training – accelerating local labor market growth and paving the way for a national and uniquely American solution to the skills gap.
INTRODUCTION: THE SKILLS GAP

The Skills Gap

While America’s labor market is nearing full-employment, there are numerous symptoms that it is far from healthy. In the last decade, nearly 10 million workers have stopped seeking work and dropped out of the workforce. Real wages have remained stagnant for the past 40 years for all but the highest earners. Socioeconomic mobility has declined; for Millennials born in 1980, only half are earning more than their parents. Underemployment is increasingly plaguing new college graduates in terms of frequency, acuity, and persistence. Diversity remains a challenge in high-skill positions, particularly in the fastest growing sectors with the greatest job creation i.e., technology and healthcare.

Despite the large number of unemployed, underemployed and unhappily employed Americans, there are over 7 million unfilled jobs, many of which are high- and middle-skill positions. Employers are spending as much as $30,000 to recruit new software developers and as much as $80,000 to recruit new nurses – and that’s if they can find them.

These are symptoms of a massive and widening skills gap: our current systems of education and workforce development aren’t adequately preparing Americans with the skills employers are seeking. The skills gap is a major reason why so many Americans feel left behind and disenfranchised. Far too many of our fellow citizens feel that participation in the dynamic economy – and the American Dream – is now out of reach, or runs through college classrooms, 4+ years of study and 120 credits, which amounts to the same thing. America’s economy is increasingly divided between the haves (with degrees) and the have nots (without degrees).

We believe tens of millions of workers need to be retrained and upskilled for growth sectors. It’s likely to get worse: over the next decade, as repetitive processes that can be automated are automated, technology will eliminate millions of middle-skill jobs. Yet our current ecosystem of community colleges and subscale training initiatives falls far short of what’s required to prepare millions of Americans for entry-level positions in growth sectors. Moreover, total spending on education and training is heavily weighted to the first 25 years of life. According to the Council of Economic Advisers, most spending is exhausted by age 17, and more than 90 percent of spending is complete by age of 25.

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Beyond the age of 25, approximately half of all spending comes from a select group of large companies that invest in continuously upskilling their own employees, leaving little investment in the human capital development of individuals who aren’t fortunate enough to work for such employers. We believe it’s imperative that America find new models that work at scale.

**The Skills Gap is Largely a Digital Skills Gap**

While many colleges and universities continue to do an unparalleled job of preparing graduates with key cognitive skills like critical thinking and problem solving, the impact of technology on hiring has resulted in an over-indexing of technology or digital skills at the top of the hiring funnel. Employers are seeking digital skills that colleges and universities simply aren’t addressing. There are four distinct reasons for this:

1. **The economy has digitized**

   Over the past decade, even companies and organizations that have nothing to do with technology have replaced paper processes with software. Across all sectors, most middle- and high-skill jobs now involve managing some business function through software or software-as-a-service (SaaS) platforms. As a result, much of the skills gap is properly characterized as a digital skills gap. In a recent survey of U.S. hiring managers, 90 percent reported it difficult to find and hire the right tech talent and 83 percent said the shortage of tech talent is slowing company revenue growth.\(^9\) Three quarters of Business Roundtable CEOs say they can’t find workers to fill jobs in STEM-related fields.\(^10\)

   But it’s inexact to generalize about a tech skills gap. The tech skills gap actually consists of thousands of micro-level or tactical technical skills gaps. For example, we don’t have a shortage of C++ or Fortran coders, although there’s huge unmet demand for J2EE, Microservices, and .NET developers. The gap extends well beyond coding to entry-level positions outside the formal technology sector. These are jobs that manage functions like supply chain, sales, marketing, customer service, finance,

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IT, and HR. Employers are seeking skills like Pardot (marketing), Marketo (digital marketing), Google Adwords (digital marketing), ZenDesk Plus (customer service), NetSuite (finance), Financial Force (finance), Workday (HR), and Salesforce. According to Burning Glass, jobs demanding Salesforce experience have quadrupled in the past five years; in 2017, more than 300,000 open positions called for Salesforce skills. In addition to these cross-sector SaaS platforms, every industry has its own SaaS platforms for specific functions. For example, insurance companies and third-party claims administrators have a range of SaaS options for claims processing.

2. Colleges fail to align programs and curricula with employer requirements

Postsecondary academic programs are controlled by faculty members who typically aren’t incentivized to align curricula to employer needs. Few are interested in what employers are seeking, particularly for entry-level positions. Many have never worked in the private sector or have only outdated or tenuous connections to non-academic employers. Many more resist the idea that instruction should be aligned to employment opportunities. A report last year in higher education’s paper of record, the Chronicle of Higher Education, sums up the view of traditional colleges and universities on this question. In an article on Texas A&M’s effort to launch courses in cybersecurity, the Chronicle reached the following conclusion: “Work-force demand can lead some institutions to teach students the skills needed for today’s entry-level jobs. But those tools may well be obsolete five or ten years from now.” The implication – one that is absolutely in the mainstream of faculty thinking – is that updating curriculum to reflect current labor market needs may not be a worthwhile pursuit because such needs will change in five to ten years. In no other sector of the economy is such outdated thinking commonplace.

But even if faculty incentives and attitudes could be changed, the organizational structure of colleges and universities complicates any effort to align programs with employer needs. Hundreds of thousands of new jobs have been created in business intelligence and data analytics over the past few years. But where do they fit into existing academic departmental structures? Some business schools have added relevant curricula; at other universities, it’s the statistics department. Under faculty control, most universities haven’t yet come up with an adequate answer. The same dynamic exists in other high demand areas like nursing and cybersecurity. Because few faculty members study or research the topic, few if any nursing programs train students on Electronic Records Management Systems. And the skills required for cybersecurity require some computer science curriculum, but are a distant relative from learning C++. At Texas A&M University, cybersecurity courses have been offered by engineering as well as agriculture and life sciences departments.

Higher education’s interface of choice to employers is career services. But not only is career services well outside the academic chain-of-command, the concept of “career services” as a separate office, distinct from every other part of the institution, conveys to students that they aren’t expected to think about employment until senior year. Not surprisingly, only half of all students ever visit career services. When they do, they’re not meeting with professionals in their fields of interest (with relevant experience and networks), but rather with career services lifers, who may be best positioned to help students get jobs working in career services.

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11 Salesforce, Feb 8, 2017, https://medium.com/trailhead/chances-are-your-next-job-will-require-salesforce-skills-290f4da05e8c
3. Hiring has changed

Technology has fundamentally changed hiring in two ways, particularly for entry-level jobs. Because nearly every good job is posted online and generates hundreds of résumés, employers utilize keyword-based filters called Applicant Tracking Systems to determine which résumés are actually seen by a human. If you don’t have sufficient keyword density, you’re not visible.

Faced with the deluge of résumés over the past decade, HR and hiring managers have sought to tighten the screen and have done so by adding skills to job descriptions. Which skills have they added? Unfortunately, there are only so many ways to say “critical thinking,” or “problem solving.” So the skills that have been added to job descriptions are digital and software skills. Across virtually every industry, technical skills now outnumber all other skills in job descriptions, particularly for entry-level jobs. Without the digital skills employers are increasingly listing in entry-level job descriptions, too many college graduates are invisible for exactly the positions they want (and need in order to make student loan payments).

4. Employers Also Want Soft Skills and Industry Knowledge

Behind digital skills, as evidenced by job descriptions, employers care a great deal about a second set of skills: soft skills like teamwork, communication, organization, creativity, adaptability, and punctuality. An additional important soft skill valued by employers – particularly for entry-level jobs – is humility. Colleges and universities have not been directly focused on these skills either, and we believe that many employers perceive four years on a college campus as delaying rather than fostering the development of these crucial skills.

But soft skills aren’t screened at the top of the hiring funnel. Employers aren’t likely to list “humility” as a skill in job descriptions. And the soft skills that are listed aren’t readily assessable from résumés. So soft skills are evaluated further down the hiring funnel, via interviews – and long after the initial screen (primarily on digital skills) has weeded out many candidates with strong soft skills. It’s no wonder employers don’t think candidates’ soft skills are up to snuff. In a LinkedIn study of hiring managers, 59 percent said soft skills were difficult to find and this skill gap was limiting their productivity. A 2015 Wall Street Journal survey of nine hundred executives found that 89 percent have a very or somewhat difficult time finding candidates with the requisite soft skills.

We believe employers have become frustrated by their inability to find candidates who check every box. They’re not going to recruit on 1,000 campuses to find the proverbial needle in a haystack. As a result, many have begun resorting to insisting that candidates have already done the job, even for entry-level jobs. A recent survey found that 61 percent of all full-time jobs seeking entry-level employers require at least three years of experience. This means entry-level candidates are expected to be conversant on the industry and business function in question – an impossible task.

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The Results

For some recent graduates, the results are already in. Recent reports show that around 4 in 10 college graduates are underemployed, or performing a job that does not require a degree, in their first job. These graduates earn around $10,000 less per year than their employed peers (a 27 percent decrease) and face a 5x likelihood of remaining underemployed 5 years later. This troubling trend persists across majors, with even STEM graduates ranging from 29 percent underemployment in Engineering fields to 51 percent underemployment in Biological and Medical Sciences fields. In other words, no higher education discipline today – from the humanities to the science and technology disciplines – is adequately preparing all students with the combination of digital skills, soft skills, and industry knowledge that they need to reach gainful employment on graduation.

These results have not gone unnoticed by America’s future college and university students. Due to the increasing skills gap, and facing a crisis of college affordability, we have seen a massive shift in student preferences. The single biggest change in higher education in the past decade is the percentage of students who say they’re enrolling for job, career, or income reasons. Today, in survey after survey, more than 90 percent of students provide this as the predominant reason for going to college. But only a third of students believe college is preparing them for employment success. To paraphrase James Carville from President Clinton’s successful 1992 election: “It’s the job, stupid.”

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THE SOLUTION: LAST-MILE TRAINING

Last-Mile Training

Last-Mile Training takes a Design Thinking approach to the skills gap: designing backward from good entry-level jobs rather than forward from high school. What skills are employers demanding for entry-level positions in IT, data analytics, healthcare, biotech, finance, energy, sales, digital marketing, and what training is required? These are the key elements of all Last-Mile Training programs: primarily digital skills, soft skills, and industry knowledge.

Last-Mile Training originated in 2012 with tuition-pay coding bootcamps. There are now hundreds of tuition-pay bootcamps across the U.S. in areas like technology (coding, mobile development, web development, product development, product management, UI/UX design, data, cybersecurity, AI), healthcare (medical devices, home care), digital marketing, and sales. Nearly all of these programs are in-person, immersive, and intensive.

In the past two years, tuition-based programs have begun to be eclipsed by income share programs. These programs utilize income share agreements (ISAs) in lieu of tuition. ISAs are income-linked repayment contracts in which programs front funds for student tuition and fees – either from their operating budgets, or external sources. Then programs (or their funders) receive repayment following graduation as a percentage of student income. For instance, an ISA contract might specify that a program graduate repays tuition using 10% of their income for the first 3 years after graduating, if they reach a minimum income threshold of $60,000 a year (but repays $0 if they don’t). ISAs are insurance for students: if you don’t get a job, you won’t have to pay; and if you don’t get a good job, you won’t have to pay as much. In addition to a minimum income threshold, ISAs are time-capped and dollar-capped. Income share programs send a very welcome message to prospective students: that they have a stake in your employment. As a result, many income share programs are having a much easier time attracting talented students.

All Last-Mile Training programs share a few characteristics. They’re immersive and delivered in environments that resemble workspaces more than traditional college classrooms. For many students, it feels more like going to work than going to class. In these environments, students work together on real problems and projects borrowed or derived from employer partners. This allows Last-Mile Training to check not only the digital skill boxes, but also soft skills and industry knowledge.

Closing the Skills Gap at Scale Means Overcoming Frictions

But closing the skills gap at scale isn’t just about 7 million unfilled jobs today. It’s about moving tens of millions of Americans from declining or stagnant sectors of the economy, to dynamic sectors like technology and healthcare over the next decade. As Last-Mile Training programs have evolved over the past few years, it’s become clear that in order to scale, they need to address two distinct frictions. On the student or candidate side, there is “Education Friction.” Education Friction is why individuals fail to upskill themselves. This is a result of the time, the cost, and – most important – the uncertainty of a positive employment outcome. Education Friction is a major cause of the continuing skills gap. On the employer side, there’s also “Hiring Friction.” Hiring Friction is why employers are loath to hire candidates who haven’t already proven they can do the job, due to risk of a bad hire, or higher churn. Hiring Friction helps to explain all the unfilled good jobs, and why employers are increasingly requiring years of relevant experience for positions that should be (and once were) entry level.
While tuition-based Last-Mile Training programs address Education Friction by reducing the uncertainty of a good employment outcome, and income share programs go further by reducing the financial risk, neither completely eliminates Education Friction by guaranteeing a job, and – more important – neither addresses Hiring Friction. Scalable Last-Mile Training models will be those that eliminate both frictions, providing friction-free pathways to good jobs in growing sectors of the economy. Eliminating Education Friction means Last-Mile Training with no financial cost and a guaranteed job. And eliminating Hiring Friction means allowing employers to evaluate candidate performance on real project work before being asked to make a hiring decision.

**Employer Models**

We believe every tuition-based or income share Last-Mile Training program – and nearly everyone who’s ever worked on closing the skills gap – has come to the conclusion that the hardest part of the gap to close is not developing or delivering the requisite training, but rather building the bridge to the end employer.

Few employers are interested in a fledgling training program’s dozen graduates, let alone willing to alter their hiring practices. No employers are willing to guarantee employment to graduates of Last-Mile Training programs, and few are organized to even have a conversation about this. (The rare conversations that do occur are typically with a philanthropic or external-facing arm of the employer – not with anyone directly involved in hiring at scale.)

The simplest way to bridge the gap is for employers to operate Last-Mile Training programs themselves. These programs are called apprenticeship programs, which in the U.S. are largely restricted to traditional building and industrial trades. The Trump Administration has set a goal of 5M new apprentices, but this will only happen if apprenticeships scale into new sectors, like technology and healthcare.

Some employers in these sectors have taken the lead on launching their own apprenticeship programs. In financial services, Aon, the Hartford, and Zurich all operate apprenticeship programs. Aon offers apprenticeships in insurance, technology and human resources in partnership with a Chicago community college while paying a salary of $35,000. Bridget Gainer, VP for Global Public Affairs at Aon, said the program originated after the company realized it was experiencing a “distracting” level of turnover in certain entry-level positions. Believing that overqualified people would take the jobs and then leave in 18 months, Aon abandoned its degree requirement and launched its apprenticeship program to “fill positions and reduce turnover. . . It is neither charity nor a job creation program.”

Aon covers the cost of tuition as long as apprentices remain at the company. Two evenings each week, Aon apprentices head over to the college campus for insurance industry-specific classes. Once a week, apprentices receive counseling from a coach to help balance work, school and their personal lives. At the end of two years, Aon apprentices receive an associate’s degree in business management with a concentration in insurance, technology, or HR – not to mention a great job. Apprentices who complete

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the program are guaranteed full-time positions. Aon received 285 applicants for its first class of twenty-five apprentices and plans to start new classes every year.

The Hartford is expanding its new insurance claims apprenticeship program to 200 by 2020. The Hartford has obtained grant funding for its program and its insurance curriculum is delivered online by Rio Salado College. Zurich North America also received grant funding to cover the cost of its training, which is delivered by a local community college. Zurich’s apprenticeships are in both claims and underwriting and involve weekly classes at the community college. To provide apprentices with an incentive to complete the program, any apprentice who drops out or leaves within a year of completing the program is contractually obliged to repay the cost of tuition.

But the reality is too few employers are willing to invest the resources to launch their own apprenticeship programs. And the few that do aren’t interested in scaling to hundreds of apprentices at a time; the difficulty of managing hundreds of 18- and 19-year-old apprentices at the office or plant exceeds the potential talent pipeline benefit.

The good news is that we’re seeing the emergence of a new set of intermediaries that allow employers to outsource this talent development to trusted partners. These new models, which we call “employer-down” Last-Mile Training models, are typically companies that had very little or nothing to do with education or training previously, but which are now building Last-Mile Training into their business models – adding an attractive new dimension to their value proposition for their own commercial gain.

Think about staffing companies. They’re in the business of having their fingers on the pulse of their clients’ talent needs. They have relationships with hundreds or thousands of clients – most importantly with hiring managers – often at very large employers. Equally important, they’re accustomed to taking risk: hiring the talent themselves and staffing the talent out to clients. Our experience – and the rapid growth we’ve seen from adding Last-Mile Training to staffing – has provided convincing evidence that the best way to eliminate Hiring Friction is for intermediaries like staffing companies to provide employers with the opportunity to “try before they buy.” What was previously a tough hiring decision for employers becomes a no-brainer. Moreover, because the initial employer decision is not a hiring decision, these new pathways typically circumvent the formal HR function (which increasingly has become a compliance/risk management gatekeeper, rather than a talent management role) by working directly with hiring managers and business units. HR only gets involved later on, at the time of the hiring decision, after the talent has proven they can do the job – a much easier decision.

As a bonus, because staffing models are employer-down, they also eliminate Education Friction by not only refraining from charging tuition to candidates, but hiring candidates from day one of training, thereby guaranteeing an employment outcome. Employers are willing to pay a premium over a trial period for this lower risk – particularly for skill gap areas where the cost of a bad hire is at a record high, and where over 50 percent of entry-level employees churn within two years. By absorbing the hiring risk away from employers, intermediaries like staffing companies are producing new friction-free pathways to employment that have the potential to close America’s skills gap over the next decade.

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The growth demonstrated by staffing + Last-Mile Training models is noteworthy. FDM group, a UK-based publicly-traded staffing business that has helped pioneer this model with IT staffing into financial services companies, has grown 24 percent over the past three years. Revature, a University Ventures Fund II portfolio company that places college graduates into entry-level software development roles, has grown even more rapidly, as shown below.

![Revature Outcomes: College Graduate Software Engineering Job Placements](image)

Revature’s growth is a testament to the fact that it is possible to utilize Last-Mile Training to create a developer for less than it costs to recruit an experienced developer (and that the “emerging talent” will cost less for a period of time than the experienced hire). In an attempt to do exactly this, staffing giant Adecco recently acquired General Assembly, the largest tuition-pay coding bootcamp, for 4x revenue.

The growth of these programs highlights the massive impact on employment outcomes caused by shifting the burden of job training and placement from individual companies to intermediaries with an economic incentive to incorporate entry-level talent recruitment and Last-Mile Training into their business models. By pooling employer demand across the country, Revature and other intermediaries are able to scale job outcomes to a level unmatched by most individual companies and philanthropic efforts today.

Although staffing is a large sector of the economy ($150 billion), Last-Mile Training staffing models may be dwarfed by a related employer-down model. Every American employer outsources a range of business services to specialized service providers. IT, accounting, and HR are the most common

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functions, but America leads the world in outsourcing, and there are millions of service providers seeking to differentiate their offerings to clients.

Through Last-Mile Training, service providers are enhancing their value propositions by adding talent to the mix. By launching Last-Mile Training “apprenticeships” (registered or otherwise), digital marketing agencies will not only develop and run your campaign, they’ll provide you with a renewable source of proven, entry-level digital marketing talent. After apprentices have billed a certain number of hours to a client’s account, clients are permitted (and encouraged) to hire the proven talent. Unlike traditional apprenticeship models, employers don’t need to worry about bringing apprentices on-site and managing them; in these models, apprentices sit at the service provider doing client work, proving their ability to do the job, reducing Hiring Friction with every passing day until they’re hired by clients.

We believe a wide range of service providers in skill gap areas are beginning to recognize the potential of differentiation through talent provision. Beyond digital marketing, it’s likely that software development, cybersecurity, lab tech, case management, medical coding, claims administration, digital video production, and other service providers will launch “Outsourced Apprenticeships” and provide friction-free pathways for both candidates and employers, thereby enhancing their value proposition, pricing power, and market share. American employers lead the world in outsourcing non-core functions, or functions they don’t perform as well as specialists. We believe apprenticeships operated by service providers will make entry-level hiring the next major business function to be outsourced.

Techtonic is a good example of an Outsourced Apprenticeship. Techtonic is Boulder, CO-based software development shop that was recently approved by the U.S. Department of Labor as the first registered apprenticeship program for software development. Since then, Techtonic has marketed its services with a novel value proposition: not only does Techtonic address clients’ software development needs – whether for a mobile app, or a full-stack development project – but it also solves their talent needs. Techtonic apprentices begin working on client projects from week 6 or 7. And once they’ve billed 1,000 hours, clients can and are expected to hire them. Techtonic’s talent is remarkably diverse (40 percent underrepresented minority, 30 percent women, 25 percent veteran) and American-born. So Techtonic uniquely checks multiple boxes for its clients, and – critically – eliminates Hiring Friction because employers are only asked to make a hiring decision once they’ve become very familiar with a candidate’s work.

By eliminating Hiring Friction, what was previously a tough hiring decision for employers becomes a no-brainer. Moreover, because employers aren’t being asked to make a hiring decision, alternatives like Techtonic avoid the headache of interacting with HR. Most managers with a need for talent to complete immediate work are empowered to say yes to a new staffed or outsourced resource, and are therefore much more fertile ground for launching careers; after new talent is proven, the hiring process and paperwork become a mere formality tasked to HR. As a result, Techtonic has scaled 5x over the course of 2018.
THE PROPOSAL: FEDERAL FUNDS FOR “EMPLOYER-DOWN” LAST-MILE TRAINING

Introduction

Today, the single largest method of direct federal funding for higher education is through Pell Grants (around $28.2 billion in 2017-18), which are tied solely to degree-based education and almost wholly unconnected to job outcomes. The much more limited federal funding stream focused on job training is regulated through the Workforce Innovation and Opportunity Act (WIOA), which governs the deployment of more than $6.9 billion in Core WIOA Program federal funding annually primarily through 600+ regional and local Workforce Development Boards (WIBs).

In theory, WIBs are tasked with distributing federal and state funds to address skills gap and other workforce challenges in cooperation with public, private, and social sector stakeholders. In practice, however, while well-equipped to manage local workforce needs, WIBs often create an additional layer of complexity between federal funds directed towards a national interest (matching a well-trained workforce to careers in growing industries), and local funding needs like incumbent workforce development-focused organizations. As a result, the process by which relevant job training and placement organizations apply for and receive funding today is non-standardized throughout the U.S., often protracted due to local regulatory and political hurdles, and ill-equipped to support organizations with potential to place candidates at a national scale.

Yet parallel to our challenged postsecondary education and workforce systems, there are thousands of scaled employers and employer-facing intermediaries (staffing firms and business service providers) who would consider incorporating entry-level talent recruitment and Last-Mile Training into their business models if there were public support for the requisite significant investment. Establishing a mechanism to enable direct federal funding of scaled employer-down Last-Mile Training programs leading to guaranteed jobs would accelerate the development of frictionless career pathways for millions of Americans.

The four key components of the proposed funding, which we will address in detail, are as follows:

1) **Focus on employers:** Last-Mile Training (“LMT”) programs eligible to receive federal funding are restricted to either end employers or employer-facing intermediaries able to directly hire candidates into full-time positions.

2) **Reimburse recruitment and training costs:** Funding is structured as a reimbursement for recruitment and Last-Mile Training costs. This ensures that employers recoup costs in training future hires, but are not economically incentivized to train more hires than required by employer needs.

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3) **Pay for performance:** Last-Mile training providers are only eligible to recoup costs for candidates who are successfully placed into full-time, high-earning, career-track jobs in designated growth industries. This structure will ensure that LMT programs are incentivized to create employment outcomes for candidates, with the greatest amount of funding directed towards programs that achieve both quality and scale in employment outcomes. It is also based on the successful UK “pay for performance” funding model for Apprenticeship Service Providers, firms which provide a combination of training and placement to companies hiring apprentices.30

4) **Direct employers to recruit and train candidates in need:** Employers are only eligible to receive recruitment and training cost reimbursement for disadvantaged candidates, as defined by the Free Application for Federal Student Aid (FAFSA) used to direct Pell Grants today. This methodology has proven successful in targeting students most in need today (see below).31 It should be noted that employers are not prohibited from training candidates who are not qualified to receive federal aid, and are therefore likely take in a mix of advantaged and disadvantaged candidates due to the economic incentives of providing targeted training to a cohort of qualified future hires. But federal funding will only reimburse recruitment and training cost for candidates who meet Pell requirements.

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30 In the UK, apprentices must remain enrolled for 13 weeks to be eligible for payment to ASP’s, with 20 percent of funding held back and paid upon completion of apprenticeship programs. See Education & Skills Funding Agency, Apprenticeship technical funding guide for starts from May 2017, July 2018

Governance & Key Stakeholders

*Primary governing body:* The proposed owner for the program is the U.S. Department of Labor’s Employment and Training Administration (ETA), which is primarily responsible for administering the core components of the Workforce Innovation and Opportunity Act (WIOA) today.

*Key collaborators:*
- **U.S. Chamber of Commerce:** The U.S. Chamber of Commerce should be a key collaborator in raising industry awareness and participation in the program. The Chamber should conduct outreach through national Industry Associations and other networks to raise engagement in the program to end employers, either as direct Last-Mile Training providers or beneficiaries of training provided by intermediaries (staffing and outsourced service providers).
- **WIBs:** Local and regional WIBs should collaborate with the U.S. Chamber of Commerce to involve end employers as well. Particularly valuable will be the ability to complement the Chamber’s national scope with campaigns to bring awareness to local employers or associations most in need of highly skilled digital talent. In addition, WIBs can collaborate with the DOL to ensure WIOA-administered and partner programs (e.g., the Adult Services program, the Wagner-Peyser program, the Job Corps program, Apprenticeship programs, etc.) work with new intermediaries to source talent and build employer relationships.
- **WIOA Administration Leadership:** While the proposed program is owned at the ETA level, collaboration with WIOA leadership will be critical in sharing best practices in administering federal workforce funds and engaging relevant stakeholders within and outside of the ETA.

Sources of Funding

The proposed funding is a new funding stream directed towards “employer-down” Last-Mile Training programs. However, the option exists to cover part or all of this funding stream by reallocating funds from related programs. These programs are:

*Federal Pell Grants:* Potentially the most efficient funding source would be funds currently directed towards Pell Grants, as these grants focus solely on degree-based higher education and have the following shortcomings:
- Less than half of all Pell recipients earn a bachelor’s degree within 6 years at the college where they first enroll. On an institutional level, only 47 percent of institutions award degrees to more than half of Pell recipients who initially enroll. This means that potentially 50 percent or more of total grant funding today is not being directed towards creating strong employment outcomes for entry-level workers.
- Job attainment across Pell recipients is not tracked. However, at a national level, Strada and Burning Glass research shows that 43 percent of all college graduates are underemployed at the start of their careers, earning an average of $10,000 (27 percent) less per year than fully employed graduates, with 5x as much likelihood of remaining underemployed 5 years later. This trend includes STEM graduates, ranging from 29 percent Engineering underemployment to 51 percent Biological and Medical Sciences underemployment.

However, reallocating Pell funding may pose feasibility challenges, as the program would require DOL and DOE collaboration on the heels of recent efforts to reduce Pell eligibility hours at the federal level. Other funding streams should therefore be considered in the near term.

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33 See footnote 18 for Strada and Burning Glass Report.
WIOA & Partner Program Funding: For program year 2016, the federal government appropriated $10.5 billion to states for Core WIOA Program and partner program funding, with over $6.9 billion for the Core WIOA Program and around $3.4 billion in federal formula funding and/or competitive discretionary grants for partner programs. The most feasible source of funding for the proposed program is to redirect a portion of WIOA and partner funding to Last-Mile Training, as the latter accomplishes similar goals at a national scale. In addition, while the end goal for the proposed program is direct federal funding, WIOA state-level funds also offer the opportunity for local or state leaders to leverage federal funding to pilot this model in partnership with local employers, e.g. by leveraging flexible rapid response training funding streams.

Program & Employer Eligibility

Last-Mile Training (“LMT”) programs eligible to receive federal reimbursement for recruitment and training should be defined as programs meeting Training Criteria, offered by employers or by intermediaries that meet Employer Criteria, leading to employment for candidates meeting Employment Criteria.

Training Criteria:

- **Curriculum:** Curriculum is based on specific, measurable job requirements (technical skills, soft skills, and/or industry background) for specific positions meeting Employment Criteria, with requirements developed in collaboration with potential end employers of candidates.

- **Training Outcomes:** Training enables candidates to meet designated job requirements, as demonstrated by a) assessments during training program and b) ability to perform in designated roles under managerial supervision after entering full-time employment.

- **Training Characteristics:** Training period is a minimum of 4 weeks and a maximum of 6 months. Training includes the following at a minimum: 2 weeks full-time, in-person training; 40 hours live, instructor-led content (online or in person); 40 hours live, cohort-based training producing candidate work products similar to on-the-job work products (online or in person).

- **Candidates:** Candidates are hired as employees from the first day of training and paid at least the relevant minimum wage. Candidates cannot be charged for any training tuition, fees, or expenses.

Employer Criteria:

- **Registered Apprenticeship:** Program is federally designated as a Registered Apprenticeship, or a new industry-recognized apprenticeship.

- **Operational Scale:** Company or service provider must employ at least 10 full-time employees (not necessarily involved in LMT program).

- **LMT Scale:** Employers hire a minimum of 10 candidates into full-time positions meeting Employment Criteria within a year of first reimbursement of recruitment and training expenses, and a minimum of 30 candidates into such positions annually within three years.

Employment Criteria:

- **Occupation:** Training and employment must focus on specific occupations that meet or exceed projected U.S. average employment growth as defined by the Bureau of Labor Statistics.

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Statistics (most recent projections should be used; 12/2017 projections yield 7.4 percent average growth from 2016-2026). Today, these occupations are concentrated within, but not exclusively confined to, Healthcare and IT industries (see below).35

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35 UV analysis of data from BLS, Career Outlook, December 2017 and 2014-24 projections
• **Completion Rates:** By second year of operations, program should achieve completion rate (percent of candidates who complete LMT program) of at or above 70 percent.

• **Employment & Starting Salary:** Critically, candidates must remain employed full-time in-field – either by the original employer, or by an end-client – for at least 12 months following completion of training, and – following completion of training – at a salary level that is at least 2x the relevant minimum wage.

**Program Funding Structure**

Eligible LMT programs (See “Program & Employer Eligibility”) should receive federal funds as a reimbursement of recruitment and training costs, which only apply to candidates meeting Employment Criteria. This structure ensures that LMT programs receive funding on a performance basis (job outcomes for candidates), with the greatest amount of funding directed towards programs that achieve both quality and scale in job outcomes for candidates.

**Employers will be eligible to receive recruitment and training cost reimbursement for candidates meeting the following criteria:**

- Candidate hired after conclusion of training program into an occupation meeting all above Employment Criteria.
- At start of training program (i.e. not including any wage paid to candidate as a trainee), candidate is eligible to receive Pell Grant funding for degree-based higher education, based
on candidate’s Expected Family Contribution (EFC) as reported in their Student Aid Report after completing a FAFSA form. Employers will be eligible for recruitment and training cost reimbursement for any candidate with an EFC which qualifies them to receive greater than $0 in Pell Grants.\textsuperscript{36}

**Calculating Recruitment and Training Reimbursement:**

- **Recruitment costs:** Reimbursement should only cover costs directly associated with recruiting candidates to training. Costs may not include employer-facing recruitment and promotion or general company branding / PR efforts.

- **Training costs:** Reimbursement should only cover the costs of training and assessing job-skills for roles meeting Employment Criteria and/or for reimbursements, stipends, or wages paid to trainees during training. Training costs should not include costs incurred in hiring or placing candidates (employer-facing marketing, communications, or promotion; starting bonuses; or other costs after conclusion of training period).

- **Eligible candidates only:** Reimbursed costs should only cover candidates meeting reimbursement criteria. When calculating non-unit costs (e.g., instructors), total reimbursable amount per candidate should be based on total training and wage costs, divided by total number of candidates in training (including candidates not eligible for reimbursement as well as candidates who start but do not complete).

- **Not “double-counted”:** The same spend cannot be counted twice for reimbursement across candidates, years of program operation, total operational Last-Mile Training programs, etc.

- **Reimbursement cap:** Total recruitment and training costs may not exceed $10,000 per candidate.

**Anticipated Outcomes & Evidence of Success**

With this initiative, we aim to accelerate the growth of “employer-down” Last-Mile Training programs. These programs greatly reduce or eliminate Education Friction, the costs and risks which restrain workers from upskilling to fill employer talent needs, by ensuring training is efficient, skill-focused, and free (or paid) for candidates. They also greatly reduce or eliminate Hiring Friction, the costs and risks which restrain employers from hiring candidates who haven’t already proven they can do the job, by ensuring training is tied directly to open positions and starts with paid employment, not the classroom. Taken together, these benefits have the potential to bridge the Skills Gap and match millions of unemployed or underemployed Americans to great jobs in growing sectors.

As described earlier, there are already successful “employer-down” Last-Mile Training models providing jobs to thousands of Americans with high representation from disadvantaged sectors of society. We believe many additional employers as well as employer-facing intermediaries (staffing firms and business service providers) would consider incorporating Last-Mile Training into their business models if they knew that they could recoup the significant investment in recruitment and training. This program will close the gap and accelerate the growth of Last-Mile Training programs and the development of frictionless career pathways for millions of Americans.

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\textsuperscript{36} The EFC is calculated based on student and student family net income less living expenses and net assets. See Federal Student Aid, March 2018, [https://studentaid.ed.gov/sa/about/announcements/pell-2018-19](https://studentaid.ed.gov/sa/about/announcements/pell-2018-19)
Initial target participants in this program are the millions of students underserved by today’s higher education system: the approximately 70 percent of students who do not complete 2-year degrees within 3 years, the approximately 40 percent of students (and more than 50 percent of Pell recipients) who do not complete 4-year degrees within 6 years, the 43 percent of bachelor’s degree recipients who face underemployment, and the likely larger, but untracked percentage of students graduating with associate’s degrees who face underemployment. As digital skill requirements proliferate and Last-Mile Training programs scale across geographies and industries, these frictionless pathways to employment have an opportunity to rival traditional college not only for today’s underserved students, but for tens of millions of American workers who are out-of-position relative to current and future labor market needs.

While little research addresses Last-Mile Training programs in particular, significant research indicates that apprenticeships, a specific type of “employer-down” Last-Mile Training program in which trainees are paid by an employer to “learn by doing” a job before transitioning to full-time employment, improve employment outcomes for young people. OECD’s 2017 Apprenticeship report summarizes the potential benefits to apprentices as: higher employment rates than the national average, below average repeated periods of unemployment than the national average, stronger employment outcomes than their often-compared peers graduating vocational education programs, and earnings up to 15-20 percent higher than graduates from compulsory education. 

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38 See footnote 18 for Strada and Burning Glass Report.
39 OECD, June 16, 2017, https://www.oecd-ilibrary.org/sites/9789264266681-en/1/2/1/index.html?itemId=/content/publication/9789264266681-en&csp=盐城ed513ae1deb07a4cfdf0fd00b6ad&itemIGO=oecd&itemContentType=book
In addition to these benefits, a research scan by the OECD suggests that apprenticeships improve labor market outcomes more broadly. U.S. state-level data shows that ROI for vocational training, including apprenticeships, can range from 8.4 percent (Wyoming) to 48.3 percent (Massachusetts). In the UK, by contrast, where apprenticeships have been broadly implemented and regulated, British National Audit Office analysis suggests a return of 16 to 21 times total apprenticeship spending to the overall economy. Finally, cross-country data shows that countries with high shares of young people enrolled in vocational education, including Germany, Denmark and Australia, tend to have the lowest rates of youth unemployment.40 As we have stated, the expectation is not that apprenticeships expand outside the traditional industrial and building trades by dint of end-employers taking the initiative themselves, although many more will be incentivized by federal funding of recruitment and training costs for eligible employees. But the main lift will be by intermediaries such as staffing and business services firms with a commercial incentive to scale entry-level talent provision. These firms will turn Outsourced Apprenticeships into a primary pathway to good jobs.

40 See footnote 41.
IMPLEMENTATION DETAILS

Vision for Impact

Today, there are over 7 million job openings in the U.S., with over 40 percent in the information, healthcare, finance, and professional and business services industries ripe for Last-Mile Training innovation. At scale, Last-Mile Training can create career pathways for unemployed and underemployed Americans to achieve not only these jobs, but also the millions of new jobs that will be created over the next decade in these high-growth fields – from the 1.4 million unfilled software jobs expected by 2020, to the job growth from still-nascent fields like blockchain, Robotic Process Automation (RPA), and telemedicine.

A conservative estimate of potential scale within 5 years based on Revature’s growth suggests that Last-Mile Training programs can place almost 630,000 candidates into career paths by Year 5 with 5,000 total providers – or roughly 25 percent of the more than 21,000 registered apprenticeship programs operating in the U.S. today.

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The program is expected to remain sustainable as it scales due to two reasons. First, as detailed earlier, developing America’s workforce will create net economic gains, with low estimates from 8.4 to 48.3 percent ROI and high estimates from scaled implementation in the U.K. to 16 to 21 times initial investment. Second, as Last Mile Training options scale across the U.S., they will become viable alternatives to Pell-funded 2- and 4-year degrees for some students, potentially reducing total federal spending while increasing associated employment outcomes.

A simple method of checking funding sustainability is to calculate the new taxes gained from shifting American workers from underemployment to full employment. Based on Strada and Burning Glass research, each worker moved from underemployment to employment would gain around $10,000 in annual income, which would be a net gain to total U.S. labor market income (as each newly employed worker would fill one of 7 million open jobs). Each new job placement would therefore create additional annual federal income tax revenues of around $900 at a minimum, but likely significantly more given year over year wage gains expected for fully employed workers. If each new Last-Mile Training job placement required federal spending of a maximum of $10,000, then this investment would be returned to the government within around 11 years – yielding a fully sustainable investment vehicle even without calculating additional economic gains.

In addition, uncalculated economic gains would include: additional tax revenues gained from shifting workers from unemployment to employment, additional tax revenues gained from expected year over year wage gains for fully employed workers, reduction in federal provisions for unemployed or underemployed workers, reduction in federal grant and loan outlays for workers who enter Last-Mile Training pathways as an alternative to degree-based higher education, and productivity gains from filling higher-skilled open positions.

**Conditions for Launch & Key Stakeholders**

The current success of Last-Mile Training models, as well as bipartisan support for apprenticeships at federal, state, and local levels, have created the necessary conditions to launch federal support for Last-Mile Training. The major barrier to launch is the effort required to align the required stakeholders (DOE, DOL, etc.) on appropriate funding streams and implement the program, especially on the heels of recent efforts to reduce Pell eligibility hours at the federal level.

However, this barrier can be surmounted in the long term by focusing on regional, state, and local successes in the short term. In particular, the ~$10.5 billion deployed annually in WIOA and partner program state-level funds offer the opportunity for state and local leaders to pilot this model in partnership with local WIBs and employers, e.g., by leveraging flexible rapid response training funding. State and local leaders interested in piloting Last-Mile Training funding should identify the following key stakeholders in their regions to collaborate on program definition and launch:

- **Existing “employer-down” Last-Mile Training providers:** Employers and intermediaries already offering relevant programs can partner with leaders to engage top employers, pilot

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44 See footnote 18 for Strada and Burning Glass Report.
45 Based on fully employed salary of around $45,000 per Strada and Burning Glass, and estimated federal income tax rate on $45,000 gross pay of around $4,000 (around 9 percent). See https://www.taxformcalculator.com/tax/45000.html
funding models, and share best practices. (See appendix for list of around 65 Last-Mile Training providers who have launched full or quasi-“employer-down” models.)

- **Scaled intermediaries (staffing providers, business services companies) with expertise in growing industries:** Scaled intermediaries in growing industries will more readily understand the economic benefits of purpose-trained talent, and will have the necessary scale and industry expertise (especially in industry-focused providers, e.g. in IT, Sales and Marketing, etc.) to pilot and expand Last-Mile Training models.

- **Innovative employers in growing industries with national scale:** Often providers of various types of Last-Mile Training, these companies have the flexibility to pilot new models and national presence to serve as end-employers for intermediary-run programs or scale successful pilots internally. Particularly strong employers include previously mentioned apprenticeship providers (Aon, The Hartford, Zurich North America), clients of current Last-Mile Training providers (see “Employer Engagement” in Appendix I), and companies with strong non-profit arms such as IBM, pioneer of the P-TECH high school to STEM employment public-private partnership which has graduated over 150 students to date.48

- **SaaS platform providers:** SaaS providers have a vested interest in increasing technology adoption through skilled training (e.g. on Salesforce, Workday, etc.). Providers with headquarters or other contacts in targeted regions should be engaged as sources of expertise, employer relationships, and PR.

- **Industry associations:** Industry associations in skills gap industries (e.g. IT, Accounting, etc.) can help source end employers and build PR momentum.

- **WIBs:** Regional and local WIBs, particularly larger boards, can serve to direct funds for state and local pilots. In addition, WIBs can ensure that current WIOA-administered and partner programs (e.g., Adult Services, Wagner-Peyser, Job Corps, etc.) help source talent and build employer relationships.

- **Colleges and universities:** 2- and 4- year colleges can partner with Last-Mile Training providers to source new and recent graduates seeking to launch careers. This model has worked particularly well with current successful Last-Mile Training providers, both in sourcing candidates and generating top-of-funnel PR and engagement in the concept across educators, employers, and governments.

- **Philanthropies and other social sector players:** Innovative social sector groups are likely to support the economic and social mission of Last-Mile Training. These players can leverage their networks to drive top-of-funnel awareness as well as employer and candidate participation. In addition, there is potential for these players to provide initial pilot funding. However, this funding should ideally be located at the government level to facilitate national scale over the long term.

**Communication Channels & Key Stakeholder Value Propositions**

Traditional government and industry communication channels should be leveraged to contact and engage potential stakeholders, e.g., top of funnel PR, individual contacts, industry associations and conferences, speaking events and round tables, etc. As communication support, leaders can also

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Key value propositions across stakeholder types include the following:

<table>
<thead>
<tr>
<th>Stakeholder Type</th>
<th>Scaled, sustainable job &amp; economic growth</th>
<th>Increase diversity in workforce</th>
<th>Purpose-trained, job-ready talent</th>
<th>PR for individuals / organizations</th>
<th>PR for industry / sector</th>
<th>Adoption of new technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governments / Leaders</td>
<td>✓</td>
<td>✓</td>
<td>□</td>
<td>✓</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Workforce Boards</td>
<td>✓</td>
<td>✓</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Existing LMT Providers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>□</td>
</tr>
<tr>
<td>Scaled Intermediaries</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>□</td>
</tr>
<tr>
<td>Innovative Employers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SaaS Platform Providers</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Industry Associations</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>□</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Colleges &amp; Social Sector</td>
<td>✓</td>
<td>✓</td>
<td>□</td>
<td>✓</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

**Budget & Government Role**

See “Sources of Funding” and “Vision for Impact” sections on expected scale, economic impact, and time to ROI. Key to keep in mind for state and local leaders considering pilots is that this model is structured to incentivize employers, not governments, to bear the heavy lifting of setting up and

51 WSJ, Oct 17, 2017, [https://www.wsj.com/articles/these-companies-will-pay-you-to-learn-your-job-1508245202](https://www.wsj.com/articles/these-companies-will-pay-you-to-learn-your-job-1508245202)
scaling successful Last-Mile Training. The program structure at a local level should therefore be light, focused on engagement and publicity, and likely managed (at least initially) by a related state program or WIB.

Main program costs at government level would include: program management, particularly in stakeholder engagement and communications; and program oversight, particularly in validating and reimbursing recruitment and training costs. Oversight will vary based on state / local pilot governance and organization structure, while reimbursement will track successful job placements as the program scales (see details on reimbursement structure in “Program Funding Structure” section).

**Key Next Actions**

Interested state and local leaders should prioritize the following next steps:

- Identify and engage key stakeholders in their regions to collaborate on program definition, employer engagement, candidate recruiting, and program launch.
- Identify owners from within each stakeholder group for the following activities:
  - **Last-Mile Training launch:** At least one employer or intermediary must own launch of initial Last-Mile Training programs with expectation of receiving partner funding. Employers will be drawn from the stakeholder set mentioned above, and most likely from the innovative and high-growth IT industry at the outset. Ideal training partners will own project management of majority of program (e.g., determining relevant job roles, hiring recruitment and Last-Mile Training leadership, setting launch dates with key stakeholders, confirming KPI’s and delivery deadlines, etc.)
  - **Funding:** Initially likely to be a regional WIB that will also provide program oversight. Potential for initial funding support from philanthropies or other social sector players as well.
  - **Program management (if different from funding source):** Identify the local “home” for oversight of the program. This body should collaborate with Last-Mile Training provider in setting initial stakeholder meetings and training launch expectations. Operational management, however, should remain with Last-Mile Training providers (see “Budget & Government Role” section for details).
  - **Program participant sourcing:** Getting commitments from program participant sourcing partners, e.g. colleges and universities, industry associations, or other networks, will be extremely helpful in driving a successful initial launch and proving the concept to key stakeholders. Contracts or other agreements between universities or other sourcing partners and training providers are recommended.
  - **PR / engagement:** Advance commitments from partners to amplify the message and share early successes from the program will have an outsized impact on candidate sourcing and employer placement.
- Ensure program management aligns all stakeholders on KPI’s and tracking mechanism for program success. This will ensure each key stakeholder is accountable – and recognized – for their contribution to the development of sustainable career pathways for millions of American workers locally and nationally.
APPENDIX: SAMPLE NATIONAL & LOCAL LAST-MILE TRAINING PROVIDERS

Following are Last-Mile Training programs run by either intermediaries (Staffing / Placement Providers and Apprenticeship Service Providers) or directly by companies (Apprenticeship programs), representing a strong potential set of collaborators for launching or scaling state and local “employer-down” Last Mile Training programs.

Staffing and Placement Providers

<table>
<thead>
<tr>
<th>Company name</th>
<th>Preparing students for these jobs:</th>
<th>Locations</th>
<th>Employer engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>AlwaysHired</td>
<td>Tech Sales</td>
<td>San Francisco, CA</td>
<td>AlwaysHired contracts with employer partners for student placement</td>
</tr>
<tr>
<td>Avenica</td>
<td>IT, Banking, Non-profit, Logistics, Insurance, Financial Services, others</td>
<td>Atlanta, Chicago, Dallas, Minneapolis, Philadelphia, Phoenix, St. Louis</td>
<td>Job requirements and Avenica evaluation criteria selected in partnership with Avenica clients; candidates complete 4 month trial period working directly for future employers</td>
</tr>
<tr>
<td>Code2040</td>
<td>Web Development</td>
<td>San Francisco, CA</td>
<td>Employers of interns participate in diversity training</td>
</tr>
<tr>
<td>Cook Systems Bootcamp</td>
<td>Web Development</td>
<td>Memphis, TN; Phoenix, AZ; Dallas, TX; Jacksonville, FL</td>
<td>Program run by Cook Systems, outsourced development company, with potential hire at end of program</td>
</tr>
<tr>
<td>Knack.it</td>
<td>Varies</td>
<td>Online</td>
<td>Paid relationships with employers and educational institutions for placement of candidates based on performance</td>
</tr>
<tr>
<td>Medical Sales College</td>
<td>Medical Device Sales / Other Services</td>
<td>Denver, Tampa, Austin, Los Angeles, Detroit, or online</td>
<td>Hiring partner network, including employer portal for candidate review; career development resources</td>
</tr>
<tr>
<td>PrepMD</td>
<td>Medical Device Sales / Other Services</td>
<td>Braintree, MA</td>
<td>PrepMD contracts with major employers for placement, and also offers temporary positions in Medical Device Services until students are permanently placed</td>
</tr>
<tr>
<td>Revature</td>
<td>IT, Web Development, Software Development</td>
<td>Across US</td>
<td>Graduates employed full-time by Revature and placed on software engineering projects for Revature client companies across US. Curriculum developed and refined based on technology needs of Revature clients.</td>
</tr>
<tr>
<td>Skillful</td>
<td>Varies</td>
<td>Online</td>
<td>Employer hiring network; student and employer facing tools (e.g. skills based job posting templates, interview question) to connect middle-skill job seekers to employers, educators, and community coaches</td>
</tr>
<tr>
<td>Strive Talent</td>
<td>Sales and customer service/success</td>
<td>SF, LA, Chicago</td>
<td>For premium enterprise clients, Strive qualitatively and quantitatively analyzes the company's open role to identify the traits/competencies that are necessary to succeed and then creates a pre-intro and post-intro evaluation process.</td>
</tr>
<tr>
<td>The Data Incubator</td>
<td>Data Science</td>
<td>NYC, Washington, San Francisco, Seattle, Boston, Online</td>
<td>Bootcamp offered free to students and paid for by employers; hiring network of 250+ hiring and training partners</td>
</tr>
</tbody>
</table>

Apprenticeship Service Providers

(Assist employers in launching and managing apprenticeships and training programs)

<table>
<thead>
<tr>
<th>Company name</th>
<th>Preparing students for these jobs:</th>
<th>Locations</th>
<th>Employer engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apprentice.io</td>
<td>Software Development</td>
<td>U.S. and Europe (varies by participating companies)</td>
<td>Apprentice.io is an apprenticeship service resource connecting students to employer-run apprenticeships. Engagement varies by employer</td>
</tr>
<tr>
<td>Apprenticeship 2000</td>
<td>Manufacturing</td>
<td>Charlotte, NC</td>
<td>Paid apprenticeships with in SC and relevant high school curriculum run by local participating schools; path to long term employment at partner employers</td>
</tr>
<tr>
<td>Apprenticeship Carolina</td>
<td>Various technical fields including IT, Advanced Manufacturing, Construction, Energy, Healthcare, Tourism, Transportation</td>
<td>South Carolina</td>
<td>Run by the SC Technical College System, partners with employers to run 800+ apprenticeship programs combining on-the-job training with technical education typically delivered by the technical college</td>
</tr>
<tr>
<td>CareerWise Colorado</td>
<td>IT, Business Operations, Finance, Advanced Manufacturing</td>
<td>Colorado</td>
<td>Employer managed Apprenticeship with CareerWise assistance</td>
</tr>
</tbody>
</table>
## Apprenticeships

<table>
<thead>
<tr>
<th>Company name</th>
<th>Preparing students for these jobs:</th>
<th>Locations</th>
<th>Employer engagement (E.g. in developing curriculum, mentoring students, connecting for interviews, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8th light</td>
<td>Software Development</td>
<td>Chicago, Los Angeles, New York, London</td>
<td>Apprenticeship is the largest path to employment at 8th light. Apprentices are software generalists who rotate regularly through client projects before joining general team as Software Consultants</td>
</tr>
<tr>
<td>Accenture Apprentice Program</td>
<td>IT, consulting, Federal Services</td>
<td>Chicago, expanding to other locations</td>
<td>Full-time apprenticeship with potential ramp to full-time employment</td>
</tr>
<tr>
<td>Accenture Federal Services</td>
<td>IT, consulting, Federal Services</td>
<td>Eastside Promise Zone, San Antonio, TX</td>
<td>Public-private partnership with the City of San Antonio and Bexar County, Texas, providing up to 50 paid apprenticeships for students and adults from the Eastside Education and Training Center, Sam Houston High School, and St. Philips College.</td>
</tr>
<tr>
<td>Amazon</td>
<td>IT</td>
<td>Seattle, WA</td>
<td>Partnership with Department of Labor to provide paid apprenticeship with ramp to full-time hiring for military veterans</td>
</tr>
<tr>
<td>Aon</td>
<td>Insurance, Technology, HR</td>
<td>US (Chicago, IL and Lincolnshire, IL) and UK</td>
<td>Full-time employment combined with certification-focused training provided by Aon</td>
</tr>
<tr>
<td>BLUE 1647</td>
<td>IT</td>
<td>St. Louis</td>
<td>Paid apprenticeship with guaranteed employment after program completion</td>
</tr>
<tr>
<td>Company name</td>
<td>Preparing students for these jobs</td>
<td>Locations</td>
<td>Employer engagement</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------</td>
<td>------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>BlueCross BlueShield</td>
<td>IT</td>
<td>South Carolina</td>
<td>Paid apprenticeship serves as path to employment at BCBS</td>
</tr>
<tr>
<td>BMW</td>
<td>Manufacturing</td>
<td>Spartanburg, South Carolina</td>
<td>BMW provides paid apprenticeship including on-the-job training</td>
</tr>
<tr>
<td>Cleveland Clinic - Sleep Technologist Program (ASTEP)</td>
<td>Sleep Technologist</td>
<td>Cleveland, OH</td>
<td>Following completion of the program, students are eligible for a sleep technology position at Cleveland Clinic contingent on successful completion of the ASTEP I program and 6 months of patient care experience. If hired they are eligible to seek reimbursement of tuition.</td>
</tr>
<tr>
<td>Cooperative Home Care Associates</td>
<td>Home Care</td>
<td>Bronx, New York</td>
<td>Home Care training as a path to employment at CHCA</td>
</tr>
<tr>
<td>Craftsmanship Academy by RoleModel</td>
<td>Software Development</td>
<td>Holly Springs, NC</td>
<td>Includes 3-6 month apprenticeship, followed by a 3-9 month residency at RoleModel with the expectation of full-time placement at RoleModel or referrals to another company</td>
</tr>
<tr>
<td>CVS Health</td>
<td>Retail Pharmacy and Management</td>
<td>Arkansas, Wisconsin, Rhode Island, Michigan, Missouri, Texas</td>
<td>Paid apprenticeship including on-the-job training with expected career path at CVS</td>
</tr>
<tr>
<td>Eagle Technologies</td>
<td>Manufacturing</td>
<td>Bridgman, MI</td>
<td>Company-provided manufacturing content leading to certification and job placement in the company</td>
</tr>
<tr>
<td>Fresh tilled soil</td>
<td>UX/UI Design</td>
<td>Massachusetts</td>
<td>Employer paid apprenticeship including on-the-job training</td>
</tr>
<tr>
<td>GE Healthcare Experienced Commercial Leadership Program (ECLP)</td>
<td>Medical Device Sales / Other Services</td>
<td>US and Canada</td>
<td>Paid apprenticeship followed by 8 months of on-the-job training, with path to employment at GE</td>
</tr>
<tr>
<td>IBM P-TECH</td>
<td>IT, Software Development, Cybersecurity</td>
<td>New York, Connecticut, Colorado, Illinois, Rhode Island, Maryland</td>
<td>IBM has jointly developed curriculums with the local community college, as well as one-year and two-year courses aligned with the company's hiring needs.</td>
</tr>
<tr>
<td>JPMorgan Chase</td>
<td>IT</td>
<td>Houston, TX</td>
<td>Employer paid apprenticeship including on-the-job training and ramp to full-time hiring</td>
</tr>
<tr>
<td>Kaiser Permanente</td>
<td>Medical Laboratory Technician / Medical Technologist</td>
<td>Colorado</td>
<td>On-the-job training and technical skills program leading to 2 year commitment to full-time hire at Kaiser Permanente Colorado Laboratory</td>
</tr>
<tr>
<td>Lockheed Martin</td>
<td>IT</td>
<td>Washington, D.C.</td>
<td>Paid apprenticeship and rotational work assignments serve as path to employment at Lockheed Martin</td>
</tr>
<tr>
<td>MemoryBlue</td>
<td>High Tech Inside Sales and Consulting</td>
<td>Virginia, California, Texas</td>
<td>Apprenticeship including on-the-job training leading to full-time regular position</td>
</tr>
<tr>
<td>Mercuria</td>
<td>IT, Finance, Commodities Trading and Logistics</td>
<td>Houston, TX</td>
<td>Paid apprenticeship serves as path to employment at Mercuria</td>
</tr>
<tr>
<td>Mercy Hospital - Medical Laboratory Science</td>
<td>Medical Laboratory Science</td>
<td>Ardmore, PA and Ada, OK</td>
<td>Mercy hired 100% of participants from first 2 years of program. Also offers scholarship program for students who commit to work for at least 2 years in a Mercy facility on graduation</td>
</tr>
<tr>
<td>Mercy Hospital - Pathway to Employment</td>
<td>Hospital Services</td>
<td>St. Louis and Crystal City, MO</td>
<td>Mercy provides apprenticeship training and assists students who achieve 80%+ competency in job placement at Mercy or other hospitals</td>
</tr>
<tr>
<td>NetGalaxy Studios</td>
<td>Web Development, Software Development</td>
<td>Charleston, SC</td>
<td>Paid apprenticeship serves as path to employment at netGALAXY</td>
</tr>
<tr>
<td>Nextiva</td>
<td>IT</td>
<td>Arizona</td>
<td>Paid apprenticeship serves as path to employment at Nextiva</td>
</tr>
<tr>
<td>Research Medical Center - StaRN</td>
<td>Specialty Nursing</td>
<td>Kansas City, MO</td>
<td>Apprenticeship followed by 2-year employment at sponsor hospital</td>
</tr>
<tr>
<td>Resilient Coder</td>
<td>Web Development</td>
<td>Boston</td>
<td>At least once per bootcamp, students meet client and complete paid work on client website; Resilient Lab hosts two month paid technical fellowship for bootcamp graduates</td>
</tr>
<tr>
<td>Siemens</td>
<td>Manufacturing</td>
<td>US (North Carolina, Alabama, Atlanta, Sacramento, UK)</td>
<td>Siemens-provided manufacturing content leading to certification and job placement in the company</td>
</tr>
<tr>
<td>Company name</td>
<td>Preparing students for these jobs</td>
<td>Locations</td>
<td>Employer engagement</td>
</tr>
<tr>
<td>------------------------------</td>
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</tr>
<tr>
<td>Techtonic Group</td>
<td>Web Development</td>
<td>Boulder, CO</td>
<td>Apprentices work as outsourced developers for local companies, with opportunity for employment at clients after graduating</td>
</tr>
<tr>
<td>The Hartford</td>
<td>Insurance (Claims)</td>
<td>Hartford, Connecticut and Tempe, Arizona</td>
<td>Paid apprenticeship including on-the-job training</td>
</tr>
<tr>
<td>TranZed Apprenticeship Services (TAS)</td>
<td>IT</td>
<td>Mid-Atlantic Area</td>
<td>Partnership with employers and 3aaa, a UK Apprenticeship Service Provider, to place and train candidates</td>
</tr>
<tr>
<td>Trinity Health - Certified Nursing Assistant (CNA)</td>
<td>CNA</td>
<td>22 US States</td>
<td>Free training offered through hospital to improve CNA employee funnel; potential hiring for graduates</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>Financial Services (Branch Management, Collections, Financial Crimes)</td>
<td>Florida, Illinois, Massachusetts, Missouri, New York, California</td>
<td>Paid apprenticeship including on-the-job training with expected career path at Wells Fargo</td>
</tr>
<tr>
<td>Zurich North America</td>
<td>Insurance (Underwriting and claims)</td>
<td>Schaumburg, IL</td>
<td>Paid apprenticeship including on-the-job training</td>
</tr>
</tbody>
</table>