



TALENT PIPELINE MANAGEMENT ACADEMY

Strategy 3: Communicate Competency &
Credential Requirements

Strategy 3

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Introduction

Strategy 2 addressed the quantity, location, and timing of talent needs. Mitigating critical skill shortages also requires a focus on quality, which means addressing the **competency, credential,** and other **hiring requirements** for critical jobs. This is the purpose of Strategy 3.

How employers accurately communicate their hiring requirements has important implications for how successful they are in managing their talent pipelines. Setting hiring requirements that are too low will increase costs to employers by requiring more on-the-job training and increasing turnover costs. Setting requirements that are too high will have the unintended consequence of excluding otherwise qualified candidates and potentially reducing the size and diversity of the available talent pool, as well as imposing higher education and training costs on prospective workers. Both can result in positions going unfilled for long periods of time with potentially high onboarding and turnover costs.

Talent Pipeline Management® (TPM) treats aligning and communicating job requirements as a separate strategy for the purposes of the curriculum given its importance and complexity, but *it is best to think of the outcomes of this strategy as part of the combined process by which employer collaboratives communicate their combined need for talent and the hiring requirements for filling that need.*

As mentioned in Strategy 2, a key decision for employer collaboratives is whether they conduct (1) two separate surveys, with one focused on projecting demand for critical jobs, followed by another focused on hiring requirements; or (2) a combined demand planning and hiring requirements survey, which we call the needs assessment survey. We will discuss the pros and cons of each choice after we review the essentials of communicating hiring requirements.



Strategy 3 Learning Objectives

- 1 Explain the role of communicating hiring requirements in TPM®.
- 2 Recognize different ways employers can communicate hiring requirements.
- 3 Develop a shared language for communicating hiring requirements with an employer collaborative.
- 4 Combine and share the results of demand planning and communicating hiring requirements, as outlined in Strategies 2 and 3.



Strategy 3 Action Plan

	3.2 Identifying Hiring Requirements	3.3 Reporting Hiring Requirements Results	TPM Web Tool
ACTIVITIES Actions taken to achieve desired outcomes	<ul style="list-style-type: none"> Establish common language in describing work tasks, knowledge, skills, and tools and technologies Develop agreement on most critical competency requirements Agree on common (or most critical) credential requirements (and distinguish if they are required or preferred) Agree to level of work experience to include Assess the frequency in which the skills or competencies are applied on the job Identify other requirements that collaborative members agree are important Consider mapping and aligning hiring requirements by job level and for feeder jobs Select survey template and schedule survey delivery Prepare collaborative members to participate in survey 	<ul style="list-style-type: none"> Organize survey data and identify best template for reporting results Identify action items and key decision points for collaborative members when reviewing results Determine which stakeholders (beyond collaborative) will see results and when Organize meeting to review results 	<ul style="list-style-type: none"> Select survey template and schedule survey delivery Organize survey data and identify best template for reporting results
MILESTONES Progress points marking significant development	<ul style="list-style-type: none"> Consensus on business functions, jobs, levels for critical positions Design and approval of hiring requirements survey instrument Completion of survey delivery Survey responses collected 	<ul style="list-style-type: none"> Hiring requirements reports developed and presented Constructive feedback provided Focus of collaborative refined 	<ul style="list-style-type: none"> Design survey Completion of survey delivery Hiring requirements reports developed and presented
OUTPUTS Achievements resulting from actions	<ul style="list-style-type: none"> Number and percentage of collaborative members completing hiring requirements survey(s) 	Number and percentage of: <ul style="list-style-type: none"> Collaborative members validating survey results Collaborative members participating in the process that would consider doing hiring requirements survey again in a year Collaborative members agreeing to participate in Strategy 4 back mapping survey 	<ul style="list-style-type: none"> Number and percentage of collaborative members completing the hiring requirements survey(s)

*Note: Unit 3.1: The Role of Communicating Hiring Requirements in TPM covers educational information and therefore is not included in the Strategy 3 Action Plan. This Action Plan is meant to serve as a guide and not an exhaustive list of all the activities, milestones, and outputs your collaborative can achieve.



Key TPM Terms and Definitions

Here are the concepts that are most critical for understanding and executing Strategy 3. These terms appear in the order in which they are listed below and are highlighted in purple throughout the chapter.

Competency

What someone should know or be able to do in a particular job as demonstrated through tasks performed; tools and technologies used; and knowledge, skills, and abilities applied. In Strategy 5, we discuss learning outcomes, which are similar to competencies but are more commonly associated with curricula used in education and training programs.

Credentials

Documents attesting to qualifications and the attainment of competencies, usually in the form of education degrees and certificates, industry and professional certifications, badges, and licenses.

Hiring Requirements

The competencies, credentials, work experience, and other characteristics (e.g., ability to pass a drug test) used for making hiring decisions for one or more jobs related to a business function. Hiring requirements can be preferred or required.

Skills

Capabilities to apply knowledge and perform work tasks.

Work Tasks

Work performed in carrying out job roles, functions, and responsibilities.

Knowledge

What a person should understand in terms of facts, theories, principles, concepts, and procedures related to general or specific domains, including disciplines and professions.

Tools and Technologies

Essential technologies used to perform work tasks and skills, including software and equipment.

Employability Skills

Essential workplace skills needed to be successful in any job, including what are commonly referred to as “soft skills,” such as problem solving, critical thinking, communication, and teamwork.



Unit 3.1

The Role of Communicating Hiring Requirements in TPM

Clearly communicating hiring requirements for their most critical job openings is one of the most important challenges facing employer collaboratives. TPM focuses major attention on clearly specifying hiring requirements through a shared language so employers within the collaborative can understand how their needs are both similar and different. This ability to communicate differences in a clear and consistent manner will enable talent providers to better customize and meet the needs of all employers instead of aiming for an average fit.

Employers have choices in how they communicate their hiring requirements. Many employers have historically relied on education credentials and work experience as proxies for **skills**, but in today's economy, employers are becoming increasingly sophisticated in how they communicate their hiring requirements in order to better source talent.

In TPM, employers should communicate their hiring requirements for critical jobs by minimally addressing competencies, credentials, work experience, and other requirements (e.g., security clearance, citizenship). TPM encourages employers to move toward “skills-based hiring” and to more clearly communicate what additional hiring requirements, including credential and work experience proxies, are required and which are preferred for critical jobs.

Communicating hiring requirements is critical in TPM because it helps employers—and therefore potential employees—do the following:

- **Get the Right Applicants:** Communicating clear hiring requirements is the best way to get the most qualified candidates to apply in a way that does not drive up screening costs or deter qualified candidates from applying.
- **Hire the Right People:** Communicating hiring requirements improves the capacity of employers to screen and hire the right people who can be quickly and reliably onboarded, trained, and retained.

In setting hiring requirements, employers should consider their implications for improving performance and achieving return on investment in managing their pipelines. Setting requirements that are lower than what is necessary for successful onboarding and work performance may result in increased hiring costs, lower productivity, and lower retention.

In contrast, setting requirements that are higher than necessary may result in a reduced pool of qualified talent, including those from populations prioritized in employer diversity, equity, and inclusion (DEI) initiatives. This may result in longer lead times and higher costs in developing talent in the pipeline. Finally, this may result in lower retention rates due to higher expectations among workers meeting these higher requirements.

Given these implications, the best approach is for hiring managers to conduct a detailed analysis of job requirements and the characteristics of top performers in these jobs who have been successfully retained, and then use this analysis to establish validated hiring requirements.

TPM encourages employers to use the Strategy 3 survey process for sharing and compiling validated hiring requirements in a common language based on shared competency and credential frameworks, taxonomies, and other resources.¹ This common language is necessary to identify both similarities and differences in hiring requirements and opportunities for aligning and harmonizing these requirements over time—its importance cannot be understated. The Strategy 3 process provides the vehicle for rich dialogue for employers to have with one another on how to improve their signaling.

It is worth reiterating, that by identifying the commonalities and differences of employer requirements, this process does not require that employers come to complete agreement on which competencies are tied to their critical jobs.

Instead, it is more important that employers clearly communicate employer similarities and differences to providers. This survey process using agreed-on language can then be used by employers to constantly update job descriptions and online job postings.

¹ Andrew Reamer, Robert Sheets, and Jason Tyszko, *Clearer Signals: Building an Employer-Led Job Registry for Talent Pipeline Management* (Washington, D.C.: U.S. Chamber of Commerce Foundation, 2017).

Exercise 1



Analyzing Job Descriptions Exercise

This exercise illustrates how differently employers signal hiring requirements for critical jobs and calls into question how employers can unintentionally narrow their candidate pool.

On the following page are two examples of job requirements for software developers—one generic and the other by level. The requirements are typical of what you might find when looking at a job description or online job posting and are consistent with what you might find in a labor market report highlighting job requirements.

Review the requirements for each job and compare and contrast them. After reviewing the exercise, discuss the following:

- 1** Highlight some of the hiring requirements for each of the positions and describe ways in which they can be improved or communicated more clearly.
- 2** Based on the way the job hiring requirements are written, explain how an unqualified candidate may think they are qualified or could be referred by a provider that offers job placement services.
- 3** Identify how the hiring requirements may inadvertently reduce applications from otherwise qualified candidates.

Requirements	Description 1: Software Developer	Description 2: Software Developer, Senior Level
Key Job Functions and Responsibilities	<ul style="list-style-type: none"> Develop new systems and maintain operational programs and procedures. Lead transformational initiatives, such as use of agile practices and migration to future software architectures, and establish project standards and processes. Work with stakeholders and product owners to define software requirements. Design, develop, and maintain code that meets requirements, is high quality, and performs efficiently and effectively to provide a great customer experience. Incorporate standards and best practices, including performance, security, usability, and maintainability. Troubleshoot development, deployment, and production problems across multiple environments and operating platforms. 	<ul style="list-style-type: none"> Analyze user needs and software requirements to determine feasibility of design within time and cost constraints. Confer with systems analysts, engineers, programmers, and others to design systems and to obtain information on project limitations, capabilities, performance requirements, and interfaces. Design, develop, and modify software systems, using scientific analysis and mathematical models to predict and measure outcomes and consequences of design. Develop and direct software system testing and validation procedures, programming, and documentation. Modify existing software to correct errors, allow it to adapt to new hardware, or improve its performance. Perform or oversee revision, repair, or expansion of existing programs to increase operating efficiency or adapt to new requirements. Participate in an agile team to deliver the full life cycle, including requirements, architecture, design, development, testing, and deployment. Write, analyze, review, and rewrite programs using a workflow chart and diagram and applying knowledge of computer capabilities, subject matter, and symbolic logic. 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.
Skills	<ul style="list-style-type: none"> Ability to quickly learn new concepts and software Self-motivated and a team player Strong communication skills, both written and oral Strong problem-solving skills 	<ul style="list-style-type: none"> Critical thinking and complex problem solving Teamwork and interpersonal skills Effective communication skills Project management
Technologies		<ul style="list-style-type: none"> Operating Systems: Linux and OS X Software: C, C#, C++, and SQL
Credentials	<ul style="list-style-type: none"> Preferred: Bachelor's degree, preferably in computer science, computer engineering, software engineering, or a related discipline 	<ul style="list-style-type: none"> Required: Bachelor's degree, preferably in computer science, computer engineering, software engineering, or related discipline
Work Experience	<ul style="list-style-type: none"> Preferred: At least two years 	<ul style="list-style-type: none"> Preferred: At least five years
Other	<ul style="list-style-type: none"> Required: U.S. citizenship 	<ul style="list-style-type: none"> Required: U.S. citizenship Required: Ability to obtain and maintain a government security clearance

Unit 3.2

Identifying Hiring Requirements

Identifying and, especially, communicating hiring requirements is a complex task, but one that is critical to the TPM process and worthwhile for collaborative members. Collaboratives can experience greater leverage than individual employers as they communicate their talent needs to their provider partners. Collaborative members also benefit from the shared expertise of their peers to be able to articulate why these requirements are essential to their business.

The first major decision in identifying hiring requirements is whether it will be done at the business function level or for one or more jobs or job families (i.e., occupations). In most cases, it is best to identify hiring requirements at the business function level (e.g., machining, welding, software development), which will involve one or more common job titles used by employers in the collaborative.

In forming a collaborative—and as part of a demand planning survey—employers may focus on one or more job titles, possibly organized by occupation (e.g., by Standard Occupational Classification, or SOC, codes) within a business function. This could be because the employer collaborative’s focus is separate occupations. However, the collaborative’s focus might be different job titles that are essentially the same job with many of the same hiring requirements.

For example, a collaborative may find its members call software developers by different titles, but the role the developers play is essentially the same. Organizing hiring requirements at the business function level has the added benefit of simplifying the process since one survey will cover multiple job titles, as opposed to identifying hiring requirements for two or more jobs.

Competency, Credential, and Other Hiring Requirements

TPM encourages employers and employer collaboratives to move toward skills-based hiring. As a result, one of the most difficult decisions to make is how best to communicate competency requirements. Employers communicate this information in job descriptions and other hiring tools through a variety of methods, usually involving a combination of (1) **work tasks** reflecting the major job functions and responsibilities, (2) **knowledge** and skills, and (3) adeptness with **tools and technologies**.

Minimally, a job description should communicate the most important work tasks—what a person should be able to do on the job—and the essential **employability skills**. Collaboratives can then decide to add more requirements over time and decide how to manage the delicate balance between capturing all essential information and making the hiring requirements survey too complex to capture and communicate this information.

In compiling hiring requirements, employers must establish a common language in describing work tasks, knowledge, skills, and tools and technologies. They should work from previously established lists of requirements prepared by other employers, business and industry associations, or other trusted sources. Some of these sources might have been identified when establishing a focus area in Strategy 1. For those who have access to the TPM web tool, the site’s Library provides access to numerous widely used resources.

In addition, employers should review their own competency requirements and those from trusted sources to make sure the wording used does not over- or understate what is required. They should also verify that the language within the job description does not contain any hidden biases (e.g., gender bias). Finally, they should make sure that the wording is not firm-specific and is as jargon-free as possible. These three considerations are important in fully engaging a larger and more diverse talent pool for critical jobs. Finally, it is not just the competencies that matter, but also the preferred demonstration of the competency. In addition to articulating in-demand skills and competencies, TPM provides employers a process in which they can more effectively signal preferred demonstrations or assessments of that skill or competency to preferred and trusted talent sourcing providers.

It is important to keep in mind that even though employers may describe a skill the same way, they do not always mean the same thing. Context matters and differentiates the skills in one setting versus another. This is a common challenge with soft skills, for which “ability to manage time effectively” can mean entirely different things in the context of an information technology-related job versus a manufacturing or healthcare job. These distinctions are important to helping employers better signal to learners how to optimize their career readiness. Indicating preferred demonstrations and assessments allows for clarity in interpretation of a potential candidate’s stated skill sets.

Another important decision is how to list credential requirements and how to make sure you are capturing whether these credentials are required or preferred. “Required” means that a job candidate would be disqualified if they do not possess the credential at the point of hire. “Preferred” refers to a credential that enhances the competitiveness of the job candidate but is not used to qualify or disqualify an applicant.

Next, work experience can be defined in multiple ways, starting with number of years of professional experience in the workforce. Often, employers do not specify if work experience should be related to the critical job; if this is important, it is best to state that relevant work experience is needed. Employers can request information related to time spent on projects, or a work-based learning experience, such as an apprenticeship program. Work experience can also be required or preferred.

Employers may communicate other hiring requirements that can vary depending on the industry and job. Many of these requirements can be used to qualify or disqualify a potential candidate. Some of the most common requirements set by employers include citizenship status, drug-free status, security clearances, language skills, and references. The TPM framework suggests that employers reexamine these additional requirements and make sure that they are necessary and do not exclude otherwise qualified workers. TPM recommends employers to be fully transparent about any additional hiring requirements that are used in the talent screening and hiring process.

In summary, TPM encourages employers to work together to move toward skills-based hiring based on a common language. It also encourages employers to rethink any hiring requirements that may reduce the pool of qualified talent or reduce opportunities for those who have been overlooked or screened out by traditional hiring requirements, including opportunity populations that are targeted in employer DEI initiatives. These populations are addressed in Strategy 4.

Hiring Requirements by Level, Importance, and Frequency

Employer collaboratives face a major decision in how they communicate the level and importance of hiring requirements. Similar to what was covered in Strategy 2 with regard to demand planning, employer collaboratives can set different requirements based on the level of the position they are planning to fill. This can be broken down by (1) entry level, (2) mid level, and (3) senior level. For example, a collaborative can set different hiring requirements for different levels, even though they are addressing the same business function. As described in Strategy 2, setting levels may be important in cases where employers have a wide variety of jobs in the same business function but have different levels of competency and credential requirements. Setting levels is also important when employers are trying to communicate career pathways from entry level to more advanced jobs. It is also very useful in expanding access to a larger and more diverse talent pool through entry-level jobs. Of course, collaboratives can defer on requesting information by level if this is deemed to be unnecessary or too advanced for getting started.

In addition, employer collaboratives can decide how to communicate the relative importance of different requirements. This can help further delineate how much weight different employers place on a particular requirement, which can be useful in determining how essential the requirement is for the purpose of building a talent pipeline. This is a very important decision, because employer collaboratives should clearly communicate priorities in their hiring requirements. The most common format is using a five-point scale ranging from “not important” to “very important,” though this can be simplified even further.

To aid companies in determining the importance of a skill, they can also assess the frequency in which the skills or competencies are applied on the job. This is an important piece of information that can be ascertained through a job analysis and can help employers sort which skills are more or less important based on how often they are used in relation to how critical they are for performing the job.

Figure 3.1: Sample Survey Template includes a survey template of competency, credential, and other hiring requirements. This survey template was developed by TPM partners in Northern Virginia that formed an information technology collaborative with a focus on software development as a critical business function.²

² Elevate Virginia Project Team. NoVA Talent Pipeline Management® Initiative Survey (excerpts). October 2015.

Figure 3.1: Sample Survey Template

Elevate Virginia Project Team, NoVA Talent Pipeline Management Initiative Survey (excerpts), October 2015



Please rate the following tasks for **Computer Programmers I 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 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 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 Programmer I Software Developer**.

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

Please indicate your preferred industry sector experience, if any, for **Computer Programmer I Software Developer**.

	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 I 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	<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"/>
<input type="text"/>			

Computer Programmer I 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"/>
<input type="text"/>			

Computer Programmer I 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"/>
<input type="text"/>			

Computer Programmer I Software Developer: Technical Competency—Programming Language

	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"/>

Computer Programmer I 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"/>

Computer Programmer I 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"/>

Please rate the following Professional Business Skills for **Computer Programmers I 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 I Software Developer**

	Entry Level	Mid Level	Senior Level
High School Diploma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Associate 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 I 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 I Software Developers** and indicate the experience level (entry, mid, senior) for which they are most relevant.

Source: Elevate Virginia Project Team, NoVA Talent Pipeline Management Initiative Survey (excerpts), October 2015

Identifying Changing Competency and Credential Requirements

As employers define their competency and credential requirements, they can identify major changes in hiring requirements that may require the upskilling of existing employees in those jobs. This could provide important information as collaboratives consider upskilling solutions in Strategy 5.

Major changes in competency requirements may be due to the addition of new job responsibilities or growing importance of existing ones, changing technical skill requirements because of new technologies or new work processes, or the addition and/or changes in foundational employability skills. For example, manufacturing companies may add significant industrial maintenance responsibilities to production workers because of growing automation. Healthcare employers may move to coordinated care approaches that expand the roles of nurses by requiring additional leadership and teamwork skills.

Major changes in credential requirements may be due to changing industry and government regulatory requirements or changes in talent recruitment strategies. One example is growing requirements for BSN nurses and the need to provide opportunities for ASN nurses to attain the higher credential. Another is changing requirements for industry and professional certifications.

Mapping and Aligning Hiring Requirements by Job Level and for Feeder Jobs

If employers are defining levels of critical jobs and related entry-level feeder jobs, they should make sure that they use comparable lists of competency, credential, work experience, and other hiring requirements. Employers should map and align these requirements so they consistently communicate both similarities and differences for each level and job, including frequency and importance of specific hiring requirements. Also, they should communicate a potential career pathway showing a progression from lower-level competencies, credential, and work experience requirements from a feeder job to a more advanced position, which will be discussed further in Strategy 5. Table 3.1 presents an example for pipefitting from colleagues at the Greater Houston Partnership and their work with UpSkill Houston's petrochemical employer collaborative.³

³ PetrochemWorks Steering Team, a collaboration of East Harris County Manufacturers Association and Associated Builders and Contractors of Greater Houston. PetroChemWorks.com.

Table 3.1: Sample Competency Map by Skill Set: Pipefitting

PIPEFITTER HELPER		
ENTRY LEVEL	MID LEVEL	TOP LEVEL
OJT: 6 Months—1 Year	OJT: 1 Year—2 Years	OJT: Until ready for independent work confirmed by site
Practice safety awareness	Apply basic pipefitting trade math	Apply advanced pipefitting trade math
Identify basic tools	Read and interpret a tape measure	Complete proper valve installation
Practice safe housekeeping	Perform proper oxyfuel cutting	Read, interpret, and describe a plan of work from a basic ISO
Apply basic construction math	Identify common fittings	Reference the Graves Blue Book to complete a piping system layout
	Identify basic components of an ISO	Install and connect a proper flange assembly
	Identify and use basic pipefitting hand and power tools	Identify common components of pipe/vessel trim (pipe to gauges)
	Perform proper grinding and beveling of pipe	
	Cut, ream, and thread pipe	
CRAFT PROFESSIONAL (JOURNEYMAN)—INDUSTRIAL PIPEFITTER		
ENTRY LEVEL	MID LEVEL	TOP LEVEL
Perform proper hydro testing	Select and install proper pipe supports	Fabricate and/or install a pipe spool
Lay out and fabricate screw (threaded) pipe	Describe and/or demonstrate installation of underground pipe	Describe and/or demonstrate proper planning for measuring, cutting, and installation of large bore piping
Complete proper fit up for socket weld pipe	Explain OD and ID and its impact on layout, calculation, and fabrication	Identify exotic piping materials, proper handling, and impact on field erection
Properly install and connect pipe/vessel trim	Bolting specialist	Perform pre-alignment (pipe stress to pumps)
Perform advanced ISO interpretation (develop and direct work plan)		Develop a field ISO
Perform basic pipe rigging (bull rigging)		Perform a material takeoff
Complete proper fit up for butt weld pipe		Qualified senior bolting specialist
Complete field erection/ installation of pipe		
Flange makeup knowledge		
Field verify pipe spool dimensions		

Disclaimer: The Competency Map above is intended as a guide to confirm skill sets and to support career progression. This is not a training model. It does not cover every task a craftsman would perform at a specific level and should not be used as a training plan. The Competency Map shows overall knowledge and/ or proficiency necessary to perform at a designated level. All helpers and journeymen are expected to practice high-quality craftsmanship. All experienced craft professionals are expected to guide and mentor lessor experienced helpers. All are expected to work with safety as the most important principle. All are expected to display high-performance work behaviors: attendance, punctuality, teamwork, safety, and quality.

Where to Start: Reviewing Job Descriptions and TPM Resources

Employer collaborative staff should begin building the Strategy 3 component of the needs assessment survey by compiling the existing job descriptions and online job postings from employer members to identify similarities and differences in the definition of positions within the chosen business function. The TPM web tool enables users to upload job descriptions for this purpose through the job description compilation survey.

Then, the collaborative staff should explore TPM resources including industry competency frameworks and competency frameworks developed by other employer collaboratives that could be used to establish a common language for describing hiring requirements.

Deciding Whether to Conduct Separate or Combined Surveys

The needs assessment survey encompasses the surveys described in Strategy 2 (demand planning) and Strategy 3 (hiring requirements). Employer collaboratives must decide whether to conduct separate or combined surveys and how to design and carry out the survey(s).

In general, employer collaboratives should conduct separate surveys in the following circumstances:

- **Multiple Focus Areas and Targeted Jobs:** The employer collaborative has more than one focus area or business function, or many different targeted jobs and levels of these jobs, and wants to use demand planning to help narrow its focus.
- **Employer Commitment and Experience:** The collaborative does not have sufficient commitment from some employers to complete a longer and more complex survey and needs the collaborative to do something quick and simple to build experience and trust among employers.

In contrast, employer collaboratives should conduct combined surveys when they are focused on one or two clearly defined business functions and have sufficient employer commitment to conduct a longer and more complex needs assessment survey. Moving forward, they should conduct combined surveys when they do additional rounds of surveys to update projections and hiring requirements.

Building the Agenda for Your Survey Meeting

As described in Strategies 1 and 2, your first collaborative meeting should determine the focus of the collaborative. You will then introduce the needs assessment survey as a way to start the talent supply chain process. In conducting your meeting on the Strategy 3 component of the survey process, you should develop an agenda that allows the employer collaborative members to do the following:

- 1. Select critical business functions, jobs, and levels.**
- 2. Select the survey template and schedule.**
- 3. Prepare your employer collaborative members for the survey.**

1. Select Critical Business Functions, Jobs, and Levels

- Confirm the critical business function(s) and determine which will be addressed in the first survey involving hiring requirements.
- Review the common competency, credential, and other hiring requirements that were provided in any job descriptions and online job postings that employers have shared with one another. Employer collaborative members can also review hiring requirements used by other TPM collaboratives along with competency and credential taxonomies and frameworks found on the TPM web tool.
- Share the proposed survey draft with collaborative members based on the analysis of job information and TPM resources.
- Ask employer members to determine if they want to use job levels based on the demand planning survey results.
- Encourage employer collaborative members to seek data on different job levels if there are large numbers of job openings at different levels and these levels have different competency, credential, and hiring requirements, including work experience.
- Review the consequences of establishing hiring requirements that are too high or too low for the actual requirements at different levels.
- After the review, propose how to develop a final draft list of hiring requirements to be used in the survey for one or more levels.

2. Select the Survey Template and Schedule

- Review examples of the survey template that will be used, based on decisions about the number of business functions and jobs included, as well as levels and the hiring requirements that you have chosen to include.
- Propose and get agreement on a schedule for distributing and completing the survey.

3. Prepare Your Employer Collaborative Members for the Survey

- Remind employers about the need to engage hiring managers and other key decision makers in developing and validating survey responses for each selected business function and critical job.
- Emphasize the importance of clarifying actual hiring requirements for different levels to make sure the requirements reflect which are most important, frequently applied, and necessary to be qualified to do the work.
- Emphasize the need to communicate not just the most in-demand skills and competencies, but their preferred demonstration, including preferred assessment products or instruments.
- Review the survey design and show examples of how it can be completed and submitted.
- Show examples of how you will aggregate and report results to protect the confidentiality of employers. Re-emphasize that the survey should not be used to collect salary information, to protect members from any legal risks of working together to address their common talent needs.
- Show examples of what could be shared with outside stakeholders, including providers, and emphasize that the collaborative can decide whether to share these results.
- The group can also combine the hiring requirements information with the job projections data gathered from the demand planning survey for a more complete profile of its employer members' talent needs.
- Summarize the decisions made about the design of the hiring requirements survey and confirm the date of the next meeting to review the results.



Identifying Hiring Requirements Exercise

This exercise illustrates how collaborative members use the hiring requirements process to articulate similarities and differences in their critical jobs, including how required and preferred hiring requirements play an important role.

Because there was no existing trade group for transportation, distribution, and logistics (TDL) companies, a local chamber of commerce organized a group of 10 member companies that recently expressed deep concern over TDL skills shortages. Having secured the buy-in to launch a TDL employer collaborative, the companies decided to focus on warehousing as a critical business function and identified a family of relevant front-line occupations under that function, including (by SOC codes) the following:

- 53-7011 Conveyor Operators and Tenders
- 53-7051 Industrial Truck and Tractor Operators
- 53-1021 First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand
- 53-7062 Laborers and Freight, Stock, and Material Movers, Hand
- 43-5071 Shipping, Receiving, and Traffic Clerks

These occupations were recently targeted in a demand planning survey, and a meeting was convened to review the results. The data showed existing and increasing demand for all five occupations, with the vast majority of demand for entry-level positions. Satisfied with the results—and with a greater sense of urgency and purpose—the collaborative agreed to take the next step and identify hiring requirements.

Because each of the companies treated this family of SOC jobs differently, with some treating equipment operators and clerks as separate jobs and others treating all five as essentially one job without any specific levels, they decided to address competency, credential, and other hiring requirements at the business function level.

During the meeting, the member companies shared a number of their hiring requirements for warehousing positions. Every employer referenced employability skills (i.e., soft skills) as a top requirement. Nearly all of the companies agreed to a core set of work tasks, though there was a debate over how important some were versus others, and a small number of members suggested work tasks that were dismissed as irrelevant by the majority of the members.

Everyone agreed that a high school education was required, but some companies required an associate degree or certificate, while others said they preferred a third-party industry certification. Experience was definitely preferred by most companies, but given the focus on entry-level jobs, many did not require it. Last, each company required job candidates to pass a drug test.

Unit 3.3

Reporting Hiring Requirements Results

In addition to administering the hiring requirements survey and aggregating the results, employer collaboratives will need to determine how the results will be used.

If there are multiple audiences for the results, the collaborative will need to determine how generalized or how specific the shared information should be. Reports must be designed and customized to serve these multiple objectives.

Collaboratives will need to be careful not to reveal information that is deemed proprietary or for the eyes of the collaborative membership only.

We cover four types of reports: (1) collaborative reports, (2) employer internal reports, (3) provider reports, and (4) community reports.

Collaborative Reports

Collaborative reports are the aggregate results after each employer has had a chance to conduct its internal job analyses and complete the hiring requirements survey. While employers trust the host organization with their data, the information shared with the collaborative membership should be in aggregate form; this protects information that may be considered proprietary (see Appendix for legal language provided by U.S. Chamber of Commerce legal counsel).

These reports should include total numbers for demand—including by level, if applicable—and hiring requirements where there is consensus (see Table 3.2: Example Report of Employer Responses by Competency and Table 3.3: Example Report of Employer Responses by Credential). However, the reports should also specify where there are major differences in requirements.

Possible scenarios include (1) collaborative-wide agreement on the importance of a given hiring requirement; (2) broad agreement, but with a minority of collaborative members communicating something different that requires deeper understanding; and (3) no apparent consensus, with employers across the collaborative communicating something different, warranting a discussion. To show both similarities and differences in employer hiring requirements, it is important to show the full distribution of employer responses, not just averages (e.g., median or mean). Many times, averages hide important information on the level of differences between employers.

From there, collaborative members can discuss how to recalibrate their hiring requirements based on feedback from their peers, or they can move forward with better information about important differences among their needs. This is critical information that can help enable mass customization in talent development when using a shared language for communicating hiring requirements.

Table 3.2: Example Report of Employer Responses by Competency

Requirement	Aggregate Employer Responses (Total Employers = 15) 1 = Not Important; 5 = Very Important				
	1	2	3	4	5
Work Task A	3	3	1	0	8
Employability Skill B	0	0	0	3	12
Other Hiring Requirement C	1	8	4	2	0

Table 3.3: Example Report of Employer Responses by Credential

Credential	Aggregate Employer Responses (Total Employers = 15)		
	Required	Preferred	Neither
Degree A	9	6	0
Education Certificate B	5	10	0
Industry Certification C	0	2	12
License D	0	2	13

Employer Internal Reports

Employers should begin by sharing the survey results with internal employees. This is particularly important when a collaborative is starting with upskilling as a talent sourcing strategy. The information should be organized in a format that is suitable to share with existing employees who are interested in, or have been selected for, upskilling opportunities and career advancement.

Provider Reports

Next, collaboratives can create provider reports. These reports are designed to be shared with those providers that the collaborative intends to use to source talent. We will cover how to designate preferred providers in Strategy 5, but for now we are pointing out that this information can be organized to help providers better understand (1) how many learners need to be in the talent pipeline; and (2) what specific competencies, skills, and credentials a provider's curriculum needs to address in order to meet the employer's needs and to set learners up for success.

Community Reports

Finally, collaboratives can publish community reports. These are intended to be public documents and are used by the collaborative to communicate more broadly the demand for talent in the region or state, and what requirements are needed to fill this demand. These reports can be used to help bring attention to a particular skills gap or changing job requirements in a dynamic industry, or to inform public policy and research. Similar to demand planning data, employer-specified hiring requirements can also be used to improve the quality of state occupational projections and real-time labor market information.

Sharing Reports and Templates with Peers in the TPM Network

The design of the needs assessment survey and the resulting aggregated findings can be shared with peers in the TPM network. Part of the mission of the TPM Academy® is to develop a peer-to-peer exchange of ideas for how to communicate demand and hiring requirements that can help streamline the needs assessment process. This exchange also promotes standardization among requirements and how we describe them where possible.

Exercise 3



Reporting Results Exercise

This exercise presents the opportunity for a host organization to use data as an action-oriented plan for next steps.

The local chamber of commerce serving as a host organization, as discussed in Exercise 2, successfully disseminated its first hiring requirements survey for the warehousing function on behalf of its TDL employer collaborative. The chamber is now in the process of compiling the results and generating reports to be shared at the next collaborative meeting. Per the agreement among the collaborative members, the results will be compiled in tables and shared in aggregate form to protect the privacy of each individual employer.

Seeing the results for the first time, the chamber staff is preparing for the upcoming collaborative meeting. The plan is to present the results and facilitate a conversation among the collaborative members, but staff members must first understand the results, featured in Tables A–D.

Table A: Results by Competency and Employability Skill

Competency and Employability Skill (Abbreviated List)	Aggregate Employer Responses (Total Employers = 10) 1 = Not Important; 5 = Very Important				
	1	2	3	4	5
Processes Requests and Supplies Orders	0	0	1	1	8
Maintains Inventory Controls	0	1	0	3	6
Completes Inventory Reports	0	0	1	4	5
Maintains a Safe and Clean Work Environment	1	3	5	1	0
Communicates Clearly	0	3	5	1	1
Solves Problems	0	6	2	2	0
Manages Time Efficiently	0	0	0	0	10
Fosters Teamwork	1	2	1	5	1



Table B: Results by Academic Level and Credentials

Academic Level and Credential	Aggregate Employer Responses (Total Employers = 10)		
	Required	Preferred	Neither
High School Diploma	10	0	0
Associate Degree	1	2	7
Bachelor's Degree	0	0	10
Community College Warehousing and Distribution Certificate	2	2	6
International Warehouse Logistics Association Certified Logistics Professional	0	1	9

Table C: Results by Experience

Experience	Aggregate Employer Responses (Total Employers = 10)	
	Required	Preferred
Less than One Year of Experience	0	5
Two to Three Years of Experience	0	2

Table D: Results by Other Requirements

Other Requirements	Aggregate Employer Responses (Total Employers = 10)	
	Yes	No
Pass a Drug Test	10	0

After reviewing the exercise, discuss the following:

- 1** Based on the report's findings, identify two or more hiring requirements for which there is consensus among the collaborative's members. Explain how you arrived at that conclusion.
- 2** Identify two or more areas for which there is a lack of consensus and explain how you arrived at that conclusion.
- 3** As a host organization, how would you manage the conversation to address variation in hiring requirements, and what are some possible outcomes?
- 4** Beyond the employer collaborative membership, how might the collaborative share these findings with other stakeholders, and what format do you recommend it uses?

2 of 2

Ready for Next Steps?

Before you move to the next strategy, make sure you have achieved the learning objectives necessary to move forward. When you go back to your community, ensure you will be able to execute the following activities:

- Explain why communicating hiring requirements is important in TPM.
- Identify various ways of signaling employer hiring requirements.
- Explain how to develop and use a shared language for communicating hiring requirements across employers.
- Create hiring requirements survey for collaborative members to prioritize hiring requirements (or a needs assessment survey if combining demand planning and hiring requirements).
- Use the Strategy 3 Action Plan at the beginning of the chapter to determine your next steps and track your progress.
- For those using the TPM web tool, develop a comprehensive needs assessment survey and report results to stakeholders, including collaborative members and existing workers.

NOTES