

WELLSPRING PROJECT

# BRIDGING THE GAP

## CONNECTING EDUCATION + INDUSTRY WITH OPEN STANDARDS

NOVEMBER 2020

# Wellspring Project

## PHASE I FINAL REPORT

# EXECUTIVE SUMMARY

Wellspring is a multi-phase initiative of the [1EdTech Foundation](#) and [IMS Global Learning Consortium](#) focused on accelerating the education-to-work ecosystem through new technologies and data exchange based on open standards. Wellspring is a grant-funded collaboration to:

**Create a scalable foundation for an education-employment ecosystem based upon verifiable digital credentials capturing learning achievements and skills to empower individuals to find jobs and transform the education system from valuing seat-time to skills.**

Based on interoperable learner records and credentials, this new environment will allow individuals to find jobs aligned to their expertise and skills and employers to identify the best talent aligned to essential job roles. Upon completion of all planned phases, project Wellspring will demonstrate:

- ✓ Educational institutions documenting academic credentials that align with targeted job positions and follow open standards for data interoperability
- ✓ Employers searching to find talent based upon candidates' verifiable digital credentials
- ✓ Learners using their verifiable credentials as currency to apply and qualify for jobs in employers' applicant tracking systems

This report covers Wellspring Phase I, an exploratory project to demonstrate the feasibility of educators and employers working together to develop and create machine-readable, interconnected skills frameworks, with educators documenting their Learning Outcomes program frameworks and employers describing their job requirements as competencies and skill frameworks. The two complementary frameworks would be mapped and linked digitally, using technology tools adhering to the IMS [Competencies and Academic Standards Exchange®](#) (CASE®) standard, demonstrating that machine-readable linked data can connect employer talent needs with educational program offerings through learner's credentials.

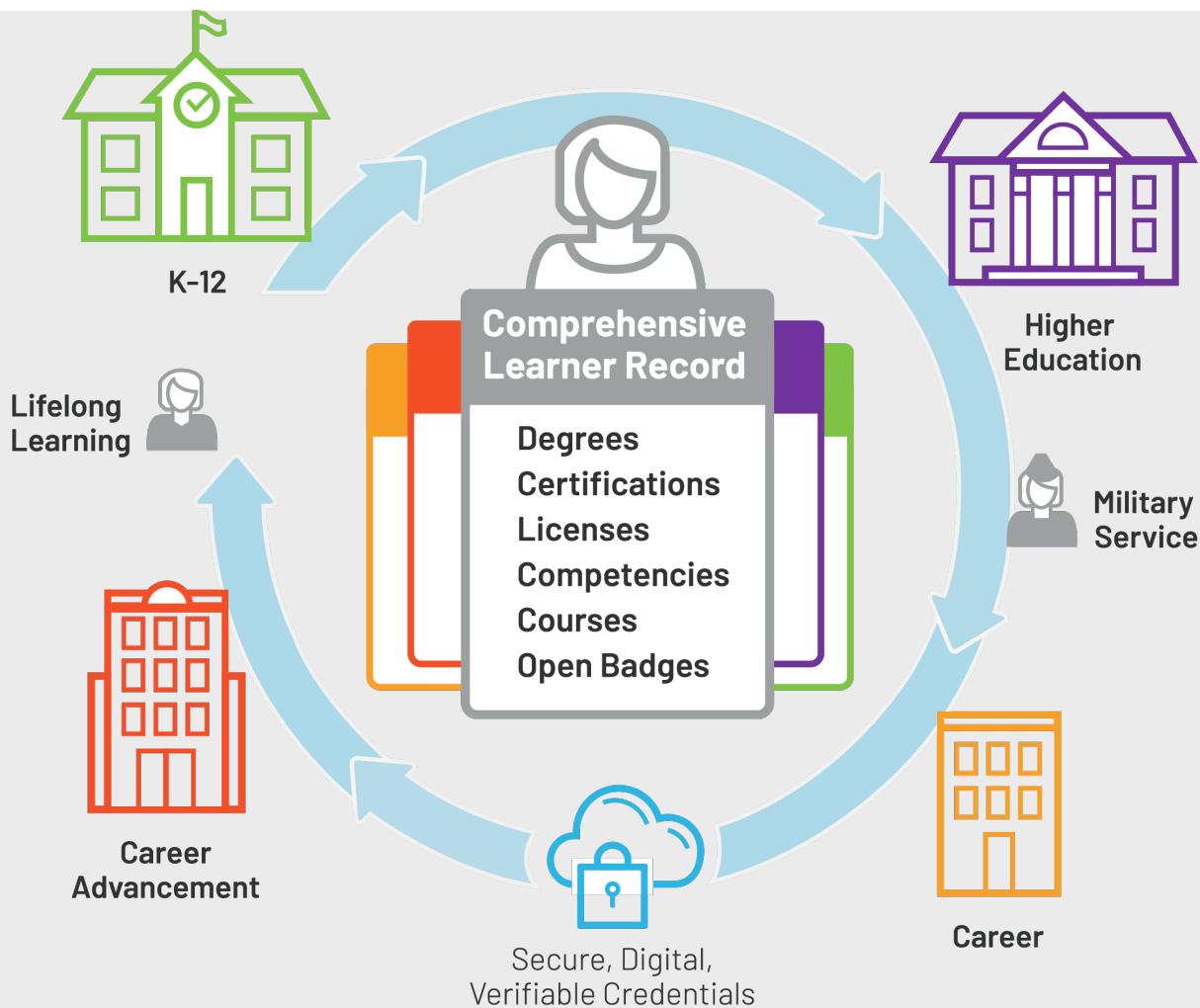


FIGURE 1. EXAMPLE OF A DIGITAL CREDENTIALS ECOSYSTEM

## KEY FINDINGS AND IMPLICATIONS

Wellspring Project Phase I succeeded in achieving its stated goals. Through this experience, the participants provided significant insights for the community of institutions and employers that want to embrace modern technology powered by open standards to bridge the gap between education and workforce for the benefit of learners and earners over their lifetime.

Key Findings from Wellspring Phase I	Implications
Participating employers and educational institutions demonstrated they could strengthen strategic relationships by collaboratively creating and aligning learning outcomes and skills frameworks.	The use of open standards that enable collaboration can improve educational outcomes through better industry alignment. There can be defined, repeatable processes that make collaboration far more productive, highlighting technology market opportunities on multiple levels.
The primary motivation for educational leaders' participation in Wellspring was a desire to respond to local needs by aligning academic programs with industry opportunities.	Global or national strategies to define skills must be flexible and agile enough to incorporate regional and local variations and alternative elements. Standards representing skills must recognize distinct global, national, and local constructs.
Employers agreed that work was needed to improve their job descriptions and postings to include skills-focused practices not yet universally adopted.	For an efficient talent market to function, the education community's current efforts will require equally robust initiatives in the industry to organize and signal their talent needs in an open-standard form. Future Wellspring phases should engage experts to design and perform a return on investment (ROI) analysis of strategic skills data management in a corporate setting.
Support from institutional and employer executive leadership is essential for success. Participating organizations require significant time and effort, and they need to understand their management considers this a strategic priority.	Evidence of improved ROI through the use of tools based on open standards with more effective and well-designed processes should continue to build executive interest and commitment.
The work of creating and aligning competency and skills frameworks can be tedious and time-consuming.	A significant market opportunity for productivity tools based on open standards exists to support live collaboration in skill requirements definition, curriculum design, and assessments across education and industry domains.

Key Findings from Wellspring Phase I	Implications
<p>Educators, employers, and stakeholders understand that a robust data infrastructure is critical to achieving scale and efficiency in a talent pipeline, forming a foundation for data-based scale and process transformation.</p>	<p>The open standards <a href="#">Comprehensive Learner Record</a> (CLR) and <a href="#">Open Badges</a> are well suited for the scenarios presented, offering machine-readable, verifiable credentials aligned to industry-recognized skills for demonstration in Wellspring. These IMS standards can also be combined (with Open Badges being incorporated into the CLR) to support institutions and employers that have built credentials based on Open Badges. This flexibility also supports the combination of Open Badges and CLR as a lifelong learning and employment record (LER).</p>
<p>The pilot identified three critical areas of interoperability that must be addressed to scale the skills data ecosystem:</p> <ol style="list-style-type: none"> <li>1. Education curricula must explicitly tie to job requirements to quickly respond to changing needs,</li> <li>2. Local and regional job variations must be taken into account to maintain validity, and</li> <li>3. Use of common, preferred skills terminology when applicable can positively increase the understanding of skill descriptions.</li> </ol>	<p>Using the IMS open standard <a href="#">CASE</a>, the Wellspring pilot demonstrated the ability to tie education programs explicitly to job requirements at the global framework and local item levels. CASE does not currently incorporate semantic skill descriptors; the standard is designed to evolve and incorporate such experience and best practices.</p>

Wellspring is designed to demonstrate use cases from education to work. The IMS [Comprehensive Learner Record](#) (CLR) and [Open Badges](#) standards are also designed to support employer-based learning and achievement. Future phases of Wellspring will demonstrate badges and employment records in the CLR.

**Wellspring Phase I was made possible through the generous support of the Charles Koch Foundation.**



# PROJECT REPORT

Phase I of Wellspring was conducted from September 2019 through August 2020 and facilitated by IMS Global Learning Consortium in partnership with Education Design Lab and the Council for Adult and Experiential Learning (CAEL). Phase I targeted the development of shared educator-employer competency frameworks. Two post-secondary institutions, with their employer partners, successfully created six competency frameworks that aligned their academic program credentials with specific job roles.

This report details the process, findings, and recommendations from Phase I. Through this process, three key categories of themes emerged:

- **Employer-centric:** The importance of language and terms in actively engaging employers early in the development process.
- **Long-term impact:** The value of developing more scalable, automated processes that identify both technical and 21st skills competency frameworks for education-business partnerships.
- **Project process improvement:** Recommendations for improving the execution of project activities towards project deliverables.

The competency frameworks created by Wellspring in Phase I were intended to serve as foundational use cases and establish the competency structures that support the recording of what learners know and can do, aligned to specific job roles in industry. A key hypothesis of Phase I was that these new competency frameworks would be vital digital artifacts for each participating organization—resources to be maintained and leveraged over time and utilized throughout each organization's program development and talent management lifecycles to facilitate human and machine matching of education programs and job needs.

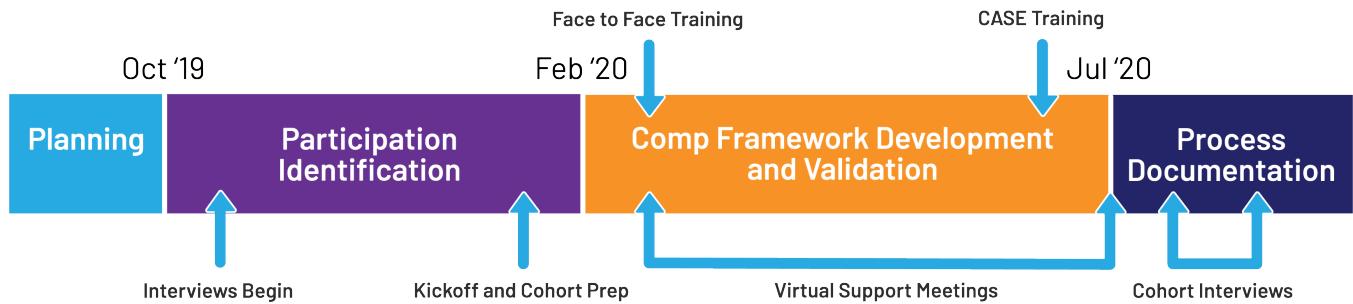
**The learn-to-work skills ecosystem continues to burgeon with projects addressing different aspects of the talent supply chain. Wellspring Phase I provided valuable insight into technological and human solutions needed to dramatically shift business as usual in the post-secondary education and workplace talent management spheres.**

The digital alignment processes demonstrated in Wellspring Phase I establish the required connecting bridges between education and industry organizations and between the learner and the necessary skills for specific job roles.

## Timeline

The timeline for Phase I of the project is detailed in Figure 2 and includes four major phases:

1. Planning,
2. Participant identification,
3. Competency framework development, and
4. Process documentation.

**FIGURE 2. PROJECT TIMELINE**

## Deliverables

Four project deliverables emerged from Phase I of the Wellspring Project:

1. Competency frameworks created by academic programs and their industry partners, published and aligned using the IMS CASE open standard
2. Analysis of:
  - ▶ Expected impact of competency frameworks for academic program and industry partner
  - ▶ Project participants' lessons learned
3. Community article on best practices for designing learning outcomes that align with industry competencies
4. Training materials for developing competency frameworks that are useable in future expansion phases

## THE COMPETENCY FRAMEWORK LANDSCAPE

The Wellspring Project was designed in early 2019 upon the premise of the need for, and promise of, a robust education-to-workforce ecosystem. Lumina Foundation (2020) designed a “[Connected Learn and Work Ecosystem](#)” model that tracks the multi-faceted elements of this challenge and the work currently underway by many contributing organizations. The identified model elements (credential transparency, alignment and alliances, drive and connect systems, employer/workforce, and messaging about credentialing systems) are furthered by the deliverables and outcomes of the Wellspring cohorts.

**The real issue is that employers are the disconnect between schools and industry. There is a lack of communication between what employers need in terms of skills and what students learn in today's education model.**

Maaghul, 2020

The employer-education relationship is a vital component of the ecosystem. At first glance it appears as if higher education institutions have advisory board and employer guidance, but these relationships are often superficial. Kilfoye (2020) contends, “Institutions must intentionally partner with employers to begin constructing the talent pipeline almost from the beginning of a learner’s journey, not just during the last mile when students are about to graduate.” Shared and validated competency frameworks need to be developed to drive curriculum development, skills achieved, and standards-based student records as the skills currency with value in a job marketplace. The national trend toward skills-based hiring renders the need for clearly expressed skills. “The vast majority of job descriptions and postings are not based on open competency frameworks that enable employers to use a common language in describing their competency requirements so that their education partners can clearly see similarities and differences between employers.” (Tyszko & Sheets, 2019).

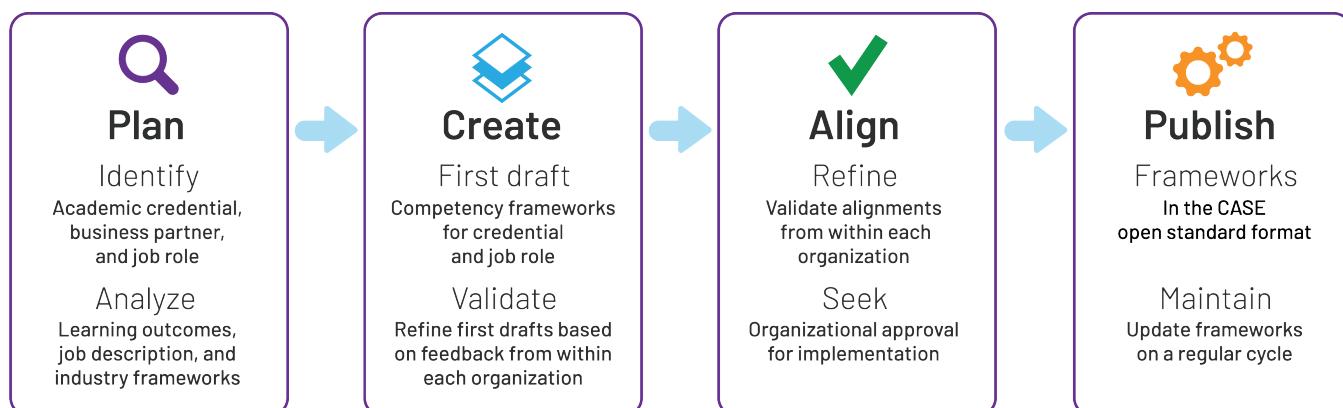
Shared business–education understanding of language, competencies, and outcomes is essential to establish the “same page” to build “richer competency engagement,” allowing job candidates to effectively communicate and validate what they know and can do. To complete this process, education entities must adjust their programs, curriculum, and learning outcomes, while employers must clearly identify job role skills.

The demands of today require a reimagined “high-quality learning and skill-building” ecosystem (Spaulding, Montes, Chingos, and Hecker, 2019). With a global digital transformation underway, the “distance economy” (McKinsey, 2020) further impacts the need for rapid skills-based credentials such as industry certifications, certificates and micro-credentials, and machine-readable learner records that can be linked through standards-based interoperability to optimize talent identification in the marketplace (Credly, 2020).

## THE WELLSPRING PHASE I PROCESS

Wellspring Phase I was comprised of the following phases of activity:

- Cohort identification, selection and development
- Preparatory meetings
- Face-to-face training workshop and follow-up virtual meetings
- Framework development and publishing



**FIGURE 3. COMPETENCY FRAMEWORK DEVELOPMENT PROCESS**

All cohorts began with the education institution as the lead organization on the project. After selection and onboarding to the project, the education provider facilitated the process on behalf of the cohort. Figure 3 illustrates the step by step process that the participants engaged in and the action items that were necessary to achieve the final deliverable of shared comprehensive competency frameworks.

## COHORT IDENTIFICATION + DEVELOPMENT

The Wellspring Project leadership team worked collaboratively to identify, interview, consider and invite participant cohorts to the Wellspring Project and used a multi-step process (Figure 4) to cultivate, select, and gain acceptance from those engaged in the project.

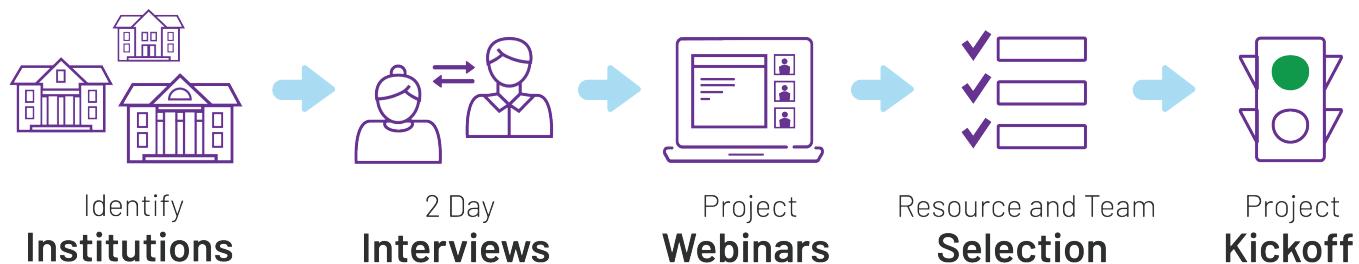


FIGURE 4. COHORT IDENTIFICATION AND ONBOARDING PROCESS

The original outreach list of 34 academic institutions was compiled based upon suggestions from the following project sponsors and leaders:

**Charles Koch Foundation**

**Council for Adult and Experiential Learning (CAEL)**

**Education Design Lab**

**IMS Global Learning Consortium**

Invitations to participate were sent to 23 recommended schools with a descriptive email message, a one-page overview of the project, and a prompt to solicit interest. In some cases, initial outreach was done via verbal communication versus electronic. From this group, 13 higher education institutions indicated interest. They moved onto the interview phase, which consisted of a preliminary survey, virtual one-hour meetings, and ongoing outreach and facilitation with the participants. In some cases, this initial interview required an additional video call to answer questions or brief other institutional team members. Despite an encouragement to include employers in these initial and follow-up calls, all calls consisted solely of individuals or teams from the educational institution.

The interview process resulted in four institutional partners being invited to the project. The other institutions interviewed found the project to be out of alignment with organizational priorities, or they did not meet the project's criteria for participation. In summary, the 11 institutions did not move into the project onboarding phase due to one of the following reasons:

- The educational institution's representative could not generate buy-in and support from an academic program/credential to invest in the Wellspring work.
- The identification of an employer partner in the discipline area of the program was not possible.
- The maturity of experience with competency development, digital microcredentials, or comprehensive learner records would not lead to project success in the view of project leadership.
- The institution had many other initiatives underway, including technology transitions that limited the ability to commit resources to the project.
- The institution was more advanced in the development of competency frameworks in partnership with industry than the project target.
- The program area identified by the educational institution was formative and not established enough within either the organization or the business engagement process.
- Previous experience with competency frameworks and prior learning credits tended to align with student entry rather than programmatic competency learning achievements.



FIGURE 5. COHORT IDENTIFICATION

## KICK-OFF MEETING + PREPARATION FOR FACE TO FACE WORKSHOP

The four institutions that participated in the initial Wellspring Cohort consisted of three individual institutions and one university system (with two participating universities). All participants were invited to a two-hour virtual introduction session facilitated by the project team and instruction on the required preparation for the face to face workshop led by CAEL. General topics covered in this session included: a project overview and working process, skills frameworks, expectations, and preparation for the workshop, and a Q+A session. [View the slides here](#). A shared folder was created for all participating cohort members that included agenda, session support materials, examples, resources, glossaries, cohort partner work products, and other helpful materials assembled throughout the project.

Of the five education partners, one exited the project the week before the in-person workshop. This partner was positive, excited, and innovative but was unable to secure a commitment from an employer partner in the necessary timeframe for the project. This left four remaining participant cohorts that participated in the workshop:

- Excelsior College + Energy Providers Coalition for Education (EPCE)
- John F. Kennedy University + Lakeside Union School District (Exited program in April 2020)
- National University (Exited program in April 2020)
- Portland State University + Standard Insurance Company + St. Charles Health System + University of Washington Bothell Center for Information Assurance and Cybersecurity

Note: John F. Kennedy University and National University are associated with the same combined university system. Soon after the February workshop, both universities determined that project continuation was not feasible due to the COVID-19 pandemic and internal reorganization priorities. During the face-to-face session, they were active participants and thoroughly explored the benefits of continuing, but were unable to commit the resources and strategic support necessary given the organizational constraints in spring 2020.



## FACE TO FACE TRAINING WORKSHOP WITH COHORT PARTNERS

Four cohort partners joined the project and participated in the February 2020 in-person workshop in Atlanta, Georgia. This full-day working session was facilitated by the Council for Adult and Experiential Learning (CAEL) with additional coordination by Education Design Lab and IMS Global Learning Consortium.

At this session, the participant workbook and presentation deck were integrated with active, hands-on collaborative activities. Topics for this in-person session included:

1. Justification for frameworks,
2. Considerations in the development of frameworks.
3. Analysis of materials and existing frameworks,
4. Creation of the framework,
5. Validation of the framework, and
6. Alignment of frameworks between academic program and employer partner.

## COHORT FRAMEWORK DEVELOPMENT + SUPPORT

After leaving the training session in February, each cohort partner was asked to further develop, refine, and expand upon the work created on-site. Each participating cohort was asked to identify a timeline for a follow-up support meeting to assess progress on the frameworks. The project team met monthly with each cohort and also held additional individual phone calls and virtual meetings as necessary.

In March, CAEL joined the virtual session to provide further guidance on framework development, considerations for discussion, and the cultivation of a framework validation plan. Training on CASE Network maintenance was held in July in a combined virtual workshop for cohorts. During this period, the education institutions met internally to construct the competency frameworks and communicate directly with their employer partner to garner feedback.

## COMPETENCY FRAMEWORKS

A total of six competency frameworks were developed as part of the Phase I project work, with “mapping” between the education partner, employer partner, and Education Design Lab’s 21st Century Skills competency framework. The frameworks are listed below:

### Energy Leadership

Excelsior College: Leadership Certificate (Undergraduate)

EPCE: Supervisory Competencies

### Energy Project Management

Excelsior College: Energy Industry Project Management Certificate

EPCE: Energy Construction Manager Competencies

### Cybersecurity

Portland State University: Cybersecurity Certificate

The Standard + St. Charles Health System: Cybersecurity Analyst/Security Operations Center Analyst

Throughout their work, the Portland State + The Standard cohort utilized the NICE Cybersecurity Workforce Framework as a key resource for informing the development of each of their organization's competency frameworks. Additionally, Portland State mapped specific competencies from their program's framework to associated competencies within the NICE framework, thus motivating the Wellspring Project team to contact NICE and obtain permission to publish the NICE Cybersecurity Workforce Framework in the CASE Network Labs platform.

## Excelsior College + EPCE

Excelsior College identified two existing programs designed for the energy industry: Leadership undergraduate certificate and Project Management undergraduate certificate. These programs had existing learning outcomes developed with advisory groups but had not been mapped to job roles. EPCE, as an energy industry association, called upon its employer members to provide job descriptions and employer identified needs. The two employers—XCEL Energy and Day & Zimmerman—were the primary companies working with EPCE, but additional information was compiled and integrated from other organizations.

Excelsior College's representatives, specifically the person responsible for industry partnerships, worked closely with EPCE to translate job descriptions into competency statements. These statements were then aligned to the Leadership and Project Management undergraduate certificate programs (credit-based). Interestingly, these two programs are broad in nature, preparing learners for supervisory and management roles. Therefore, the job roles identified by EPCE were not exclusive—the competency framework would apply to a multitude of supervisory and project positions across the energy industry.

The project manager met individually with the Excelsior team to clarify how the linkages between the EPCE list of competencies would align with the Excelsior programmatic competencies. With an identified linkage relationship, the visual representation of this emerged and was captured in a series of spreadsheets. This work was exceedingly manual, and once the initial frameworks had been developed, EPCE found it necessary to validate the competency frameworks directly with the EPCE membership.

Additional collaboration on the intersection of the 21st-century skills with the technical competencies was necessary. While the technical skills emerged first within the framework, the durable skills identified with Education Design Lab support were subsequently integrated and aligned to both the employer and education frameworks, creating a 360-degree view for all stakeholders.

## Portland State University + Standard Insurance Company + St. Charles Health System + Center for Information Assurance and Cybersecurity

Portland State University was referred to the project via its partner at the Center for Information Assurance and Cybersecurity at the University of Washington Bothell. An added and unexpected member of the project team, the Information Assurance and Cybersecurity director at Standard Insurance, remained engaged throughout the project. Onboarding of this cohort was rather late in the process, limiting their involvement in the earlier webinars and preparation provided for the potential participants.

The Portland State University team quickly became focused on identifying existing frameworks on the topic of cybersecurity (NIST/NICE, SANS, University of Washington's Certificate in Cybersecurity Risk Management, O\*Net, and others). Beginning with the employer job role of cybersecurity analyst, the team combed through the position description and crafted these items in terms of a nationally recognized SANS framework. These statements were then aligned to the education competencies. Portland State's certificate program was under development; therefore, benchmarking education outcomes were done with other existing programs.

The two employers were staged in their engagement with the project. The standard was instrumental in crafting the competency framework(s), initial alignment, and ongoing support. St. Charles Health System was utilized as a validator of the frameworks and assisted with aligning the [NIST/NICE frameworks](#). The Wellspring Project team assisted with mapping these industry standards and job roles and uploading the industry framework to the CASE Network. (See the NICE Cybersecurity Workforce framework published in the CASE Network Labs platform: [Knowledge, Skills, Abilities, and Tasks](#) and [Work Roles](#).)

Concerning the 21st century skills, the cohort partner team utilized O\*Net's skills taxonomy, which resulted in an extensive list of competencies. To hone in on the priorities in the job role of cybersecurity analyst, Education Design Lab offered a "T-Profile" training session, a tool utilized to prioritize the highest priority 21st-century skills within a particular job role and provide a common education-employer language for discussing these skills. Representatives in this session included: the chief information officer and an HR representative from St. Charles Health System, a program director and faculty member from Portland State University, and the executive director at the Center for Information Assurance and Cybersecurity.

## COMPETENCY FRAMEWORKS IN CASE

CASE Network Labs is an open platform created by IMS Global for publishing digital frameworks for competencies, skills, and academic standards in the CASE format. The CASE standard is designed for any institution, employer (or organization such as the Credential Engine), and commercial software products to store and exchange skills-based frameworks and related data across the open web. IMS publishes a directory of [products that are certified CASE compliant](#). Frameworks published in CASE can be interchanged across the open web with products, services, and platforms that implement the open standard.

For Wellspring, all frameworks created by participants in Phase I were entered into the IMS CASE Network Labs platform. The CASE Network Labs platform can be accessed at <https://labs.casenetwork.imsglobal.org>. (Note: Frameworks on this platform are publicly viewable based on the preference of the authoring organization, and some frameworks are private, again at the publisher's discretion).

The CASE Network Labs platform also provided the framework alignment capability through functionality to create the relationships—called “associations”—between items in one framework and related items in their partner framework. For example, each competency statement in the EPCE Supervisory Competencies framework was associated with a competency statement in the Excelsior College Leadership Certificate framework. These associations are specific relationship statements (e.g., “is exact match” or “is part of”) defined by the CASE standard. In some cases, participants found the set of existing relationship statements to be a less than perfect description of the true relationship. In working drafts, participants wanted to use relationship statements such as “Other” or “is child of,” which were not supported by the CASE Network Labs platform.

To assist the project participants, IMS staff loaded the frameworks into the CASE Network Labs platform on behalf of the participants to save time. IMS staff also provided an orientation to the platform to show how to access the system and perform basic edits such as editing the content of a competency item or setting the framework to publicly available. Additionally, IMS staff created and provided a [user's guide](#) to the platform for reference following the project.

The following images (Figures 6-8) are examples of the participants' competency frameworks as published in the CASE Network Labs platform. See Appendix A for further examples.



**IMS GLOBAL**  
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# Competency Frameworks

Find framework...

- ▶ [\*\*ACT Holistic Framework - Cross-Cutting Capabilities Version 2\*\*](#)
- ▶ [\*\*Education Design Lab\*\*](#)
- ▶ [\*\*Energy Providers Coalition for Education\*\*](#)
- ▶ [\*\*Excelsior College\*\*](#)
- ▶ [\*\*IMS Global\*\*](#)
- ▶ [\*\*National Institute of Standards and Technology \(NIST\)\*\*](#)
- ▶ [\*\*Portland State University - School of Business - Center for Executive and Professional Education\*\*](#)

FIGURE 6. LIST OF COMPETENCY FRAMEWORKS IN CASE NETWORK LABS

**PSU Cybersecurity Certificate Competencies**

Tree View
Association View
Verified

- ▶ [\*\*PSU Cybersecurity Certificate Competencies\*\*](#)
  - ▶ [\*\*Access Control & Password Management\*\*](#)
    - 📍 Identify the major concepts in modern operating syst...
    - 📍 Develop system specific plans for the implementation...
  - ▶ [\*\*Active Defense\*\*](#)
    - 📍 Apply knowledge to implement network defense mea...
    - 📍 Describe the various concepts in network defense.
    - 📍 Use a network mapping tool.
    - 📍 Utilize network monitoring tools.
  - ▶ [\*\*Contingency Plans\*\*](#)
  - ▶ [\*\*Frameworks\*\*](#)
  - ▶ [\*\*Cryptography Algorithms & Deployment\*\*](#)
  - ▶ [\*\*Defense In Depth\*\*](#)
  - ▶ [\*\*Development Security\*\*](#)
  - ▶ [\*\*Endpoint Security\*\*](#)
  - ▶ [\*\*Third Party Risk Management\*\*](#)

**PSU Cybersecurity Certificate Competencies**

Identifier: 2df56d10-aad2-11ea-8eb3-0242ac1c0003

Creator: Portland State University - School of Business - Center for Executive and Professional Education Publisher: Portland State University

Language: en

Adoption Status: Verified

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FIGURE 7. PORTLAND STATE UNIVERSITY CYBERSECURITY FRAMEWORK IN IMS CASE NETWORK

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**EPCE Energy Construction Manager Competencies**

Tree View Association View Verified

Search...

▼ EPCE Energy Construction Manager Competencies

- Ability to effectively communicate expectations to the proj...
- Capable of effectively evaluating PM's and their staff and h...
- Capable of performing root cause analysis of sub-par perfo...
- Capable of implementing corrective measures with little m...
- Able to coach site management on the use of these tools a...
- Can discern and implement process change management ...
- Capable of being the process owner for the continuous im...
- Capable of understanding contracts and the financial oblig...
- Understands decision making and impact to financial perfo...
- Knowledge of cash management, including timely invoicin...
- Analyze and develop comprehensive plan
- Has effective listening skills to identify and understand cus...
- Capable of being conversant vertically and horizontally at ...
- Capable of presenting reports and plans to customer mana...
- Can predict what groups will do across different situations
- Effectively identifies key players and build high performing ...

**Able to coach site management on the use of these tools and holds them accountable for...**

**Full Statement:**  
Able to coach site management on the use of these tools and holds them accountable for implementation

**Identifier:** b7b9d232-bbc8-11ea-8682-0242ac140003

More Info

Is Part Of

Assess how HRM functions and processes work together to influence productivity and overall performance of organizations.

Excelsior College - Project ...

FIGURE 8. EPCE COMPETENCY FRAMEWORK IN IMS CASE NETWORK

# PROJECT FINDINGS

To inform the findings below, the project team interviewed the participants, reviewed notes, recordings, agenda, minutes, and associated meeting materials that were compiled. Additionally, four virtual interviews were held with the participating cohorts to gather information from Excelsior College, EPCE, Portland State University, and The Standard with St. Charles Health System.

Participants' responses to interview questions were organized into the following categories:

1. Participants' goals and expectations for entering the project
2. Participants' experiences, successes, challenges working with their partner; working through the project's process
3. Participants' expectations for organizational impact beyond this project

The participants' successes and challenges are embedded within each section's reporting and captured in the themes and recommendations that follow.

## Category 1

### **PARTICIPANTS' GOALS AND EXPECTATIONS FOR ENTERING THE PROJECT**

#### **Education Partners**

Both cohorts indicated that the desire to respond to local needs and substantiate program-industry alignment served as a motivator to the education entities for program participation. The project's national status was appealing so that the education institution could distinguish itself in the marketplace. A push toward short-term, innovative, employer responsive digital credentials also influenced the decision to engage in Wellspring. University and College leadership acted as the impetus for the cohorts to devote time and resources to the Wellspring work. Specific feedback from all parties was suggestive that engagement of the employers in the early onboarding activities would have been useful for shared perspectives, understandings, and work progress.

In the case of the Energy field, the workplace and employee skills are rapidly changing. Employers are vocal about the need for 21st-century skills as well as current technical skills. Talent gaps exist in long-term employees with content knowledge but not the technical skills to succeed in job roles. This was then a driving force to participate in Wellspring. The inter-organizational dialogue also provided the impetus to engage in rich, co-creation collaboration that extended beyond the basic review of documents such as job descriptions, position ads, and workforce data. At the start, project success was defined as a good alignment between the academic program and the industry partners.

For Portland State, the cybersecurity opportunity aligned to the university's priority to develop more short-term, potentially non-credit, digital credentials through innovative programs that respond to industry trends and specific employer needs. University leadership established the importance and expectation, which resulted in active engagement and available resources for the project. Preliminary concepts of program success were not clear, but the process was appealing and appreciated.

All partners, both those in the project and those who did not advance to the development phase, indicated that the identification of employer partners to engage in this work was difficult. In some cases, the education institution was working from a list of existing partners, and in others, new employer partners were being identified for this work. In neither case were the relationships substantial enough to warrant trust and verify position and required extensive expression of value and benefit. Internal relationships, often with organization leaders, led to committed business engagement.

The education partners suggested some expansion of the parties involved in the project beyond those on the current teams. These internal roles would be helpful to have in the dialogue for future cohorts:

- Institutional Leadership
- Program Director
- Faculty or Subject Matter Expert
- Project Management
- Community Outreach or Industry Coordinator

Resources needed for the project included: funding for travel (both education institution and business), time to spend on framework development after the workshop, internal personnel input from those not involved in the project. HR expertise may have been useful.

## Employer Partners

In general, the rapidly changing workplace has exacerbated the need for upskilling, re-skilling, or entry hiring of employees to fill skill voids that result from the introduction of new technologies, including AI, or changes in practices. In most cases, the employers agreed that there was work to be done to modify job descriptions and position postings to align with the skills needed in particular roles. In addition, one anticipated outcome was a purposeful, replicable model that could be implemented across the industry.

The field of cybersecurity is emergent, continually evolving, and has experienced a significant talent gap. Many employers are looking to either hire those with cybersecurity credentials that are layered on top of other degrees or certifications or advance incumbent employees with years of experience. In the case of one employer, it was indicated that they were looking for individuals with 10+ years of experience. One employer noted that the Wellspring Project provides the opportunity to develop internal organizational career paths, supported with tuition reimbursement.

Both cohorts had employers interested in working with HR to restructure and facilitate better retention, promotion, and career pathway development.

## Category 2

### **PARTICIPANTS' EXPERIENCES, SUCCESSES, AND CHALLENGES WORKING WITH THEIR PARTNER—WORKING THROUGH THE PROJECT'S PROCESS**

It was reported that the competency framework development process was similar to the curricular design process; however, the operating philosophy was still compelled by the academic program rather than backward designed from the job role/employer needs. All partners were open, welcoming, and respectful with the employer partners. In general, those in the educational organizations started with existing programs and expected to "tweak" those rather than devise, rework, or re-engineer to align to the surfaced employer needs. The co-design of the academic program was not an anticipated outcome of this work. As Mark Leuba noted, a designed "for"—rather than designed "with"—philosophy seemed to remain constant.

Interestingly, the employers were aware of the need to avoid including specific technologies or competencies that were narrowly identifying the company's niche skills. By generating broader competency statements, they were also creating more sustainable position descriptions that could guide the company into the future, beyond the current specific technology or minute skill needs.

All education partners indicated they spent more time than initially anticipated on the project. It was estimated that approximately 100 hours were spent by one institution by one individual in one atypical case. Another institution described a series of meetings over many months that included many individuals. In the latter case, a steering committee with about 25 people met twice a month for the first two months, which then transitioned to a small group meeting of 3 people every few weeks for the last two months. Overall, the process was described as very time-intensive, manual, and tedious. Additional automated processes need to be identified to successfully scale to a wider range of job roles and academic program.

The business partners noted that they spent anywhere from 12-20 hours on the project, depending on their role, whether that be framework development or validation. HR engagement would have been useful to have in the project, per the responses. One person interviewed indicated that the project was very beneficial, but having a clear "understanding of who needs to be at the table to make this a meaningful process" is required. The energy employers met monthly and exchanged emails; however, there were many ongoing meetings between EPCE and Excelsior College.

Faculty will need to review the competency frameworks, and academic review will be required if credit is awarded as part of the academic program. No institution reported an impact on the accreditation process or the need to report changes to the accrediting body.

All cohort members reported positive experiences and significant learnings through the Wellspring process. Neither the education partner nor the business partner had been hyper-aware of the differences in language, work process, and fundamental worldview differences.

Building the bridges between the two takes a concerted effort and ongoing communication. The project facilitation was reported as having been helpful and supportive. Resources that were utilized included other industry frameworks (O\*Net, NIST/NICE, 21st Century Skills, etc.), the project support team's documentation, other institutions' academic programs, and job descriptions and postings.

Excelsior College reported the identification of curriculum gaps that will need to be addressed before implementing the frameworks. Excelsior participants indicated they would not have had this opportunity nor insight had they not gone through the project process.

Despite the time and intensity of the work, both partners now plan to develop similar frameworks with other programs. Some of the challenges and suggestions identified by the project participants included:

- Intentionally identify a program that aligns with the institution's strategic direction and perhaps is advanced enough to have existing relationships and a clear path.
- Identify the employer partner and then target a job role aligned to a program supported by the education institution.
- Time and investment in the work may be much more extensive than anticipated.
- Not surprisingly, the COVID crisis did influence the project process. Education entities transitioned to different schedules and reactive internal processes, while the employers became focused on responding to the market needs in various ways. The pandemic's impact was different for each business, depending on the industry sector (healthcare, insurance, energy companies, and utilities).
- The specificity of the work requires:
  - ▶ Increased lead time with realistic timeframes
  - ▶ More subject matter experts
  - ▶ Multiple employers
  - ▶ Additional process clarity at the beginning of the project, including role and responsibility details
- The lack of funding for participation was noted as a limitation given that employer travel needed to be covered by the education organization.
- Provide exemplar examples of the anticipated deliverables. By showcasing the competency frameworks developed in Phase I, coupled with the CASE Network Labs platform, future cohorts will have a better concept of the end product. In addition, templates and tools were developed throughout the project to serve as guides for the participating cohorts.

## Category 3

### PARTICIPANTS' EXPECTATIONS FOR ORGANIZATIONAL IMPACT BEYOND THIS PROJECT

While both educational partners have plans to implement the competency frameworks in the future, neither expressed when program changes would be made, program marketing and recruitment would occur, or how the organization would integrate these changes into their systems. Excelsior College did indicate an anticipated rollout of the revised academic certificate program for Spring 2021. Still, as mentioned previously, there were curriculum gaps that would need to be addressed before moving forward that were anticipated to take about three months. Both institutions expressed the impact of COVID-19 on budgets and operations, and the dynamic situation created challenges that are difficult to predict.

**The completed competency frameworks and changes to the certification design were touted succinctly by one participant: "Better alignment with industry employers should lead to better recruiting of students and better placement of graduates."**

#### Framework Maintenance

The timeframe for revisions varied based upon the perspective of the organization. The Energy-focused team felt that annual reviews by both the employer and the academics made sense. In contrast, the cybersecurity employers thought a three-year cycle was sufficient (education partner suggested two years might be more reasonable).

Given that the education institutions assumed the lead of the cohort partnership, the "maintenance" of the system's frameworks appeared to fall to these leaders primarily. The individual businesses did not express the "ownership" of the completed business framework. However, EPCE, as a coordinating entity, was willing to serve in this role on behalf of the represented energy industry.

#### Future Relationships and Framework Development

Wellspring Project coordination was instrumental in the development process per the Energy cohort. The workshop provided a strong foundation as they required the background knowledge, and the organization, prompts, reminders, and facilitation helped them track toward completion. The depth, extent, and duration of the employment relationship was exceedingly helpful and provided an association to further build upon.

Both education institutions indicated plans to develop further frameworks, although all parties expressed the inability to scale the model due to the time and effort investment. On the employer side, one cybersecurity representative indicated that they hoped to develop career pathways for which the competency framework design is beneficial. The other cybersecurity partner indicated their company has a robust HR process that was successful and was doubtful that there would be further development or clear implementation. EPCE indicated that the resulting competency framework was perceived as a "catalyst for the employers to adapt their hiring practices" as they lean in on skills-based hiring. To this end, EPCE is interested in working with institutions beyond Excelsior College (other non-competing job roles) to design competency frameworks for high-need industry roles.

## THE COMPREHENSIVE LEARNER RECORD (CLR) HORIZON

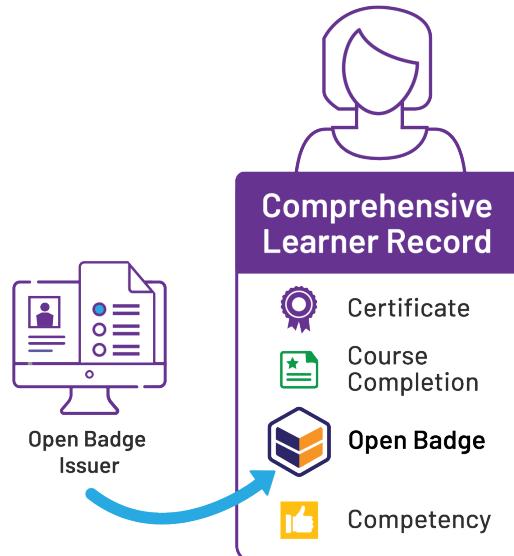
Given the Wellspring Project's long-range trajectory beyond Phase I and the integral role of institutional contributions to open-standards based [Comprehensive Learner Records](#) and [Open Badges](#), the project team inquired as to the cohorts' plans for documenting learning and skills through these new forms of learner records. Both institutions indicated that discussions were underway, but no decisions had been made, giving the appearance these were broader and non-specific conversations and centered on the need for and direction of tools to support CLRs. Further, the project representatives were unclear how the competency frameworks published in CASE would link into the CLR or Open Badges and the sharing of the learned skills, pointing out an opportunity for additional communication describing that important relationship.

### Open Badges and the CLR

The Comprehensive Learner Record standard is designed to contain all of the learning achievements earned at an organization by a learner-worker. These can include Open Badges and non-badged achievements such as courses, assessments, and skills mastered and their relationships to an overall program or credential, such as a certificate or degree. In addition to badges within a CLR, early-adopter organizations are also including other "traditional" records of completion, such as a PDF transcript or a transcript file in PESC exchange format.

The CLR is designed as the "holder" for all of the learner-worker's achievements to organize, manage, and share at their discretion.

As a matter of reference, the technology tools being utilized by each education provider are noted below.



# Technology Tools In Use

Institution	Tool Type	Vendor
Portland State University	LMS	Canvas
	ERP/SIS	Banner (for credit) DestinyOne (for non-credit)
	Badge Issuing	Credly/Acclaim
	Transcripting	Parchment
Excelsior College	LMS	Canvas
	ERP/SIS	Homegrown Internal Student Information System
	Badge Issuing	In process; tool not identified. Previously used Credly but discontinued.
	Transcripting	Alternative transcript tool in process. Not identified.

# LESSONS LEARNED: THEMES

## Employer Themes

Engage Employer Partners Early: All parties suggested that the onboarding of the employer partners should occur early on in the project. EPCE worked as an intermediary between the education entity and the business. Direct engagement would have been beneficial to project understanding. This was repeated from the cybersecurity partners who felt that if they had a better understanding of the project and its intricacies at the outset, it might have led to more seamless communication between the parties. This should also lead to a more significant employer "ownership" of the deliverables and ongoing maintenance upon completing the products. Despite the project team's encouragement and guidance that the employer partner is identified and engaged as early as December 2019, this did not occur.

Employer-Industry Relationships and Work Process: The academic institutions tend to resort to previous work processes for constructing academic credentials and the late-stage sharing of these deliverables for feedback, rather than engaging business members in the process of development. This limits the necessary structural and delivery alternatives that might be necessary to truly align to the industry needs.

## Long Term Impact

1. **Scalability:** The development process for the cohort partners required an internal, manual, hands-on approach that limits scalability. The initial learning curve, competency framework development, validation, and mapping were time-intensive beyond the Wellspring organized activities. While almost all members involved indicated they could find value in developing these frameworks, the time and personnel commitments that the process demanded would significantly limit further expansion without supportive technology and productivity tools.
2. **Technical + 21st Century Skills Integration:** The initial inclination of the participating cohorts was to focus on the technical rather than the integration of the 21st-century skills. Attending to these durable foundation skills required an intentional approach and additional project-sponsored facilitation.

## Project + Process Improvement Themes

1. **Messaging During Partner Identification:** Provide information to the potential business partners in a concise, non-academic format, as if presenting to a "board." Clearly express anticipated benefits and outcomes. Education entities also need to have the project advantages clearly described to leverage participation. Be upfront and open about the amount of time and resource investment.
2. **Wellspring Cohort Benefits:** In future phases, the project team should identify more creative ways to share the following project benefits with potential cohort members (such as utilizing exemplars from Phase I), including:
  - A point of entry to digital credentials and comprehensive learner records,
  - Responsiveness to local industry needs, and
  - Establishment of a strong employer relationship to lead to learner placement or advancement.

3. **Cohort Membership:** Integration and engagement of industry associations, councils, or standards organizations add significantly to the cohort partnership teams. Fortunately, both of the Wellspring Phase I cohort groups utilized representatives from coordinating entities such as these. This emerged naturally from the participating education institutions; however, this should be considered in future phases. These groups can help mediate between multiple employers within a particular discipline area.
4. **Identification of Academic Credential:** If education institutions are the primary partner, the program maturity is a factor that should be considered carefully. Certification and digital credential programs make good use cases for this work rather than broad degree-based programs due to the timeline of this work.

## Recommendations

1. Partner cohort identification should occur earlier in the process, allowing for sufficient time for framework development and validation. It is recommended that partners be identified within the first two months of a 10 to 12-month project, assuming a similar period for the project duration of Phase II.
2. Team members should include education-business partners and coordinating associations, councils, or membership groups to facilitate broader input, dissemination, and scaling of competency frameworks. These entities also provide insight into existing standards, frameworks, and certifications.
3. Anticipate and communicate the amount of time necessary to create the education program and job role frameworks, contributing to the time investment for cohort partners.
4. All cohort members (association/education/employer) be engaged at the outset, included in information dissemination, and participate in ongoing project meetings.
5. Technology tools (AI-based or otherwise) should be identified or developed to facilitate the collaborative automation of the education + industry framework creation process from existing inputs (program documentation, learning outcomes, job descriptions, industry standards). These can then lead to a less arduous process for the mapping and validation of shared frameworks.
6. Additional support beyond framework development is necessary for the participating institutions to fully institutionalize the resulting products and begin authoring comprehensive learner records.

## NEXT STEPS

As the Phase I Wellspring Project is closed, the larger program objective of demonstrating the Comprehensive Learner Record standard, augmented by machine-readable competency and skills frameworks, to bridge lifelong learning and workforce serves as a beacon beyond the initial deliverables of co-developed frameworks. This raises the question: How are the original participating cohorts going to move forward in their progress to be prepared for the next stages? In preparation, the education participants should implement competency frameworks based on learning outcomes aligned to skills-based achievements for a future CLR.

It was clear after the project that both Portland State University and Excelsior College would welcome additional support, including consultation with institutional leaders (e.g., Provost, Registrar, IT), guidance on vendors and product solutions, and implementation strategies to continue forward in the process toward active CLRs for learners.

Similarly, there is much to be done in the industry sector, as none of the companies or industry representatives participating were aware of CLR capabilities and how their companies would connect to CLR for future hiring pipelines and internal talent management.

For the learner-worker to be both empowered and discovered in the hiring process, both sides of the supply chain (education provider + applicant tracking systems) need to produce and receive the data based on interoperability standards using emerging technology applications. Ultimately the control of traversing that bridge needs to be in the hands of the learner-worker through the cultivation of self-sovereignty over their learning records.

The unanticipated health crisis has exacerbated the existing concern in understanding and showcasing what an individual knows and can do as aligned to job roles. The pendulum-swing—from a historically low to a drastically high unemployment rate—has thrown an accelerant on the need to support equity and diversity while matching workplace needs with skilled talent.

The U.S. federal government's recent decision to move toward skills-based hiring practices provides additional impetus for establishing the interoperable standards and the systems to support the learner compilation and distribution of skill documentation. Likewise, the interest and support for standards-based learning and employment records (LER) by the American Workforce Policy Board has increased momentum. In May 2020, the American Association of Collegiate Registrars and Admissions Officers (AACRAO) selected the Comprehensive Learner Record as its [official digital learning record](#).

Looking toward the next steps, Phase II seeks to build upon the work completed in Phase I. The goals are to:

- Expand the competency framework development cohorts from 2 to 6
- Develop pilot reference software to create, manage and share open standards-based digital credentials using the IMS Comprehensive Learner Record standard
- Design for learner-worker control
- Conduct primary research to understand the adoption of digital credentials and skills frameworks in education and the workforce
- Develop and simulate credential hub pilot software connectors to demonstrate system integration with an SIS/HRIS, LMS, Assessment and Student Life software platform

While the bulk of the work in Phase II is technical, the continuation and cultivation of additional competency framework cohorts are essential to nurturing institutional readiness for implementing the CLR and credential hub connectors. Therefore, it is recommended that the recruitment of participating partners in Phase II allow more time for institutional identification of internal academic partners, external entities, and 3rd-party associations or industry councils (Recommendations 1 and 2). In addition, the use of a multi-pronged approach to cohort identification that expands on previous techniques to include an open RFP and targeted outreach to businesses and agencies engaged in other national CLR efforts would be prudent.

The Wellspring Phase I project resulted in multiple frameworks developed from two successful cohorts. There were many lessons learned. While completing their work, the participants are anticipating future skills/competency framework design and greater linkages with business/industry. To scale this work, additional attention will need to be given to collaborative tools to automate many of the very manual and time-intensive processes of creating competency statements and crosswalking against other frameworks (Recommendation 5).

The learn-to-work skills ecosystem continues to develop with projects addressing different aspects of the talent supply chain. Wellspring Phase I provided valuable insight into technological and human solutions needed to dramatically shift business as usual in the post-secondary and employment domains. Occupation entry and mobility, and the resulting individual and business advancement, is key to sustainable economic restoration and future vitality. Wellspring Phase I positively delivered on its intended outcomes, despite the pandemic. The continued work is even more vital as we transition into post-pandemic paths to re-employment and re-skilling.

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- ▶ Ronald Buchanan, Chief Information Security Officer

### The Standard Insurance Company

- ▶ Chris Jacobsen, Director, IT Security Ops Center

# APPENDIX A

## Framework Samples from CASE Network Labs

**Excelsior College - Leadership Certificate**

Tree View Association View Verified

Search...

▼ Excelsior College - Leadership Certificate

- 📍 Evaluate appropriate skills and tools for effective leadership...
- 📍 Apply principles of management to a real life organization
- 📍 Assess an ethical approach to leadership in the context of...
- 📍 Evaluate business decisions using financial management ...
- 📍 Describe strategic management and the metrics used to ...
- 📍 Apply a strategic leadership approach to the management...
- 📍 Prepare and deliver written and oral communication to art...
- 📍 Analyze organizational cultures and the processes for cha...
- 📍 Assess knowledge of organizational behavior and its imp...
- 📍 Explain various leadership models and the implications of...
- 📍 Outline diversity and ethical challenges faced by manager...
- 📍 Analyze the characteristics, processes, and structure/desi...
- 📍 Illustrate conceptual models of individual human behavior...
- 📍 Identify techniques and strategies for improving interpers...
- 📍 Identify and describe key diversity skills necessary for suc...

Evaluate appropriate skills and tools for effective leadership

Full Statement:  
Evaluate appropriate skills and tools for effective leadership

Identifier: 555bcd4-bb00-11ea-881a-0242ac140003

Language: en

Last Changed: 2020-06-30T18:35:09

Less Info

Is Part Of

Individuals who can recognize others' needs and values add value in the 21st century workplace by putting themselves in others' shoes. [The Lab's 21st Century Skills ...](#)

Individuals who can validate others' feelings and perceptions add value in the 21st century workplace by creating a safe and participatory environment in which each member of a team can contribute. [The Lab's 21st Century Skills ...](#)

## Appendix A (continued)

**Excelsior College - Project Management Certificate**

Tree View
Association View

Search...

- ▼ **Excelsior College - Project Management Certificate**
  - 📍 Communicate the results of business analytics using ...
  - 📍 Assess how HRM functions and processes work toget...
  - 📍 Perform quantitative analysis to facilitate process sel...
  - 📍 Analyze and distinguish between ethical and unethical...
  - 📍 Identify ethical issues involved in the design and pres...
  - 📍 Analyze demand and demand patterns to identify optim...
  - 📍 Analyze methods that can be used by risk managers t...
  - 📍 Develop a risk management plan to identify, analyze, a...
  - 📍 Calculate areas of waste and potential cost reduction ...
  - 📍 Apply statistical concepts and techniques to solve bu...
  - 📍 Design a logistics strategy plan that manages "total lo...
  - 📍 Differentiate conflict communication from other com...
  - 📍 Analyze and evaluate how HRM functions can help an ...
  - 📍 Analyze organizational performance as articulated thr...

**Excelsior College - Project Management Certificate**

Identifier: 3ca08406-c14f-11ea-bac9-0242ac140003

Creator: Excelsior College

Language: en

Adoption Status: Verified

[Login or Register to Download](#)

**EPCE Supervisory Competencies**

Tree View
Association View

Search...

- ▼ **EPCE Supervisory Competencies**
  - 📍 Real time safety accountability
  - 📍 Work in close partnership with Safety Consultant
  - 📍 Evaluate team performance
  - 📍 Monitor performance trends
  - 📍 Process adherence and data integrity
  - 📍 Continuous improvement
  - 📍 Lead adoption of process changes
  - 📍 Crew productivity and execution
  - 📍 Consistent presence in the work environment
  - 📍 Removing barriers
  - 📍 Align crew skills and availability to work activities
  - 📍 Performance management
  - 📍 Training, coaching and oversight
  - 📍 Bargaining unit issues
  - 📍 Internal and external relations
  - 📍 Assist employees, work groups, customers, stakeholders
  - 📍 Empower crews
  - 📍 Adherence to policies, procedures, regulations
  - 📍 Compliance/technical training

**Lead adoption of process changes**

**Full Statement:**  
Lead adoption of process changes through effective communication of expectations and objectives.

Identifier: 2a8c87bc-bafe-11ea-bcd2-0242ac140003

[More Info](#)

Is Part Of

- Apply a strategic leadership approach to the management of change in an organizational setting [Excelsior College - Leadership ...](#)
- Prepare and deliver written and oral communication to articulate information to diverse audiences internal and external to the organization [Excelsior College - Leadership ...](#)
- Analyze organizational cultures and the processes for changing culture within an organization [Excelsior College - Leadership ...](#)

## Appendix A (continued)

**Standard Insurance Company - Cybersecurity Competencies**

Tree View Association View Verified

Search...

- ▼ Standard Insurance Company - Cybersecurity Com...
  - ▼ Information Security Analyst - Professional Level I
    - 📍 Access Control & Password Management
    - 📍 Active Defense
    - 📍 Contingency Plans
    - 📍 Frameworks
    - 📍 Cryptography Algorithms & Deployment
    - 📍 Defense in Depth
  - ▼ Development Security
    - 📍 Apply the principles of Dev/Sec/Ops to the S...
    - 📍 Understand the principles of secure software...
    - 📍 Endpoint Security
    - 📍 Third Party Risk Management
    - 📍 Incident Handling & Response
    - 📍 IT Risk Management
    - 📍 Log Management & SIEM
    - 📍 Malicious Code & Exploit Mitigation
    - 📍 Network Device Security
    - 📍 Network Security Devices
    - 📍 Networking & Protocols
    - 📍 Virtualization and Cloud Security

**Incident Handling & Response**

**Full Statement:**  
Understand and apply the concepts of information security incident handling and the processes pertaining to incident handling. Plan and implement an effective information security incident response capability for the organization.

**Identifier:** 3f0c7870-aa6c-11ea-bb81-0242ac1c0003

**Language:** en

**Last Changed:** 2020-06-09T17:02:27

[Less Info](#)

**Is Related To**

Describe responsibilities related to the handling of information about vulnerabilities. [PSU Cybersecurity Certificate ...](#)

Describe appropriate measures to be taken should a system compromise occur. [PSU Cybersecurity Certificate ...](#)

**The Lab's 21st Century Skills Badges**

Tree View Association View Verified

Search...

- ▼ The Lab's 21st Century Skills Badges
  - ▼ Initiative
    - 📍 Lead without Title
    - 📍 Act as a Catalyst
    - 📍 Demonstrate Self-Awareness
    - 📍 Learn from Experience
  - ▼ Critical Thinking
    - 📍 Identify Patterns
    - 📍 Gather and Assess Relevant Information
    - 📍 Question Assumptions
    - 📍 Draw Conclusions
  - ▼ Oral Communication
    - 📍 Speak with Clarity and Precision
    - 📍 Listen Actively
    - 📍 Use Appropriate Tone and Word Choice for Different Au...
    - 📍 Storytelling
  - ▼ Empathy
    - 📍 Recognize Others' Needs and Values
    - 📍 Listen Actively
    - 📍 Incorporate Diverse Perspectives
    - 📍 Validate others' feelings and perceptions

**Matched From**

Prepare and deliver written and oral communication to articulate information to diverse audiences internal and external to the organization [Excelsior College - Leadership ...](#)

**Has Part**

Assess knowledge of organizational behavior and its impact on organizational effectiveness and influenced by global internal and external forces [Excelsior College - Leadership ...](#)

Illustrate conceptual models of individual human behavior, regarding differences, values, attitudes, motivation, and engagement [Excelsior College - Leadership ...](#)

Outline diversity and ethical challenges faced by managers in today's global work environment [Excelsior College - Leadership ...](#)

Identify techniques and strategies for improving interpersonal communications [Excelsior College - Leadership ...](#)

## Appendix A (continued)

The screenshot shows the NICE Framework - KSAs and Tasks interface. On the left, there is a tree view of skills and tasks under the category "NICE Framework - KSAs and Tasks". The categories listed are K Knowledge, S Skills, and A Abilities. Under K Knowledge, tasks include K0007, K0044, and K0070. Under S Skills, tasks include S0001, S0032, S0079, and S0172. Under A Abilities, task A0047 is listed. On the right, there is a detailed record card for the NICE Framework - KSAs and Tasks. The card includes fields for Identifier (3999abbe-c2eb-11ea-8568-0242ac140003), Creator (National Institute of Standards and Technology (NIST)), Publisher (NIST), Version (NIST Special Publication 800-181), Description (National Initiative for Cybersecurity Education (NICE) Cybersecurity Workforce Framework (NICE Framework), a reference structure that describes the interdisciplinary nature of the cybersecurity work. Available at <https://doi.org/10.6028/NIST.SP.800-181>), Language (en), and Adoption Status (Verified). A "Login or Register to Download" button is also present.

NICE Framework - KSAs and Tasks

Tree View Association View Verified

Search...

▼ NICE Framework - KSAs and Tasks

- ▼ K Knowledge
  - K0007 Knowledge of authentication, authorization, and a...
  - K0044 Knowledge of cybersecurity and privacy principles...
  - K0070 Knowledge of system and application security thr...
- ▼ S Skills
  - S0001 Skill in conducting vulnerability scans and recogni...
  - S0032 Skill in developing, testing, and implementing net...
  - S0079 Skill in protecting a network against malware. (e.g., ...
  - S0172 Skill in applying secure coding techniques
- ▼ A Abilities
  - A0047 Ability to develop secure software according to se...

Tasks

**NICE Framework - KSAs and Tasks**

Identifier: 3999abbe-c2eb-11ea-8568-0242ac140003

Creator: National Institute of Standards and Technology (NIST) Publisher: NIST

Version: NIST Special Publication 800-181

Description: National Initiative for Cybersecurity Education (NICE) Cybersecurity Workforce Framework (NICE Framework), a reference structure that describes the interdisciplinary nature of the cybersecurity work. Available at <https://doi.org/10.6028/NIST.SP.800-181>

Language: en

Adoption Status: Verified

Login or Register to Download

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[1EdTech Foundation](https://www.1edtech.org) facilitates cooperative investment catalyzing a connected ecosystem of innovative educational products and digital credentials that together accelerate teaching and learning innovation enabling every individual to achieve without limits. For more information visit <https://www.1edtech.org>.

## About IMS Global Learning Consortium

IMS Global Learning Consortium is a non-profit organization that advances technology to scale and improve educational participation and attainment affordably. IMS members are leading suppliers, higher education institutions, K-12 districts and schools, and government organizations that enable better teaching and learning by collaborating on interoperability and adoption initiatives. IMS sponsors the annual [Learning Impact](#) program to recognize the impact of innovative technology on educational access, affordability, and quality while developing the leadership and ideas to help shape the future of educational technology. Learn more at <https://www.imsglobal.org>.

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