



Building the Talent Pipeline: An Implementation Guide



U.S. CHAMBER OF COMMERCE FOUNDATION
Center for Education and Workforce



U.S. CHAMBER OF COMMERCE FOUNDATION

The U.S. Chamber of Commerce Foundation (USCCF) is a 501(c)(3) nonprofit affiliate of the U.S. Chamber of Commerce dedicated to strengthening America's long-term competitiveness by addressing developments that affect our nation, our economy, and the global business environment.

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U.S. CHAMBER OF COMMERCE

The U.S. Chamber of Commerce is the world's largest business federation representing the interests of more than 3 million businesses of all sizes, sectors, and regions, as well as state and local chambers and industry associations.

A Message from Bill Hansen



Since its founding in 1960, USA Funds has supported students across the country seeking educational opportunities to improve their lives and achieve the American Dream. Today, too few students and workers are able to achieve that dream. The latest data from the Bureau of Labor Statistics shows that there are 5.4 million job openings throughout the United States, up from 2.7 million openings in March 2010. Yet many students and workers cannot find steady employment because they lack the skills necessary for success in the workplace. To build a 21st century economy we need a 21st century workforce, and that means we need 21st century solutions.

USA Funds is driven by its mission, “Completion with a Purpose.”

Education without real-world applicability or the ability of college graduates to launch a career will not yield the results we need to continue to grow the American economy. We must improve the alignment between what is learned in the classroom and what is needed in the workplace if we are to close our nation’s skills gap.

Employers have recognized this critical link, and that is why business leaders are sitting down with our nation’s educators and the job trainers in the public, private, and nonprofit sectors, as well as with policymakers at every level of government to do something about it.

Through our partnership with the U.S. Chamber of Commerce Foundation on the Talent Pipeline Management initiative, we have seen firsthand how the employer community has come together to begin to implement demand-driven solutions that streamline the connection between employer needs and education and training programs, resulting in stronger career pathways and better prepared workers.

Through the application of supply chain management principles, Talent Pipeline Management includes strategies that improve communication between employers and education and training partners, provide clear metrics for measuring partner effectiveness, and better align incentives to encourage both the public and private sectors to make real changes to their education and workforce systems.

We are proud to partner on this initiative, and we hope that the readers of this guide will be inspired to begin executing these solutions in their own communities. Together we can fix the national skills gap and secure America’s place in the world as an economic powerhouse and land of opportunity for generations to come.

A handwritten signature in black ink that reads "William D. Hansen". The signature is fluid and cursive, with a long, sweeping underline.

William D. Hansen
President and CEO
USA Funds



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Introduction

Today, the stability of the American economy faces an imminent and dire threat. The skills gap is hindering the growth and competitiveness of our companies, and shortcomings in our education and workforce development systems continue to widen the gap. Our country finds itself increasingly in an unsustainable position, with a growing number of students who are struggling to manage their transition to employment and businesses that are desperate for new workers.

This challenge must be met by those who have the most at stake: members of the business community. To that end, the U.S. Chamber of Commerce Foundation (USCCF) launched a new initiative to explore a vision for demand-driven education and workforce systems—one that yields more effective employment transitions for students and a better prepared workforce for all employers.

On November 19, 2014, the USCCF released its report *Managing the Talent Pipeline: A New Approach to Closing the Skills Gap*, which issued a call to action for employers to play an expanded leadership role as end-customers of talent supply chain partnerships. This approach—a bold departure from prior practice—promotes employer-led action by proactively organizing and managing a preferred provider network of education and workforce partners that are measured and rewarded based on their ability to deliver a skilled workforce.

Through bold leadership and transformational change, employers can and must lead the way to stem the tide and close the skills gap. The time to act is now. But, where do we begin?

USCCF—and our partner USA Funds—have started a growing movement of employer-led networks operating across the United States. To support these networks—and others like them—USCCF developed this implementation guide, which focuses on six leading strategies for building employer capacity as end-customers of talent supply chain partnerships.

As USCCF continues to promote and expand demand-driven solutions, we hope that this implementation guide is an important step forward in building the next generation of employer-led education and workforce partnerships to meet the skills gap and workforce challenges of our time.

This implementation guide builds on the foundation set forth in the 2014 white paper, which identified how employers could leverage lessons learned from supply chain management and apply them to their education and workforce partnerships. The strategies identified in the current guide expands on this work and shows how key practices in supply chain management can inform employer action in organizing and managing the talent pipeline.¹ **See Figure 1.**

The guide is divided into six strategies that employers can use to be more effective end-customers of education and workforce partnerships. While each strategy can be pursued independently as a best practice, the strategies are intended to be coordinated as a systemic supply chain approach. Implementing the strategies in the recommended order will optimize the benefits received by employers. **See Figure 2.**

Many of the strategies can be implemented by an individual employer, though they are designed to be shared activities among a consortium of employers. Small to midsize businesses will find immediate benefits in coordinating their efforts, while larger employers will find economies of scale and market leverage when working in concert with other employers to close the skills gap.

Each strategy begins with a description and definition. From there, each is divided into three steps with two levels of practice: Getting Started and Advanced Practice. Because users may be starting with different experiences, the guide is designed as a roadmap to help users achieve a more advanced level of practice relative to their unique starting points. The authors recommend that users follow the steps sequentially and focus their efforts first on moving through the Getting Started practices. However, users may customize their approach and engage at the Advanced Practice level based on their needs and abilities.

Throughout the guide are examples that exemplify best practices from the national learning network.

Finally, the concluding chapter, “Putting It All Together,” demonstrates how each of the strategies combines to form an employer-led talent supply chain approach.

1. This guide builds upon of the arguments and references included in the previously released white paper, which can be accessed by visiting www.TheTalentSupplyChain.org. The white paper citation is included below. Also referenced is a recently released U.S. Chamber of Commerce Foundation publication on analyzing talent flows, which informs the methodology and figures described under Strategy 4.

Robert Sheets and Jason Tyszko, *Managing the Talent Pipeline: A New Approach to Closing the Skills Gap* (Washington, D.C.: U.S. Chamber of Commerce Foundation, 2014).

Andrew Reamer, Robert Sheets, and David Stevens, *Analyzing Talent Flow: Identifying Opportunities for Improvement* (Washington, D.C.: U.S. Chamber of Commerce Foundation, 2015). Figures included under Strategy 4 are sourced, with minor modifications, from the same paper.

Figure 1: Supply Chain Management/Talent Pipeline Management (TPM) Principles and Strategies

PRINCIPLES	
Supply Chain Management	Talent Pipeline Management
1. Supply chains drive competitive advantage; they are not a cost of doing business.	1. Connect your talent strategy to your business strategy to improve competitiveness.
2. Supply chain networks create shared value and competitiveness across all partners.	2. Organize and manage flexible and responsive partnerships with preferred providers to create shared value.
3. End-to-end metrics and aligned incentives improve performance across the supply chain.	3. Shared measures and aligned incentives improve performance of education and workforce partners.

STRATEGIES	
Supply Chain Management	Talent Pipeline Management
<p>1. Joint Sourcing Improve market leverage as a group and achieve economies of scale in sourcing and purchasing of products and services.</p>	<p>1. Organize Employer Collaboratives Form new employer alliances to manage the talent pipeline around a shared need.</p>
<p>2. Plan Forecast demand for products and services.</p>	<p>2. Engage in Demand Planning Identify which positions and capabilities to focus on and how many workers are needed.</p>
<p>3. Develop Sourcing Requirements Develop specifications for products and services that are included in procurement.</p>	<p>3. Communicate Competency and Credential Requirements Specify what workers need to know, what they need to be able to do, as well as what evidence is needed to prove it.</p>
<p>4. Develop Sourcing Networks Develop supply chain networks for supplying products and services based on sourcing requirements.</p>	<p>4. Analyze Talent Flows Identify current sources of qualified talent and where there are underutilized or alternative providers.</p>
<p>5. Manage and Improve Manage and improve the creation, delivery, and returns of procured products and services from sourcing networks.</p>	<p>5 & 6. Implement Shared Performance Measures and Align Incentives Measure the success and return on investment (ROI) of the talent supply chain, and improve performance through rewards and incentives.</p>

Figure 2: Coordinate Strategies for Talent Supply Chain Approach



Strategy 1: Organize Employer Collaboratives

While there have been numerous attempts to better manage and engage the employer community, there has been limited success to date. Understanding how to organize and involve employers—particularly small to midsize enterprises—is key to successful talent pipeline management. However, attracting and sustaining employer engagement has long been a challenge for policymakers, education and workforce partners, practitioners, and philanthropy alike.

For example, education initiatives have typically organized career pathway–related intermediaries that only allow for employers to play an advisory role (e.g., via career and technical education advisory boards). Similarly, workforce development efforts have mainly taken the form of sector-based initiatives that engage employers in a region to advise the public on industry needs and priorities (e.g., via workforce investment boards). Both systems have yet to leverage the full potential of employers.

Economic developers, commerce agencies, and business associations (e.g., chambers of commerce)—motivated by a need to stay competitive—have also organized the business community to gain a better understanding of education and workforce development needs. More recently, philanthropic and community-led initiatives have generated a new wave of collective impact efforts, such as the StriveTogether network.

Under talent pipeline management, new employer collaboratives take the place of the traditional advisory board or collective impact effort. Collaboratives represent a significant shift in thinking around employer engagement. Rather than having third-party organizations “bring employers to the table,” talent pipeline management calls for new partnerships formed *by employers for employers*.

Employer collaboratives serve a consortium of businesses by managing the group’s demand for talent and by brokering preferred provider relationships based on performance and return on investment (ROI). This requires that they be member-driven organizations composed of and governed by businesses that are direct recipients of the services provided by the collaborative. Collaboratives bring a unique value proposition to member companies by organizing and managing the talent pipeline as a shared activity. **See Figure 3.**

This also means that the activities of the collaborative are ultimately financed by member dues or through member-driven fundraising—though they may initially be supported by seed investment from government or philanthropic sources. **See Figure 4.**

The first step for any collaborative is to identify an area of focus—a shared talent need where it makes sense for employers to come together around a solution. Collaboratives can be organized in many ways, depending on employer need and member characteristics. For instance, they can be organized by industry sectors (e.g., manufacturing, energy, health care); by business capabilities that are contained within or across sectors (e.g., manufacturing production, product design, therapeutic services, or IT network administration); or around supply chains (e.g., a large company and its supplier network, including small to midsize enterprises). **See Figure 5.**

Employer collaboratives further differentiate themselves through a specific set of activities that add value for their business members. These activities include coordinating demand planning, communicating competency and credential requirements, back-mapping talent flows, defining shared measures, and aligning public and private incentives (each described in the guide).

By joining collaboratives, businesses can maximize their leverage in negotiating talent supply chain solutions with preferred providers and other stakeholders, such as public-sector education and workforce agencies. This is a critical leverage point for small to midsize enterprises that often lack the time, bandwidth, and volume of need to influence the responsiveness of education and workforce systems. **See Figure 6.**

HIGHLIGHTS

- ✓ Employer engagement in education and workforce systems remains a constant challenge.
- ✓ Employer collaboratives pose a new and innovative demand-driven solution to employer engagement.
- ✓ Organized by business for business, employer collaboratives provide services that are targeted to manage demand for talent as well as for preferred provider partnerships.

TAKING ACTION

Step 1: Establish the need for an employer collaborative and identify its focus based on targeted capabilities and positions that drive competitiveness.

Getting Started: Make a decision on where to focus your talent pipeline strategy, starting with one to two critical business functions (e.g., manufacturing production) in one to two sectors (e.g., health care). **See Figure 7.**

Advanced Practice: Expand focus to include additional business functions and sectors while establishing clear guidelines for how to manage changes in focus.

Step 2: Identify the organization that will serve as a pilot employer collaborative. Develop a long-term collaborative solution based on proven ability to add value to employer partners.

Getting Started: Identify an existing organization that can serve as a “host” (e.g., chamber of commerce) to advance the work of a pilot collaborative. Supported through seed funding, this pilot collaborative will demonstrate the value of having employers work together.

Advanced Practice: Formalize partnerships either by transitioning an existing organization to play the convener role or by forming a new organization. This includes developing a long-term business model and plan (e.g., finance, sustainability, recruitment, etc.).

Step 3: Prioritize and coordinate planning activities and practices that position and support employers as end-customers of talent supply chain partnerships.

Getting Started: Begin by engaging in a demand planning exercise; then organize employer needs by competency and credential requirements (see Strategies 2 and 3).

Advanced Practice: Next, map where employers currently get their best talent; then, develop and align measures and incentives to manage and improve provider performance (see Strategies 4, 5, and 6).

Figure 3: Value Proposition for Organizing or Joining an Employer Collaborative**Figure 4: Virginia's Governor's Competition for Talent Solutions**

In the next decade, Virginia employers will need to hire 1.5 million new workers to meet their workforce needs. Understanding the need for action, Governor Terry McAuliffe has taken a number of steps to create a business-driven workforce system that is focused on building the skills employers need to succeed in today's economy. In addition to setting state goals to significantly increase the credentialing levels of Virginia's students and workers, McAuliffe has adopted the TPM principles as part of a new pilot initiative, the Governor's Competition for Talent Solutions.

This project, the first in the nation, is an attempt by state government to move resources into the business community in order to build the capacity of employers as customers of education and workforce systems. Eligible entities for the competition include local chambers of commerce and economic development organizations that can bring employers together around workforce solutions.

This effort demonstrates the power and leadership of government in catalyzing new collaboratives that are led *by business for business*. Virginia recognizes that closing the skills gap will require a new leadership role for the business community, and state government can be a key partner in seeding a new demand-driven infrastructure to manage the talent pipeline.

Figure 5: Selecting an Employer Collaborative Focus

Organizational Model	Example Focus Areas
<i>By Industry Sector</i>	 Manufacturing  Energy  Health Care
<i>By Business Capability</i>	 Engineering  Production  Therapeutic Services
<i>By Supply Chain</i>	 <p>Supplier—Manufacturer—Distributor—Retailer</p>

Figure 6: Employer Engagement Intermediary Models

	Collective Impact	Career Pathway Initiatives
Employer Objectives	Enhance brand through corporate social responsibility, receive indirect benefits from a stronger labor pool, and engage employees in community service	Receive indirect benefits from a stronger labor pool by having institutions and programs better aligned to market needs
Members	<ul style="list-style-type: none"> • K–12 schools • Community colleges • Universities • Nonprofits • Businesses • Philanthropy • Elected officials 	<ul style="list-style-type: none"> • Community colleges • For-profit colleges • Technical colleges • Career and Technical Education (CTE) programs • Businesses
Governance	A committee of diverse stakeholders and subcommittees that may or may not be staffed by business	An advisory board that is staffed or led by an education provider or agency
Functions	<ul style="list-style-type: none"> • Set goals and define objectives • Manage communications • Convene community stakeholders • Advocate • Fundraise 	<ul style="list-style-type: none"> • Review labor market data • Inform and validate program need and curriculum • Advocate and recruit for program • Fundraise
Finance	<ul style="list-style-type: none"> • Philanthropy • Donations 	<ul style="list-style-type: none"> • State/federal grants • Education operating funds

DEMAND DRIVEN

Industry Sector-Based Partnerships	Commerce/Business Associations	Employer Collaboratives
Receive indirect benefits from a stronger labor pool by having adult education and workforce institutions and programs serving a specific industry sector better aligned to market needs	Advocate for shared economic development interests and policy objectives—including education and workforce development priorities—as well as coordinate community engagement	Manage demand for talent and coordinate performance-based preferred provider networks on behalf of a consortium of employers
<ul style="list-style-type: none"> • Workforce boards • Industry associations • Businesses • Community colleges and universities • State workforce agencies 	<ul style="list-style-type: none"> • Businesses • Industry associations • Economic development corporations • Commerce authorities 	<ul style="list-style-type: none"> • Businesses • Industry associations • Economic development corporations
A board staffed by a workforce agency and occasionally chaired by a business member with related task forces	Board of directors with an independent staff and composed primarily of business organizations	Business member board or committee organized by sector, cross-sector, or supply chain
<ul style="list-style-type: none"> • Review labor market data • Set workforce goals, policies, and priorities for public systems • Inventory and validate program offerings • Review program performance 	<ul style="list-style-type: none"> • Communicate the interests of business • Advocate for economic growth • Advocate for education and workforce reform • Facilitate events and meetings with community 	<ul style="list-style-type: none"> • Identify critical needs and establish mission and focus • Define success and benchmark progress • Manage demand for talent • Broker preferred-provider partnerships
<ul style="list-style-type: none"> • State/federal grants • Workforce operating funds 	<ul style="list-style-type: none"> • Member dues • Philanthropy 	<ul style="list-style-type: none"> • Member dues • Seed funding from nonprofits

Figure 7: Guiding Questions for Identifying Strategic Positions

- ✓ Which capabilities are most critical for business success?
- ✓ Which positions drive those capabilities and carry out the most critical work?
- ✓ Do vacancies in these positions significantly impact the success of your business?
- ✓ Are these positions hard to fill, or is competition for these positions significant?
- ✓ Will these positions experience significant changes in skill requirements?
- ✓ Is there a need to tap into new sources for these positions (e.g., increase diversity)?

Strategy 2: Engage in Demand Planning

What type of talent do we need, and how much? Answering these questions has been a challenge not only for employers trying to manage their growth, but also for governments attempting to align education and workforce systems to the needs of the economy. As an added challenge, a constantly changing business environment with increased automation and near constant changing of hiring needs and skill requirements further complicate matters.

For employers, workforce planning has long been the practice of companies seeking to anticipate their most urgent talent needs based on business forecasts. Leading employers have shifted their focus away from narrow job titles to broader business capabilities (e.g., industrial maintenance, software development) carried out by a cluster of jobs organized around skill sets that change over time. However, this information is often treated as proprietary and not normally shared with other companies and talent providers.

At the same time, governments have developed short- and long-term industry and occupational projections that estimate future job openings from growth, staffing patterns, and replacement needs. Recently, some government agencies have begun to supplement these projections with more real-time labor market information tools. Employers and industry associations are often asked to play an advisory role to government in the development of these projections.

Through a process called demand planning, talent pipeline management envisions a stronger and more direct role for employers in developing and communicating forecasted talent needs. Demand planning builds on leading practices in employer workforce planning so that employers can better determine and communicate their needs with preferred provider networks.

Demand planning is the process employers follow—whether independently or through a collaborative—to develop, compile, and communicate demand forecasts of job openings for those positions that drive their competitive advantage. In order to link talent strategy to business strategy, this activity must be carried out through a company-wide process involving decision makers from all major business units.

These forecasts are based on the anticipated increase in the number of open positions because of changing business conditions, such as anticipated growth; changing staffing models (e.g., nurses taking point on primary care services over physicians); changes in skill requirements; and expected replacements due to turnover or retirement. In addition, these forecasts incorporate a risk-management assessment where each critical job forecast is rated based on the likelihood that forecasted openings may significantly increase or decrease due to changing market conditions.

Unlike government labor market surveys that rely on long-term, big-picture estimates or that pull analytics from job board postings, demand planning emphasizes short-term and dynamic forecasting with constant revisions based on the latest information coming directly from those employers that are seeking to fill positions. Employer-led demand planning is complementary, and a value-add to the existing survey methods that are used in most states today.

In addition, demand planning provides a starting point for continually improving such professional practices as developing more consistent job definitions and forecasting methods, as well as communicating risk and uncertainty. When organized by collaboratives, demand planning provides new opportunities for employers to share best practices, aggregate their forecasts, and communicate these combined forecasts to external education and training providers without divulging proprietary information.

HIGHLIGHTS

- ✓ Forecasting demand for talent has long been a challenge for employers and governments.
- ✓ Demand planning provides a solution that is a shared, employer-led activity within a collaborative.
- ✓ Knowing what type of talent is needed, how much, and at what level is the first step in building employer capacity as an end-customer.

TAKING ACTION

Step 1: Segment workforce and target capabilities and positions that drive competitiveness.

Getting Started: Build trust in the collaborative by selecting a limited number of capabilities and positions that consistently rank high in terms of criticality, have longer lead times, and are undersupplied. **See Figure 8.**

Advanced Practice: With a track record of success in place, focus on those capabilities and positions that have a medium ranking in terms of a skills gap and that may only apply to a subset of employer collaborative members.

Step 2: Survey employers about their short-term job opening forecasts and aggregate these forecasts across member businesses.

Getting Started: Begin with a survey asking for total job openings and the percentage of these openings due to (1) new jobs added or (2) replacements, with some guidance on how to develop these forecasts based on best practices in workforce planning. **See Figure 9.**

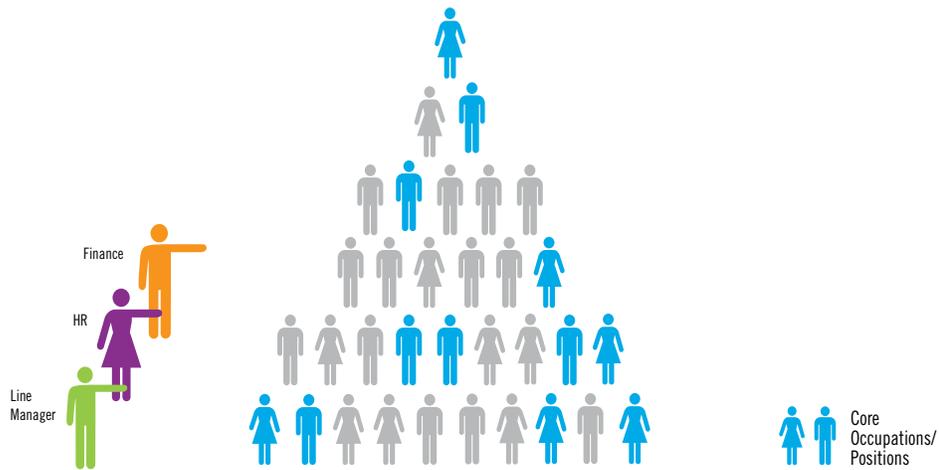
Advanced Practice: Provide employers with guidance on leading practices in workforce planning and expand survey by asking employers to identify the level of planning risk associated with forecasts as well as possible internal and external risk factors that may change these forecasts. **See Figure 10.**

Step 3: Communicate survey results with collaborative member businesses and stakeholder partners.

Getting Started: Communicate the forecast survey findings to member businesses and stakeholders without compromising individual-level employer information.

Advanced Practice: Build in risk assessment and develop new visual representations of the data to communicate not only the type and amount of positions/capabilities needed, but also the risk factors informing the forecasts.

Figure 8: Identify Core Capabilities and Rank Critical Jobs for Demand Planning (Manufacturing Example)



Position	Competitiveness Importance	Talent Development Lead Time	Availability of Talent Supply	Total Priority Ranking
Machinist	Moderate	18 months	Moderate	High
Welder	High	12 months	Low	High
Engineer	Moderate	6 years	High	Moderate

Figure 9: Example Job Projections—Vermilion Advantage’s Manufacturing Collaborative

As part of its service offering to member companies, Vermilion Advantage—formed in 2002 from a merger between the Danville Chamber of Commerce and the local Economic Development Corporation—has organized four employer collaboratives to manage its collective demand for talent.

Each year, Vermilion Advantage surveys its member companies by clusters—manufacturing, logistics, health care, and IT— to compile short-term demand forecasts that can be shared selectively with its preferred providers. This process has improved hiring practices and has transformed how the business community engages with education and training providers.

Below is an example of one of the demand planning survey instruments used by Vermilion Advantage’s sector collaboratives for manufacturing:

January 2015–December 2016 Job Projections Survey							
Position Title	New Positions	Replacement Positions	High School	Associate’s	Bachelor’s	Master’s+	Other
Assembler–Production	30	32	X				
Drafter–Mechanical Engineer	2	1		X			
Driver–Tractor	55	112	X				X
Electrical Controls Technician	1	7	X	X	X		
Electrician	1	3	X	X			
Electronic Technician	2	5		X	X		
Machinist	19	3	X				
Maintenance Technician	1	6	X	X			

Figure 10: Demand Planning Risk Management—CEWD and MEWDC Industry Game Changers

The Michigan Energy Workforce Development Consortium (MEWDC) is part of a national network of state energy workforce consortia supported by the Center for Energy Workforce Development (CEWD). The state consortia use a workforce planning process developed by CEWD to analyze short- and long-term workforce needs of the energy companies represented in the state consortia. This information is shared selectively with sponsored education and training providers that are also members of the state consortia.

A key component of the CEWD workforce planning process that is utilized by MEWDC and other state consortia is the consideration of risk factors known as “game changers.” These game changers are composed of both internal and external factors that can change the projections significantly and need to be accounted for. By leveraging risk management as part of their projections, employers can work more effectively with their preferred education and training partners to communicate their demand across a variety of potential contingencies.

External Game Changers	Internal Game Changers
Grid Modernization	Aging Workforce
Generation Mix/Carbon Management	Mergers/Acquisitions
New Build	Significant Organization Decision
Regulation/Policy Changes	Adoption of New Technology

Strategy 3: Communicate Competency and Credentialing Requirements

One of the common themes reflected in workforce discussions today is the lack of qualified candidates for open positions. For employers, it is not a workforce shortage issue; rather, it is a skills shortage. It is a mismatch between what employers need and what existing and emerging workers know and can do. One major employer concern is whether applicants meet the competency and credentialing requirements needed to be considered qualified candidates.

There is no shortage, however, of debate on the cause of the problem. Some argue that the skills gap is due to increased hiring requirements (e.g., credentials and experience) by employers that reach beyond what is necessary. Others argue that employers are not providing sufficient information on these requirements in job postings and other forms of “signaling.” Still others point to the limitations of human resource processes and tools that identify candidates based on automated applicant screening systems.

On the public education and workforce side, some argue that providers do not modify their programs to meet the needs of employers even when employers provide information on their hiring requirements. Federal and state governments have recently tried to address this issue by promoting the use of “industry-recognized” competencies and credentials, but they have not been explicit with respect to what “industry-recognized” means (e.g., Workforce Innovation and Opportunity Act [WIOA] implementation).

Talent pipeline management provides a new approach to address both sides of the problem by improving employer practices for communicating competency and credential requirements linked to hiring. Building on the previous demand planning exercise, which forecasted job openings for the most critical positions, employers can now more clearly communicate or signal their competency and credential requirements—as well as any related work experience—associated with those positions. The numerous benefits of this approach include the ability to inform the development of streamlined and transparent education and training programs that yield candidates who are a better fit and reduce the need for and costs associated with retraining.

Central to this solution is the need for employers to develop a shared language to describe their hiring requirements so that they can more clearly communicate to both providers and candidates what people should know or be able to do to perform a critical job. Competencies have two major components: (1) critical work tasks or activities and (2) the underlying knowledge and skills necessary to perform those essential activities—including employability skills commonly referred to as “soft skills” (e.g., communication and team work). These tasks and skills/knowledge may be required at the point of hire of a novice worker, or they may be required after an onboarding process and attained through work-based learning, additional training, or experience. These are key distinctions in understanding the hiring requirements.

Credentials include academic degrees and certificates, industry certifications, licenses, and microcredentials (e.g., digital badges). Credentials are used primarily to signal to employers that a credential holder has had their knowledge and skills validated by a trusted organization.

This is not to suggest that employers require the same generic skill set for an occupation title or that they should shoot for an average fit (the skills set for a nurse in one hospital system is not always the same set as that in another). The benefit of this approach is that employers—working through a collaborative—can use a shared language to specify how their needs are similar and, importantly,

different. With this information, providers can develop education and training programs that are standardized across common employer requirements, but that allow for mass customization to meet the diverse needs of individual employers represented in a collaborative.

Moreover, changes to requirements can be communicated much faster, which enables responsiveness and flexibility across the talent supply chain.

HIGHLIGHTS

- ✓ A communication breakdown around hiring requirements is a central feature of the skills gap.
- ✓ Collaboratives can help employers describe their needs through a shared language.
- ✓ A shared language enables groups of employers to communicate both similarities and differences in their hiring requirements.

TAKING ACTION

Step 1: Create an inventory of competency and credential requirements related to the critical capabilities and positions targeted in demand planning.

Getting Started: Working through the collaborative, compile competency and credential requirements for new hires in targeted positions. Do this by using lists compiled from job descriptions and profiles submitted by employers, resources from leading industry and certification organizations, and/or reports created by real-time labor market information vendors. **See Figure 11.**

Advanced Practice: Extend the inventory process beyond new hires to fully on-boarded and experienced workers and extend the process to other positions identified through demand planning.

Step 2: Validate the inventory with employers to determine the relative importance of competencies. Then identify which credentials are either required or preferred and whether there are any related work experience requirements.

Getting Started: Survey the most critical jobs identified through demand planning and build an inventory of competency and credential requirements; update as needed. **See Figure 12.**

Advanced Practice: Extend the validation process beyond new hires to fully onboarded and experienced workers and extend the process to other positions identified through demand planning.

Step 3: Finalize competency and credential requirements, noting where there are both similarities and differences for the employer collaborative members.

Getting Started: Develop a comparison chart that shows the standardized competencies and credentials across all partners, noting which subsets of employers require variation on skill requirements. **See Figure 13.**

Advanced Practice: Extend the finalization process beyond new hires to fully onboarded and experienced workers and extend the process to other positions identified through demand planning.

Figure 11: KY FAME Competency Gathering Example

Since the 1980s, Toyota's manufacturing facility in Georgetown, Kentucky, had been relying on hiring local talent and promoting internally to keep the facility running smoothly. In recent years however, a changing business environment and shifting perceptions of the manufacturing industry shrunk the talent pool, and Toyota was no longer able to find an adequate supply of skilled talent to meet its needs.

In response, Toyota partnered with Bluegrass Community Technical College in 2010 to develop the Advanced Manufacturing Technician program. Through an apprenticeship-style model, students use nationally recognized curriculum standards and soft skills training to be ready for the fast-paced, collaborative working environment of the production floor. Key to the program's success has been the detailed process that Toyota used to gather and identify the critical competencies and skills that defined the education curriculum and training process.

This highly successful program has since been replicated throughout the state via the Kentucky Federation for Advanced Manufacturing Education (KY FAME). Led by member manufacturing companies, this network utilizes a preferred provider network of training programs to target its work-based learning experiences and source talent. The program is now being rolled out in eight states.

On the next page is an early example of the type of competency gathering process that Toyota used, across facilities, to identify shared skill requirements for a critical position.

Job: Toyota Craftsmen **Duty 1: Mechanical Equipment**

Work Tasks	Importance	Frequency	Level
1. Troubleshoot/repair/replace brakes and clutches (electromechanical and mechanical)	1	Y	2
2. Troubleshoot/repair/replace gears	3	M	1
3. Troubleshoot/replace belts, sheaves/pulley	3	W	1
4. Troubleshoot/maintain chains and sprockets	3	W	1
5. Troubleshoot/repair/replace cams	0	N	
6. Troubleshoot/repair/replace seals and o-rings	4	W	1
7. Troubleshoot/repair/replace bearings and bushings	4	W	1
8. Troubleshoot/repair/replace shafts	4	W	1
9. Perform alignment and balancing	4	D	2
10. Troubleshoot/repair/replace motors (AC and DC)	4	D	1
11. Maintain couplings	4	D	1
12. Maintain fans	4	D	1
13. Install/maintain valves (cut-off, pressure relief...)	4	D	1

Dr. Annette Parker, Former Executive Director of AMTEC, *Industry—Education & Government Collaboration Historical Overview* (excerpts). (Chicago, IL: Automotive Manufacturing Technical Education Collaborative, December 2012).

Importance: 0 = Not Important; 1 = General Importance; 2 = Important; 3 = Very Important; 4 = Essential

Frequency: N = Never; Y = Yearly; M = Monthly; W = Weekly; D = Daily

Level: 1 = New; 2 = After Five Years; 3 = Senior

Figure 12: Example Competency and Credential Needs Assessment

Please rate the following tasks for **Computer Programmers | Software Developers** in terms of importance, with 1 being very important and 5 being not important at all.

	Entry-Level	Mid-Level	Senior-Level
Analyze user needs and software requirements to determine feasibility of design within time and cost constraints.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Confer with systems analysts, engineers, programmers and others to design system and to obtain information on project limitations and capabilities, performance requirements and interfaces.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Design, develop and modify software systems, using scientific analysis and mathematical models to predict and measure outcome and consequences of design.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Develop and direct software system testing and validation procedures, programming and documentation.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Modify existing software to correct errors, allow it to adapt to new hardware, or to improve its performance.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Conduct trial runs of programs and software applications to be sure they will produce the desired information and that the instructions are correct.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Correct errors by making appropriate changes and rechecking the program to ensure that the desired results are produced.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Perform or direct revision, repair, or expansion of existing programs to increase operating efficiency or adapt to new requirements.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Write, analyze, review, and rewrite programs, using workflow chart and diagram, and applying knowledge of computer capabilities, subject matter, and symbolic logic.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Write, update, and maintain computer programs or software packages to handle specific jobs such as tracking inventory, storing or retrieving data, or controlling other equipment.	<input type="text"/>	<input type="text"/>	<input type="text"/>

How many years of experience are typically required for this position,

Computer Programmers | Software Developer?

	0-3	3-5	5-7	7-10	10+
Entry-Level	<input type="radio"/>				
Mid-Level	<input type="radio"/>				
Senior-Level	<input type="radio"/>				

Please indicate your preferred industry sector experience, if any, for **Computer Programmers | Software Developers**.

	Commercial	Government Defense	Government Civilian
Entry-Level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mid-Level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Senior-Level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please select the typical compliance screening or security clearance required for the position of **Computer Programmer | Software Developer**.

	Entry-Level	Mid-Level	Senior-Level
Confidential Clearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secret Clearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Top Secret Clearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sensitive Compartmented Information Clearance (SCI)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criminal Background	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work Status Verification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Credit History	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Polygraph	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q Clearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Computer Programmer | Software Developer: Technical Competency-Development Method

	Entry-Level	Mid-Level	Senior-Level
Scrum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Waterfall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Computer Programmer | Software Developer: Technical Competency-Operating Systems

	Entry-Level	Mid-Level	Senior-Level
LINUX	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
UNIX	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OS X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Microsoft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Computer Programmer | Software Developer: Technical
Competency-Programming Languages

	Entry-Level	Mid-Level	Senior-Level
C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C#	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C++	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SQL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HTML5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HTML	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Java	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Matlab	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
JavaScript	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Python	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
XML	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ruby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Swift	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
JQuery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Computer Programmer | Software Developer: Technical
Competency-Database Management Systems

	Entry-Level	Mid-Level	Senior-Level
MongoDB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NoSQL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oracle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PostgreSQL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MSSQL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MySQL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Computer Programmer | Software Developer: Technical
Competency-Other

	Entry-Level	Mid-Level	Senior-Level
Apache Hadoop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apache Webserver	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
JBoss (Wildfly)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharepoint	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wordpress	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please rate the following Professional Business Skills for **Computer Programmers | Software Developers** at each level, with 1 being very important and 5 being not important at all.

	Entry-Level	Mid-Level	Senior-Level
Critical Thinking	<input type="text"/>	<input type="text"/>	<input type="text"/>
Complex Problem Solving	<input type="text"/>	<input type="text"/>	<input type="text"/>
Teamwork and Interpersonal Skills	<input type="text"/>	<input type="text"/>	<input type="text"/>
Effective Communication in the Workplace	<input type="text"/>	<input type="text"/>	<input type="text"/>
Project Management	<input type="text"/>	<input type="text"/>	<input type="text"/>

Please indicate the typical minimum level of education required for the position of **Computer Programmer | Software Developer**.

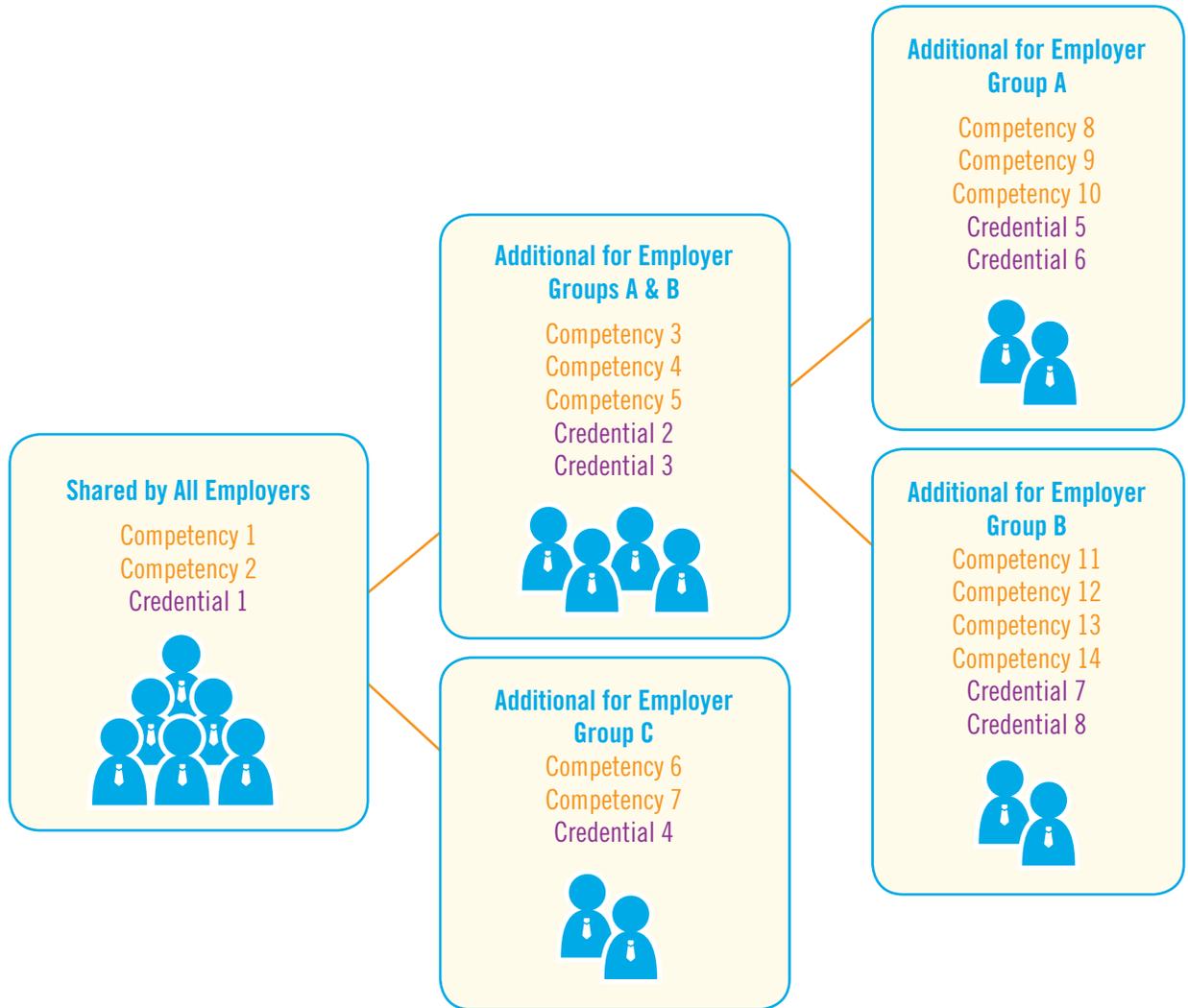
	Entry-Level	Mid-Level	Senior-Level
High School Diploma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Associate's Degree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bachelor's Degree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Master's Degree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced Degree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please describe any **REQUIRED** industry certifications or industry-recognized credentials not previously mentioned for **Computer Programmers | Software Developers** and indicate the experience-level (entry-, mid-, senior) for which they are most relevant.

Please share any **PREFERRED** industry certifications or industry-recognized credentials not previously mentioned for **Computer Programmers | Software Developers** and indicate the experience-level (entry-, mid-, senior) for which they are most relevant.

Credit: Elevate Virginia Project Team. NoVA Talent Pipeline Management Initiative Survey (excerpts). Oct 2015.

Figure 13: Finalized Competency and Credential List with Differentiation



Strategy 4: Analyze Talent Flows

Where do I get qualified talent today? Where will I most likely get my talent in the future? More often than not, these questions go unanswered by employers. For those who know the answers, this information is usually not widely shared with other employers—especially not with competitors.

However, for employers dealing with chronic skills shortages, there needs to be another solution—one that supports employer cooperation to identify and engage both public and private providers that have the capacity and commitment to provide the right talent, for the right position, at the right time, and in the right combination to become preferred providers in the future.

Currently, not all publicly funded education and training providers see themselves as playing this role. But times are changing. There is a growing movement among policymakers and consumers who are demanding greater accountability from these partners. The results can be seen in the massive investment in state longitudinal data systems, the movement toward performance-based financing, increased spending on ROI studies and calculators, and an increased emphasis on credentials that have labor market value. Vendors and social media platforms are also responding to the desire for more data by developing new tools and reports that demonstrate employment and earnings patterns linked to institutions and programs.

Talent pipeline management takes workforce data analytics further. Through talent flow analysis, employers leverage their own data to identify their major sources of talent as well as opportunities for improving talent flows from these or alternative sources.

Talent flow analysis begins with “back-mapping” to better understand an employer’s existing talent sourcing practices and to find where patterns exist. Back-mapping consists of a process whereby employers describe the flow of workers into and out of a targeted set of capabilities and positions that employers previously selected through demand planning and further defined by determining competency and credential requirements. This process then provides the basis for identifying opportunities for improvement and eventually the designation of preferred providers. **See Figure 14.**

Back-mapping leverages both public *and* private data sources to identify where employers get their best talent today. It begins with the compilation of employer data on talent sourcing that is within existing applicant tracking systems or résumé data retained during the hiring process. While most large firms have sophisticated human resources systems, even the smallest of firms maintains records of job applicants and hires. This data can be combined with public data sources—such as statewide longitudinal data systems and other résumé databases—to build a more complete picture of the flow of talent.

Begin by identifying the Tier 1 providers from which employers currently source talent. Employers could provide sourcing data on only qualified hires or on all hires. This exercise can be extended back further to Tier 2 providers and beyond to develop a more comprehensive map of all the transition points, including the flow of talent from high schools into college programs or training providers.

Public data sources are then used to identify other providers that have not been fully utilized by the employers in the collaborative, but that may become providers of choice. This is particularly necessary for employers with diversity goals. This is also true for small and midsize firms that may not be fully leveraging alternative sources of supply.

Combined with talent pipeline management, talent flow analysis is an important step for employers to better manage a network of providers while elevating the quality and performance of all sources. **See Figure 15.**

HIGHLIGHTS

- ✓ Current systems do not produce the data employers need to measure their ROI from education and workforce systems.
- ✓ Back-mapping leverages public *and* private data to map the flow of talent for targeted capabilities and positions.
- ✓ Talent flow analysis helps employers map where they get qualified talent today as well as what potential sources they may be able to tap in the future.

TAKING ACTION

Step 1: Back-map where employers get qualified talent for critical positions, which are identified through demand planning and further defined by competency and credential requirements.

Getting Started: Begin back-mapping by identifying current Tier 1 providers of qualified talent. Tier 1 means that those suppliers closest to the point of transition to employment (e.g., most recent previous employer or training program). Sources include outside providers, staffing agencies, or internal promotions.

Advanced Practice: Build into your analysis the number and type of Tier 1 providers for qualified candidates who were hired and for all qualified applicants within the collaborative. Also, extend analysis to Tier 2 sources of talent. Tier 2 is defined as those suppliers one step removed from the point of transition to employment. Finally, reference data contributed by public partners to identify untapped and underutilized providers. **See Figure 16.**

Step 2: Describe the current state of talent flows through communication and visualization tools that represent the data in a readable and actionable format.

Getting Started: Develop visualization tools that represent the Tier 1 network for member companies in an employer collaborative. This includes major suppliers of talent by volume.

Advanced Practice: Extend visualization tools to capture Tier 2 suppliers of talent and represent underutilization rates of existing suppliers and potential alternative supplier networks (**See Figure 14** for an illustrative example).

Step 3: Identify opportunities to improve performance of existing providers and to access new and emerging supplier networks.

Getting Started: Identify opportunities to improve utilization of Tier 1 providers to improve the quality and number of job candidates sourced from them. **See Figure 17.**

Advanced Practice: Find opportunities to improve Tier 2 performance and beyond to enhance existing sourcing patterns. Identify and engage alternative Tier 1 and 2 providers to explore potential partnerships that can improve flexibility and responsiveness.

Figure 14: Talent Flow Tiers

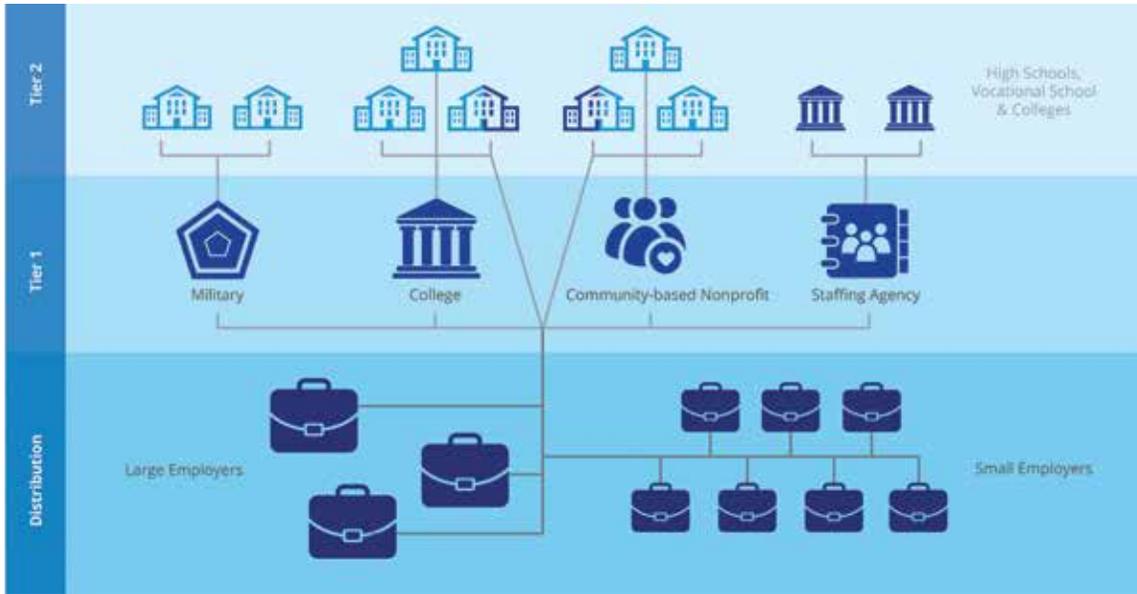


Figure 15: Mapping the Talent Flow in Arizona and Houston

The Arizona Chamber Foundation and the Greater Houston Partnership are pioneering the approach to back-mapping talent flows. As part of the Talent Pipeline Management learning network, both partners are working with the business community to leverage employer-held data to map where they get qualified talent today. Their focus is on industries with a need to improve existing talent suppliers and identify new or underutilized suppliers.

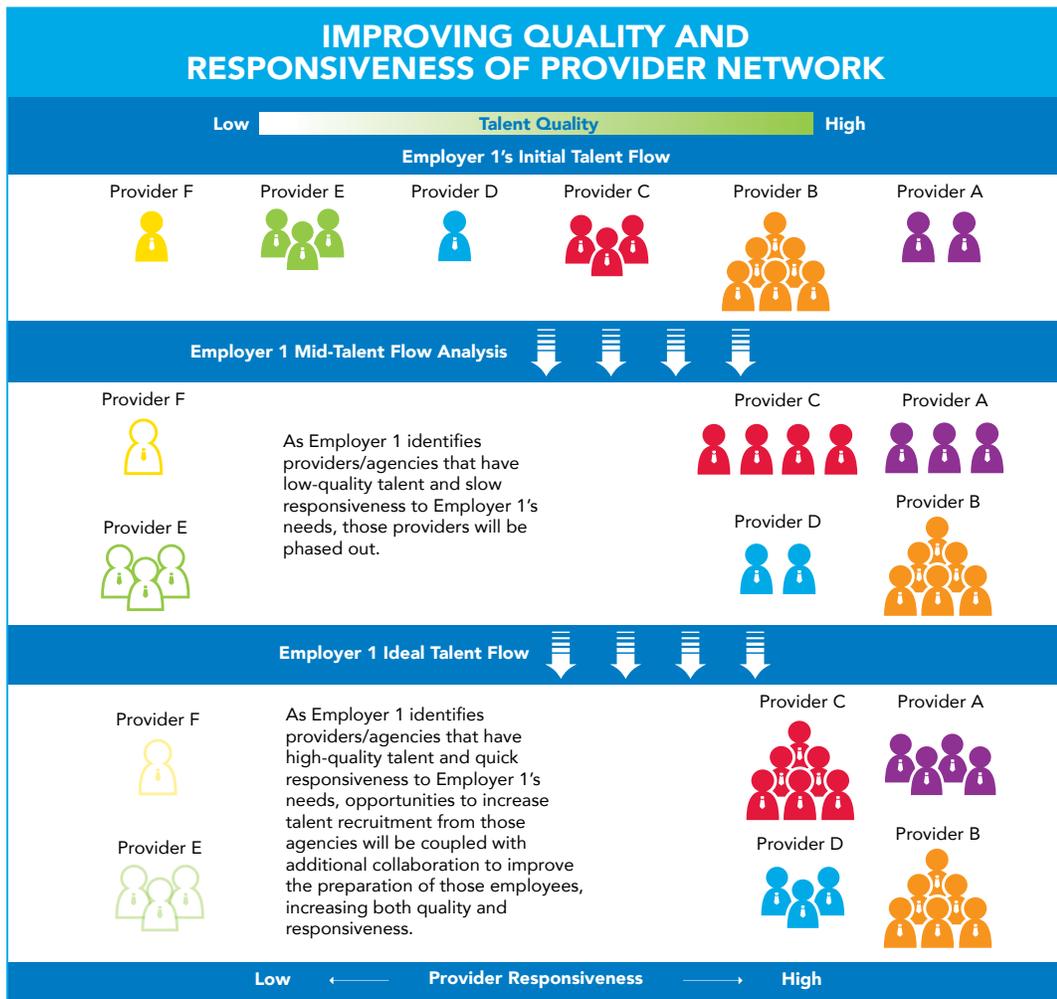
Arizona has focused on improving teacher quality and addressing teacher shortages that threaten the state's ability to deliver a quality education. By working with school districts, the Arizona Chamber Foundation plans to identify high-quality sources of teacher talent and pursue new or alternative sources of supply to better meet the need.

In Houston, the focus is on the expanding petrochemical industry and the near-term need of its industrial construction contractors to support the expansion. The Greater Houston Partnership plans to work with employers, educators, and training organizations to develop talent flow maps for the top in-demand positions in this sector. This will help related businesses, contractors, and maintenance staffs identify which programs are producing qualified workers and how they can be further leveraged and bolstered to support an expanding industry.

Figure 16: Example of Advanced Talent Flow Summary for Targeted Position

Critical Position X	Number of New Hires	Tier 1 Source (Most direct)	Tier 2 Source (Supplier to Tier 1 if applicable)	Tier 3 Source (Supplier to Tier 2 if applicable)
Experienced Outside	50	DEF Recruiters (20)	Out-of-Region Employers (18)	University of T, Program A (14)
		In-Region Employers (30)	University of R, Program A (28)	
Incumbent	40	Job Category N (40)	Job Category W (22)	Community-Based Training Provider A, Program B (18)
Newly Trained/ Credentialed	20	University of R, Program A (15)	Community College Z, Program A (10)	
		Community College X, Program A (5)		

Figure 17: Improving Quality and Responsiveness of Provider Network



Strategy 5: Implement Shared Performance Measures

How does one measure the success of an employer partnership? The answer may vary depending on who is asking the question—employers or government.

For example, some education and training programs need to meet performance objectives based on federal and state expectations, resulting in familiar program evaluation measures such as completion, placement in employment, and wages. These accountability systems have set clear performance expectations.

The challenge, however, is that these new accountability systems fail to fully capture whether employers benefit from their partnerships with these programs. In talent supply chains, employers, as end-customers, must play a lead role in collaborating with preferred providers to develop measures for monitoring and improving performance across all partners. **See Figure 18.**

The newly reauthorized Workforce Investment and Opportunity Act (WIOA) provides employers with an opportunity to better sync government accountability systems with measures valued by employers. New common performance metrics have been put in place to safeguard public investment in workforce training. **See Figure 19.**

In addition, states are seeking new ways to measure and evaluate the performance of sector partnerships, and employers have new opportunities to promote the next generation of performance measures that address the value created for employer collaboratives.

Talent supply chain performance focuses on shared measures that cut across partners and addresses how the team is performing. Using this approach, partners will better manage performance—from outreach and recruitment to hiring, onboarding, retention, and full productivity. If done right, the measures will help employers get the right talent, with the right skills, at the right time.

Talent pipeline management encourages employers to work with external partners to develop a shared system of measures supported by public-private data integration, analytics, and tools. Shared measures will help employers manage both the effectiveness of forecasted job openings—identified through demand planning—and the amount/timing of talent supplied by partners. Shared measures will also better balance three critical dimensions of value: quality, time, and cost.

- **Quality** refers to whether students and workers have the necessary competencies to successfully perform the work for a critical business function and position.
- **Time** includes maximizing and streamlining time spent in value-adding activities and reducing non-value-adding activities and wait times.
- **Cost** is the balancing of total amount of dollars spent and shared by all stakeholders in producing quality, including the reduction of opportunity costs (e.g., foregone earnings). **See Figure 20.**

Shared measures also use predictive analytics to support continuous improvement by developing both leading and lagging performance measures. These measures can be used to better manage ROI as well as to inform short-term improvements while contributing to overall long-term results, such as business growth. **See Figure 21.**

Finally, TPM encourages using both shared and internal performance dashboards to increase transparency and accountability across all partners. Shared measures are visible to employers and all partners, whereas internal measures are only seen by employers and select partners and are used for internal performance management.

HIGHLIGHTS

- ✓ Employers must decide how to measure partner performance to determine the value they are receiving.
- ✓ Shared measures require partners across the talent supply chain to balance time, quality, and cost in creating shared value.
- ✓ Leading and lagging measures help with continuous improvement and are supported by shared and internal performance management dashboards and tools.

TAKING ACTION

Step 1: Select and prioritize key performance measures across the talent pipeline.

Getting Started: Begin by identifying and targeting performance measures at or near the point of hire. **See Figure 22.**

Advanced Practice: Expand the scope of measuring partner performance to include all critical transition points across the talent supply chain, including “time-to-full productivity” for providers identified in talent flow analysis. **See Figure 23.**

Step 2: Develop shared and internal performance management tools that provide transparency in meeting goals and communicate shared value.

Getting Started: Develop scorecards and dashboards that can be shared across partners and that focus on measures at or near the point of hire. These tools can initially be shared with partners without disaggregating performance by individual providers. **See Figure 24.**

Advanced Practice: Extend scorecards and dashboards across the talent supply chain to capture a more complete set of measures disaggregated by provider. Also, develop internal dashboards for each partner in order to monitor and manage performance specific to their organization. **See Figure 25.**

Step 3: Develop leading and lagging measures that target short-term goals and that contribute to long-term results.

Getting Started: Beginning with initial target measures before extending to a more complete set, employers need to select performance goals and track short-term progress made against those goals by all talent supply chain partners.

Advanced Practice: Develop long-term performance indicators that connect targeted measures to overall business competitiveness, including growth, employment, earnings of students and workers, and ROI.

Figure 18: Silo Measures to Shared Measures

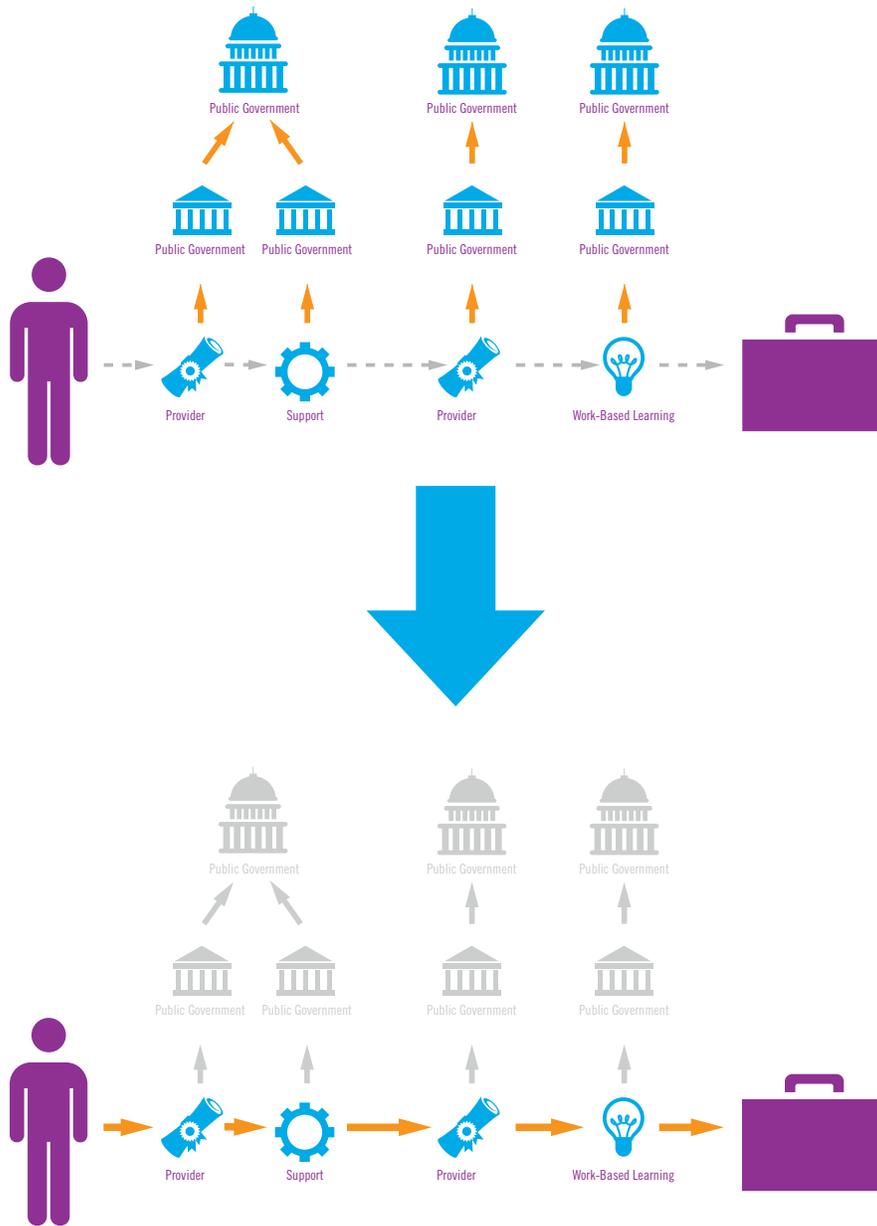


Figure 19: WIOA Common Measures

1. Percentage of participants who are in unsubsidized employment during the second quarter after exit from program.
2. Percentage of participants who are in unsubsidized employment during the fourth quarter after exit from program.
3. Median earnings in unsubsidized employment during the second quarter after exit from the program.
4. Percentage of participants who obtain a recognized postsecondary credential, or a secondary school diploma or its recognized equivalent, during participation in or within one year after exit from the program.
5. Percentage of participants who are achieving measurable skill gains toward a recognized postsecondary credential or employment.
6. *Effectiveness in serving employers.*

Figure 20: Balanced Measures



Figure 21: Manufacturing Institute's ROI Calculator

Richards Industries, a leading valve manufacturer, took part in the Manufacturing Institute's pilot test of their Return on Investment Calculator. Richards Industries had trouble finding qualified candidates for skilled positions. While the company was engaging in a number of local education and workforce development partnerships to meet its needs, it remained unclear how training was affecting the bottom line and whether it was a good investment that should be pursued.

By entering in a series of basic inputs, a company can use the calculator to answer the question, "How much is the skills gap costing your business?" The calculator projects the cost of an open position, recruiting, hiring, on-the-job training, and business impact, enabling companies to determine potential cost savings by partnering with an education and training provider.

In the case of Richards Industries, the company was able to quantify a total savings of \$27,300 per employee—or an 875% ROI on a \$2,800 investment per participant—by reducing his or her time-to-full productivity with a preferred training provider.

Figure 22: Example Measures at or Near the Point of Hire

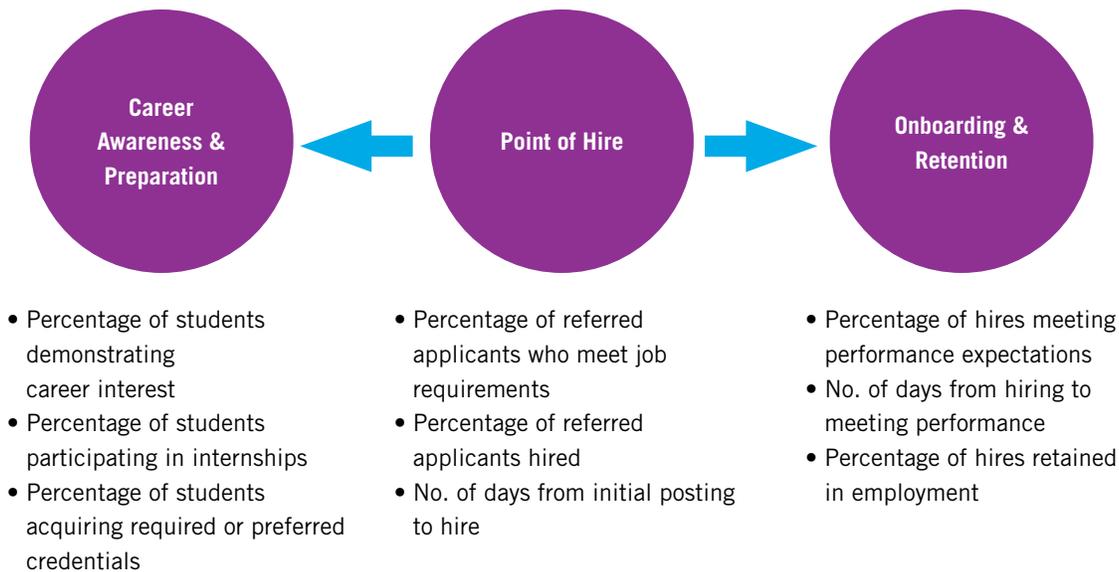


Figure 23: Defining Time-to-Full Productivity

Definition: The time between enrollment in an education and/or training program and an employer's rating that the individual—or cohort—has met performance expectations in the destination job.

Considerations:

1. The “clock” begins in high school, college, through a nonprofit provider, or other channel as long as the activities pursued focus on skills building and credential attainment versus general career guidance and exploration.
2. Prior learning assessments and forms of credentialing can provide a head start and help accelerate the process.
3. Activities taken on the way to full productivity can combine both working and learning.
4. Full productivity may be met at a point in time after hiring when additional on-the-job training supports are required.
5. Partners should reduce nonproductive downtime and increase value-adding activities that do not add time, cost, or unnecessary requirements.
6. The objective should be for employers and their preferred providers to decrease time-to-full productivity while maintaining quality and increasing total value for all stakeholders.
7. Partners must be mindful of the unintended consequences of shifting costs or burdens onto other partners in the supply chain. This may improve individual organizational performance but result in increasing cost, time, and inefficiencies for everyone else.
8. Talent supply chains are about teams and time-to-full productivity is a team measurement.

Figure 24: Example of Shared Performance Scorecard for Multiple Training Providers Offering Career Preparation and Credentialing Services to an Employer Collaborative

Talent Supply Chain Network—Cohort 1			
Total Network Performance Rating	B	●	↑
Capacity vs. Utilization (seats vs. actual enrollments)	150:110	●	↓
# Hires	85	●	↓
# Loss to Collaborative (same state vs. out of state)	15:10	●	↑
# Retained (6 months vs. 12 months)	80:75	●	—
% Reaching Full Productivity (hires vs. 12 months retained)	59:67	●	↑

(Note: Color signals level of performance relative to expectations or goals, and arrow indicates trend.)

Figure 25: Provider Performance Dashboard Example

PROVIDER A							
Tier	Type	Performance (network vs. provider)	Effective Use (capacity vs. utilization)	# Hires	# Loss	# Retained (6 months vs. 12 months)	% Reaching Full Productivity (hires vs. 12 months retained)
1	Community College	B:A	40:30	22	8	8:7	63%:71%

Strategy 6: Align Incentives

Incentives are critical to maintain a competitive and continuously improving talent supply chain. The most effective talent supply chains recognize that performance and incentives are inherently linked and therefore must work in tandem.

Incentives can be either financial or nonfinancial. Financial incentives include direct investment, grants, and donations. Nonfinancial incentives include employer recognition and the designation and/or signaling of preferred provider networks. They also include accreditation, endorsement, and approval of other stakeholders, such as industry associations, accreditors, and federal and state governments.

Talent pipeline management starts with employers organizing from within. Employers must develop internal incentives for human resources, finance, line managers, and other functions to collaborate on managing the talent pipeline—from demand planning all the way through onboarding qualified applicants and retaining them.

In addition to aligning incentives in the company, employers can target their incentives to achieve the best returns from outside providers in their talent supply chains. Here, nonfinancial incentives include employer recognition of preferred provider networks backed by performance data. From there, employers can target their financial incentives to preferred providers, including donations (e.g., equipment or funding), tuition aid, work-based learning experiences, and ultimately jobs.

The next step is to align public incentives. Currently, many federal and state agencies are experimenting with blending programmatic funding streams to achieve better outcomes. Others are implementing performance-based funding systems for workforce and higher education systems, which focus on completion rates and employment and earnings outcomes. Most notably, the newly reauthorized WIOA requires states to align four major federal funding streams (Titles I–IV) and encourages even broader alignment across additional federal and state programs. It also requires the development of “eligible provider” lists, which represents another form of government recognition as the basis for funding.

Employers can work with their public-sector partners to evaluate existing systems and find opportunities to promote performance-based incentives. Once aligned and integrated, public incentives can help employers to lower the costs of managing talent supply chains and to decrease time-to-full productivity, thereby achieving better results for students and workers. They can also be leveraged to reward those provider networks preferred by employers. **See Figure 26.**

Moving beyond existing public and private incentives, employers and public-sector partners can design and experiment with new financing tools and methods. Examples include income-sharing agreements, social impact bonds, and other innovative financing mechanisms such as changes to tax policy that can incent employer-led partnerships. **See Figure 27.**

HIGHLIGHTS

- ✓ Performance measures and incentives must be aligned to ensure that partners are accountable to one another and that they achieve desired results.
- ✓ Employers must align their incentives internally and target their financial and nonfinancial incentives externally to preferred providers.
- ✓ Employers should work with public-sector partners to align funding streams and recognition systems, internal performance management dashboards, and tools.

TAKING ACTION

Step 1: Employers align their internal incentives to support talent supply chain practices and sourcing strategies in the firm.

Getting Started: Incentivize internal coordination across major functions, such as human resources, finance, accounting, and line managers. Measure the effectiveness of coordination through the group's ability to meet or exceed talent supply chain performance expectations starting at or near the point of hire.

Advanced Practice: Extend coordination across the entire internal talent management process, including development, deployment, long-term retention, and transition.

Step 2: Employers designate and reward preferred provider networks based on performance.

Getting Started: Begin by designating Tier 1 preferred provider networks and publicly signaling their designation to those interested in navigating career pathways to employers.

Advanced Practice: Extend preferred provider designation to Tier 2 partners and beyond to recognize the full value chain in producing skilled talent for your company, industry, or collaborative. **See Figure 28.**

Step 3: Align public-sector recognition systems, funding streams, and incentives.

Getting Started: Begin with priority performance measures at or near the point of hire and align public incentives and funding streams. This includes performance-based funding systems.

Advanced Practice: Extend the inventory and alignment of incentives across the value chain of provider partners to enhance and support shared competitiveness, including such measures as time-to-full productivity. Explore the use of innovative financing mechanisms and tax policies to better support talent supply chain partnerships. **See Figure 29.**

Figure 26: Operationalizing Preferred Provider Designation

Public-sector partners can leverage an employer collaborative’s preferred provider designations to better align their own incentives. Examples include the following:

- ✓ Recognize employer Tier 1 suppliers.
- ✓ Prioritize funding for employer-designated preferred providers.
- ✓ Align sector-based strategy with employer-led collaboratives.
- ✓ Recognize and incent attainment of industry-recognized credentials that are endorsed by employer-led collaboratives.

Figure 27: Kansas Workforce AID Program

Through the creation of the Workforce Aligned with Industry Demand (AID) program, the Kansas Department of Commerce has redefined how government can support demand-driven education and workforce partnerships.

In this program, businesses drive the training process by defining the technical and employability skills on the front end of a Request for Proposal (RFP) process. Similar to a company putting out its product specifications to a supply chain, Kansas’s community and technical colleges compete in a bidding process to be chosen by the employer as the education and training provider that can best meet their individual or collective talent needs. Through its initiative, Workforce AID has proved to be an innovative and novel approach to the public and private sector, working hand in hand to designate preferred providers.

This program benefits the students by providing them with both critical skills and clear career pathways to businesses that are managing the provider relationship. Participating businesses benefit by having a streamlined talent supply chain that is built to meet their needs.

To scale and improve efforts, Kansas is now leveraging the Talent Pipeline Management approach.

Figure 28: Promote Leading Providers

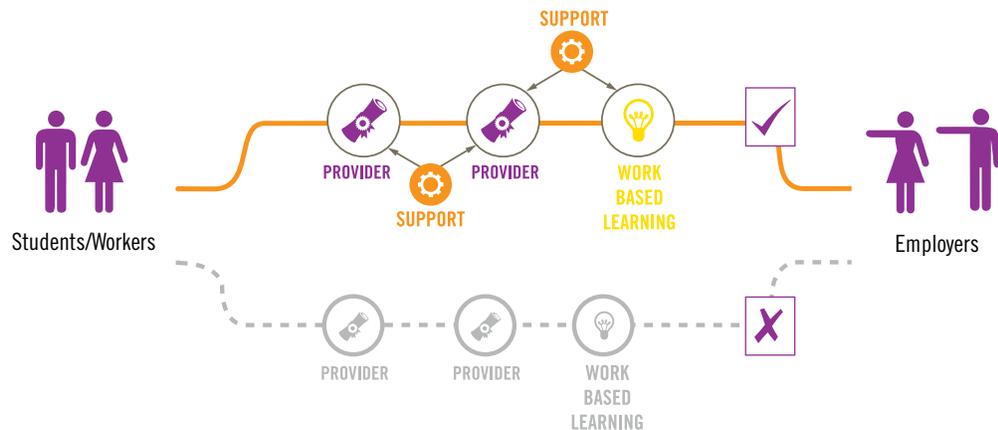


Figure 29: Types of Incentives

	Step 1	Step 2	Step 3
Type of Incentive	Employers to Internal Teams	Employers to Preferred Providers	Public Systems to Providers and Employers
Description	<i>Incentives given to employees or business units in a company</i>	<i>Incentives given from a company to an education and training provider</i>	<i>Incentives given by policymakers and public agencies to education and training providers and/or employers</i>
Nonfinancial	<p><i>Examples:</i></p> <ul style="list-style-type: none"> • Employee team recognition for performance and improvement • Expanded career and professional development opportunities 	<p><i>Examples:</i></p> <ul style="list-style-type: none"> • Preferred provider recognition • Access to and use of employer facilities 	<p><i>Examples:</i></p> <ul style="list-style-type: none"> • Accreditation and other eligibility and recognition systems tied to public funding streams • Identification and communication of employer-led preferred provider networks • Alignment of career guidance and consumer information systems • Access to public data integration
Financial	<p><i>Examples:</i></p> <ul style="list-style-type: none"> • Employee bonus plans for team performance and improvement • Expanded investments in technology tools and related supports 	<p><i>Examples:</i></p> <ul style="list-style-type: none"> • Priority access to internships and other work-based learning experiences • Monetary, equipment, and materials donations • Shared training costs for preferred training providers 	<p><i>Examples:</i></p> <ul style="list-style-type: none"> • Deployment of funding streams aligned to employer-led preferred provider networks • Performance-based funding • Scholarships and financial aid • Tax credits and incentives • Social impact bonds

Putting It All Together: Building and Improving the Talent Pipeline

Each strategy covered here—when pursued on its own—represents a best practice that can offer some level of shared value. However, when combined, the strategies create a supply chain approach that redefines employer engagement with education and workforce partners. When pursued in order, these strategies build employers' capacity to play the role of end-customers in a talent supply chain.

Having moved through each of the strategies, employers and their collaboratives are now able to co-engineer and design a talent pipeline with their own education and workforce partners for those positions—identified through demand planning—that are most critical to their competitiveness.

Pipelines can be supported through a value-stream map that identifies each of the major steps in developing talent—from career awareness all the way through onboarding, retention, and full productivity. Layered on top of the value stream is a scope and sequence of competency and credential requirements mapped to each step of the talent development process.

From there, employers and their partners can map which pieces of the talent development process are the responsibility of Tier 1 providers, and they can communicate the prerequisite requirements of Tier 2 providers and beyond through a scope and sequence mapping of competency and credential requirements.

Through back-mapping where they get talent, employers can identify existing provider relationships as well as engage with new and underutilized providers. With a talent flow map in place, performance metrics can be assigned to each of the providers in the talent-development process, which can be used to benchmark performance for existing or new providers.

Once the value stream is fully mapped, employers can now turn their attention to managing and continuously improving their talent supply chain, including their preferred provider network. Having full transparency into the design and performance of the talent supply chain, employers are better positioned to align their incentives to designate and reward preferred providers, thereby optimizing career pathway opportunities for the students and workers navigating the talent pipeline.

Through next-generation dashboard tools and scorecards, not only can employer collaboratives better communicate to their members the current state of performance in the talent supply chain but also more effectively plan for contingencies to ramp up or down supply, as needed, based on changing market conditions.

These tools can be shared broadly or selectively with public workforce agencies and other partners to improve alignment of public policy, incentives, and accountability systems. In this way, we can move beyond the rhetoric of public-private partnerships and begin to explore new frontiers for collaboration and the next generation of demand-driven education and workforce systems.

HIGHLIGHTS

- ✓ When combined, the strategies make for a talent supply chain approach.
- ✓ With their preferred partners, employers can co-engineer a value stream and continuously improve performance.
- ✓ With these tools, employers can lead the way in developing the next generation of public-private partnerships and in managing the talent pipeline.

TAKING ACTION

Step 1: Employers and their partners come together to develop a value-stream map that reflects the talent development process for a critical position—from career awareness through onboarding and retention.

Getting Started: Begin by developing a value-stream map for critical positions, identified through the demand planning process, which can meet the corresponding level of need. **See Figure 30.**

Advanced Practice: Layer a scope and sequence of competency and credential requirements across the value-stream map.

Step 2: Organize by tiered suppliers the value-stream map to identify key roles and responsibilities among partners in the talent supply chain, along with corresponding performance metrics.

Getting Started: Map the competency and credential attainment responsibilities to Tier 1 providers in the value stream, as well as related performance metrics, and identify existing suppliers. **See Figure 31.**

Advanced Practice: Extend value-stream mapping to Tier 2 providers and beyond, with corresponding competency and credential requirements as well as related performance metrics. **See Figure 32.**

Step 3: Manage performance and continuous improvement across the talent supply chain through a combination of dashboard tools and scorecards that inform decision making.

Getting Started: Develop dashboard tools that communicate to the employer collaborative the performance of Tier 1 providers and opportunities to improve existing partnerships or engage alternative sources of supply.

Advanced Practice: Extend the use of dashboard tools to Tier 2 providers and beyond to better manage performance and continuously improve the entire talent supply chain. **See Figure 33.**

Figure 30: Value-Stream Map



Figure 31: Value-Stream Map with Tiered Suppliers and Requirements

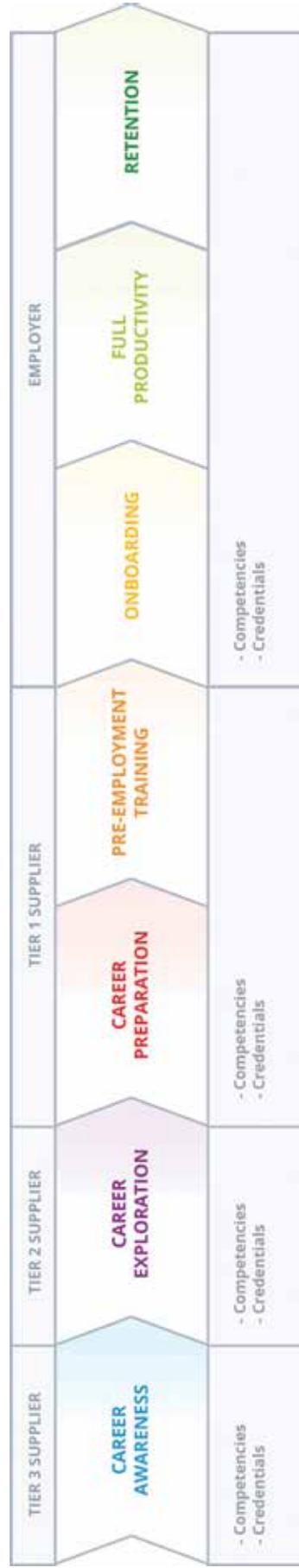
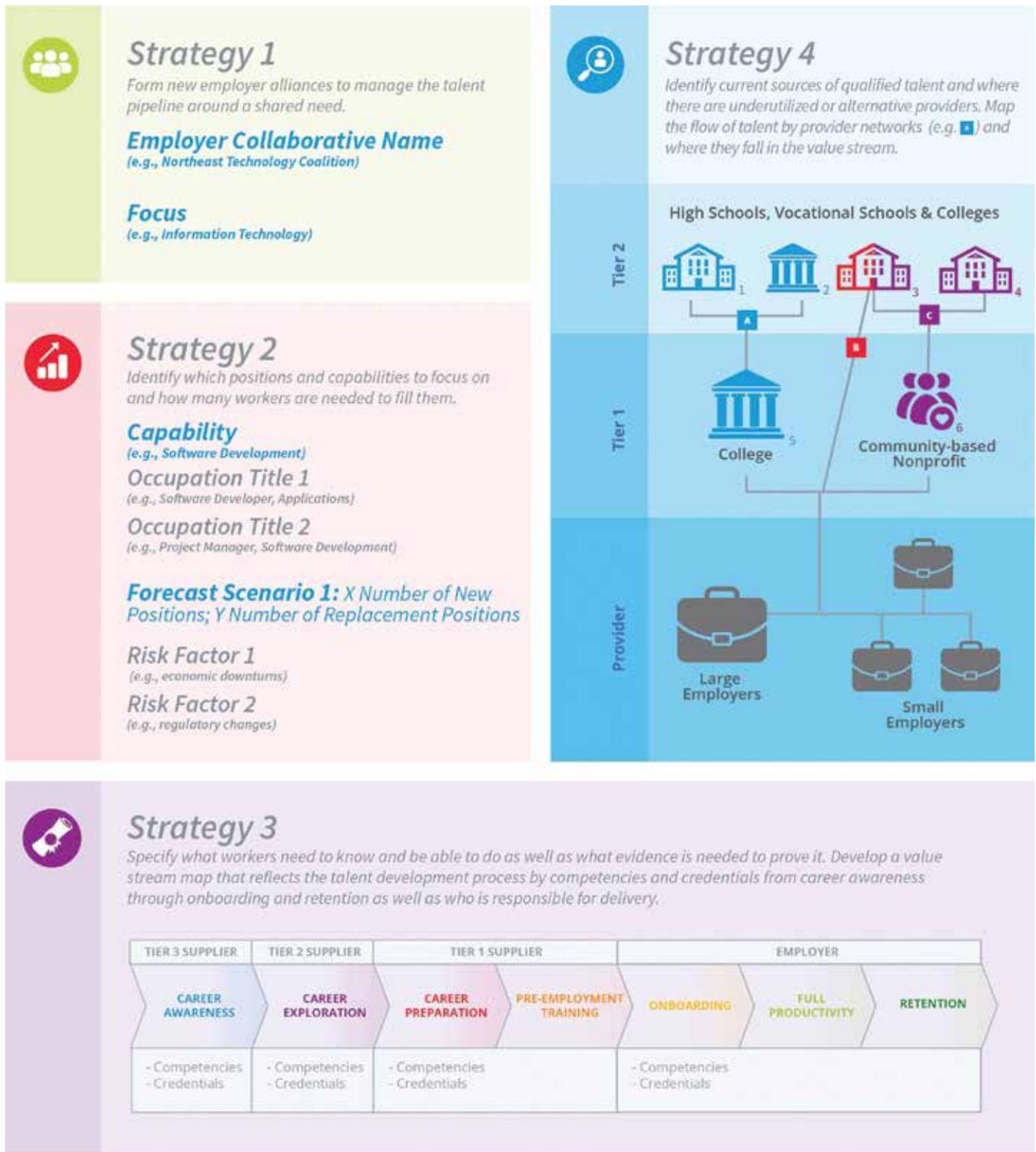


Figure 33: Dashboard Tool for Managing the Talent Pipeline



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Strategies 5 & 6

Measure the success and ROI of the talent supply chain, and improve performance through rewards and incentives. Gauge performance across three views: 1) the entire supply chain, 2) each network, and 3) each individual provider. Color signals level of performance relative to expectations or goals (●●●). Arrows indicate trend (↑↓→). Example incentives include employer signals 🚩 (e.g., preferred provider status), work-based learning opportunities 📄, and financial resources 💰. Fully customize measures and incentives as needed based on input from employer collaborative members.



Talent Supply Chain Performance

All Networks	Performance Rating	Capacity & Utilization (seats vs. actual enrollments)	# Hires	# Loss to Collaborative (same state vs. out of state)	# Retained (6 months vs. 12 months)	% Reaching Full Productivity (hires vs. 12 months retained)	Incentives
	B ● ● ● ↑	150:110 ● ● ● ↓	85 ● ● ● ↓	15:10 ● ● ● ↑	80:75 ● ● ● —	59%:67% ● ● ● ↓	🚩 📄 💰

Network Performance

Network	Performance Rating	Capacity & Utilization	# Hires	# Loss to Collaborative	# Retained	% Reaching Full Productivity	Incentives
A	● ● ● ↓	● ● ● —	● ● ● ↓	● ● ● ↓	● ● ● ↓	● ● ● —	🚩 📄 💰
B	● ● ● —	● ● ● ↓	● ● ● ↓	● ● ● —	● ● ● ↑	● ● ● ↓	🚩 📄 💰
C	● ● ● ↑	● ● ● ↑	● ● ● ↑	● ● ● —	● ● ● —	● ● ● ↑	🚩 📄 💰

Provider Performance

Provider	Performance Rating	Capacity & Utilization	# Hires	# Loss to Collaborative	# Retained	% Reaching Full Productivity	Incentives
	● ● ● —	● ● ● ↓	● ● ● —	● ● ● ↓	● ● ● —	● ● ● —	🚩 📄 💰
	● ● ● —	● ● ● —	● ● ● ↓	● ● ● ↓	● ● ● ↑	● ● ● ↑	🚩 📄 💰
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For more information visit thetalentsupplychain.org

In 2014, the USCCF—through its affiliation with the U.S. Chamber of Commerce and its federation of more than 3 million businesses nationwide—issued a call to action for the business community to lead the way in closing the skills gap. Many have answered that challenge and have begun the work of managing the talent pipeline. Many more continue to join a growing movement.

This is no surprise. The need to close the skills gap through demand-driven education and workforce systems has never been greater. The skills gap continues to grow, and employers across the nation are in search of new and promising solutions—not the failed strategies of the past.

What we need is a talent solution for our time. To achieve such a worthy objective, not only must we challenge an education and workforce system that has proved ill-equipped to meet the needs of today's students, workers, and economy, but also we—the business community—must challenge ourselves.

The strategies of yesterday cannot be the strategies of tomorrow. The business community must ask itself what it needs to do differently in order to assume the mantle of leadership in closing the skills gap. In turn, every organization and stakeholder that is tasked with supporting the education, training, career advancement, and upward mobility of students and workers must transform how they engage with the business community.

This guide is intended to advance the work started in 2014 by providing a series of strategies that begin to disrupt how employers engage with one another as well as with education and workforce partners. By following this roadmap, employers can begin to play the role of an end-customer in a talent supply chain.

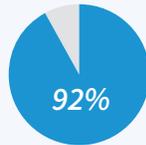
The work is far from over, and the stakes could not be greater for America's long-term economic growth and competitiveness. Again, we call on the business community and their stakeholders to partner with us on this important work.

To learn more about how you can engage in this effort, contact Jason A. Tyszko, senior director of policy and programs at the U.S. Chamber of Commerce Foundation's Center for Education and Workforce, at jtyszko@uschamber.com or visit www.TheTalentSupplyChain.org.

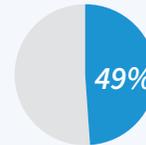
Appendix

Building the Talent Pipeline

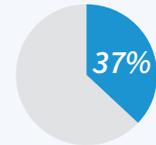
Businesses are struggling to find the talent they need to grow and compete in today's economy. Traditional approaches to training, recruitment, and hiring are proving insufficient and education and workforce partnerships are falling short of meeting employer needs.



Executives agree there is a skills gap



Employers who are unable to fill job vacancies

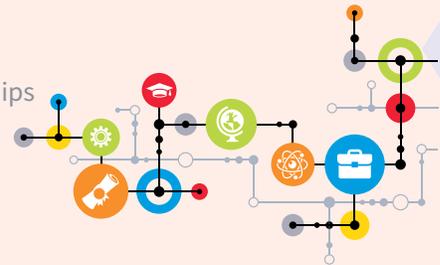


Companies that can't take on new business

By applying lessons learned from supply chain management, the business community can more effectively manage the talent pipeline and close the skills gap.

Talent Pipeline Management

1. Connect your talent strategy to your business strategy to improve competitiveness.
2. Organize and manage flexible and responsive partnerships with preferred providers to create shared value.
3. Shared measures and aligned incentives improve performance of education and workforce partners.



Talent Pipeline Management Strategies



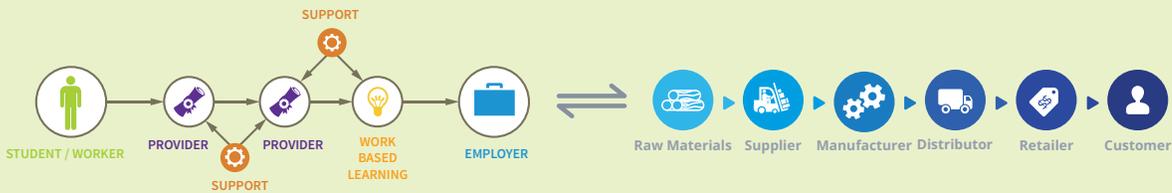
Supply Chain Management Practices

1. **Organize Employer Collaboratives** – Form new employer alliances to manage the talent pipeline around a shared need.
2. **Engage in Demand Planning** – Identify which positions and capabilities to focus on and how many workers are needed.
3. **Communicate Competency and Credential Requirements** – Specify what workers need to know, what they need to be able to do, as well as what evidence is needed to prove it.
4. **Analyze Talent Flows** – Identify current sources of qualified talent and where there are underutilized or alternative providers.
- 5 and 6. **Implement Shared Performance Measures and Align Incentives** – Measure the success and return on investment (ROI) of the talent supply chain, and improve performance through rewards and incentives.

1. **Joint Sourcing** – Improve market leverage as a group and achieve economies of scale in sourcing and purchasing of products and services.
2. **Plan** – Forecast demand for products and services.
3. **Develop Sourcing Requirements** – Develop specifications for products and services that are included in procurement.
4. **Develop Sourcing Networks** – Develop supply chain networks for supplying products and services based on sourcing requirements.
5. **Manage and Improve** – Manage and improve the creation, delivery, and returns of procured products and services from sourcing networks.



We need a demand-driven solution fit for our time, one where employers join together to play an expanded leadership role as end-customers of talent supply chain partnerships.

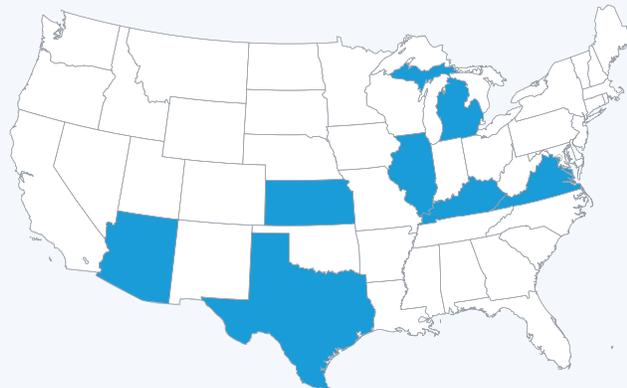


The U.S. Chamber of Commerce Foundation and USA Funds are working with employers to tap into the benefits of such an approach.

Employer Value Proposition

- Stronger brand recognition when recruiting talent.
- Improved leverage when engaging providers and public-sector partners.
- Clearer communication around talent needs and requirements.
- Easier management of business risks with preferred partners.
- Shared capacity building around new talent management practices.

We are working with partners across the country that have answered the call to action and who are organizing around a talent supply approach.



Join the movement! Visit TheTalentSupplyChain.org or contact **Jason A. Tyszko** at jtyszko@uschamber.com

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