

Takeaways and Outcomes Summary

Integrating Industry Certifications into Four-Year Degree Programs Cybersecurity Convening

July 9-10, 2019

PROJECT BACKGROUND AND CONVENING OBJECTIVES

Workcred, the Association of Public and Land-grant Universities (APLU), the Coalition of Urban Serving Universities (USU), and the University Professional and Continuing Education Association (UPCEA) have joined forces under a Lumina Foundation grant to explore how students can earn certifications as part of their four-year degree program. The project team is hosting a series of convenings between certification bodies and universities with the goal of enabling closer coordination to identify and scale practical opportunities, and identifying the barriers that would impede such partnerships and developing ways to overcome them. Each two-day convening addresses a different industry sector or topic, and incorporates opportunities to embed certifications for cross-cutting skills (e.g., project management, human resources) within degrees related to the sector as well. The ultimate output of the convenings will be a framework laying the groundwork for potential pilot programs to test different strategies and practices to better align certifications and degrees. This document summarizes the takeaways and outcomes from the second of these convenings, focused on cybersecurity. Final findings and learnings will be shared upon completion of the project.

KEY OUTCOMES

Based on the input during the convenings, the project team will develop and share the following:

- A matrix with information about certification bodies and relevant certifications
- A guidance document that will help universities better understand how to determine a quality certification
- A university point of contact list for certification bodies to use to build partnership opportunities

TAKEAWAYS, LESSONS LEARNED, QUESTIONS FOR CONSIDERATION, AND ACTIONABLE STEPS

At the end of day one and day two, participants were asked to complete an online survey where they provided their takeaways, lessons learned, further questions for consideration, and actionable steps that can be taken to advance the outcomes of the discussions:

Takeaways and Lessons Learned

Opportunities For Cooperation

- Depth of interaction between certification bodies and educators is more than expected
- Openness to incorporate certifications into curriculums
- Overcoming discrepancies and aligning certifications to degree programs could bridge a partnership
- Opportunities exist for sharing to determine some standard practices/offers to meet the needs of academia – perhaps sector/industry specific

- It is good to know that there are university programs able and willing to work with certification bodies.
- Opportunities exist around building earlier pathways/connections with certifications and degree programs, or adding an option for certification instead of a final exam and thesis
- How to tie in certifications with graduate programs and use them as a way to get buy in from faculty to create a competitive edge for degree programs
- Deepening an understanding of certification bodies and how they do their work will help to work with other faculty on tightening the alignment between curricula and the job market
- There exists real possibilities for working with credentialing bodies to provide certification opportunities for undergraduates still in school to benefit from more employment opportunities

Perceived Barriers

- We use different languages
- Lack of collaboration between certification bodies and academia
- There is value in certificates and certifications for workforce and talent development; however, it is challenging to marry them with academia due to barriers presented by various constituent groups with different objectives and perspectives – we identified these groups as government, accreditation bodies, industry, and academia, although we recognize the barriers, we rarely have all of these groups together to address the barriers from the various perspectives
- There appears to be misunderstandings about universities, how they operate, and why
- That higher education remains disconnected from the real world, even in an area as new as cybersecurity curricula
- That incentives are not necessarily aligned between four-year schools and certification bodies; there is a chance to cooperate here but we really need to work on it holistically
- Not easy to convince a university to partner with certification body
- There is a lot of good will, with folks willing to make some changes, but not on a systemic level
- Lack of entry-level certifications for the industry that can be focused on overarching concepts
- Balance is delicate in asking a university to change curriculum to meet the requirements of a certification
- Often get so absorbed in own worlds that we tend to sideline the students and the issue of public (not just industry) benefit
- There is not a clear path about how to move these sorts of partnerships forward
- Higher education is behind the times in relation to the threat that a lack of cybersecurity understanding has on our nation; there is much work to do and the traditional tenured faculty model needs to move significantly faster to help address the challenge
- The challenge of identifying which certifications actually matter (to employers) in order to prepare students for employment

How Can We Overcome These Barriers?

- Better understand some of the differences between university approach and certifications; focus where possible on programs which are more tied to industry needs/jobs

- Extended education can be an ally to embedding certifications
- Extent of certifications and related degree programs available
- Has to be a willingness to collaborate on both sides
- Very strong opportunities/desire to collaborate between universities and certifying bodies

What Is Needed To Take This To The Next Level?

- Universities and certification bodies have a lot to learn from each other and a lot they can collaborate on – starts with an open mind and willingness to see what the other is doing right/better
- Finding the middle ground
- Clarity on return on investment (ROI) of certifications are needed by universities, government, and students (e.g., will financial aid cover the cost of certifications?)
- Need for accreditation bodies to be part of our discussions; aligning goals/objectives with multiple entities (universities, accreditation bodies, certification bodies, industry/employers, etc.) and understanding the value of these perspectives – need to bring all together
- There is a need to develop a reference document articulating the needs, values, concerns, etc. from the perspectives of the communities involved, e.g., industry, academics (including administration, faculty, students), certification providers, academic accreditation bodies, and perhaps others; such a document would serve everyone as a way to educate themselves about the differences and commonalities related to certification
- Certifications need to be requirements of programs for them to be effective

Steps To Creating A Successful Partnership

- Need to engage accrediting bodies
- Work on aligning course-level objectives with knowledge and skills needed to successfully complete certification and degree program
- Much more emphasis needs to be placed on incentives for universities; the benefits to the university itself seems minimal; need to have conversations about revenue sharing models
- There needs to be more understanding of certification and its role within universities
- Need further discussions on data science and data analytics toward a goal of achieving sound and aligned understanding about what those fields/disciplines mean
- Review the current offerings in cybersecurity to develop a new program
- Faculty know how to teach and are at the cutting edge of their discipline; certification bodies know knowledge, skills, and abilities (KSAs) and perform job task analyses (JTAs) to stay on top of employer needs; neither party is well-equipped to replace the other, yet their marriage can be incredibly fruitful
- Invite industry to voice their needs
- The need to continue to build a central infrastructure that supports these partnerships in a meaningful and productive way

Cybersecurity Can Be Applied To Other Disciplines

- Fascinated by the concept of music and other subject areas that can be relevant to cybersecurity

- Apprenticeship model is very interesting – how to incorporate what we are doing with work/study programs as well
- How we can pull people from different industries to have a career in cybersecurity
- There appears to be a connection between cybersecurity and music; curious how this can be used to identify candidates to grow the cyber workforce
- The role of certifications for a wide variety of majors
- Cybersecurity as a career (licensure), and the criticality of its competencies

Other Takeaways And Lessons Learned

- Interesting to see a “younger” profession grappling with the issues and growing pains that other professions have already dealt with; pleased to see spirit of cooperation on all sides
- University accreditation can differ for BS or BA programs
- Purdue Global's program is very interesting and should be explored by other academia
- Innovation and change can be painful and messy, but we must persist in our shared responsibility to embrace and deliver the future
- SHRM has a certification model that cuts across all industries
- The question on employer input could have been explored deeper – was focused primarily on our organizations, universities, and certification bodies. We are operating in a vacuum, the employers should be driving this conversation – some of the top cybersecurity firms in the world are within 20 miles of the meeting, but their ideas are not being included in our conversation
- Perspective that academia may be more forward thinking than industry
- Higher education has a real desire to incorporate certifications into their offerings
- Cybersecurity has multiple certifications; walked away with a clearer understanding of the details, as well as potential opportunities
- Have a better understanding of certifications, which helps make the case for including certifications in academic programs
- Certifications can add value to higher education and enhance student marketability to employers

Questions Raised by Participants for Further Consideration

Can This Type of Integration Work?

- Can educating for a career and training for a job be done homogeneously?
- How do we handle certifications that require more experience than a degree program provides?
- How can a certification, such as the International Association of Privacy Professionals (IAPP), which is highly dependent on some degree of real-world work experience, be incorporated into a scalable university degree program?
- Focus has been on classic four-year college, but how about other types of learners (i.e., those that go into the military, those that go to college at night and/or online, etc.)?
- How do we address the accreditation issue? How do we align the misaligned?
- Partnerships require mutual regard and willingness to learn about and from each other; how can universities provide more information to certification bodies that will result in asset-based approaches rather than competition?

What Are The Return On Investments To Partnering?

- How do we create incentives for faculty and universities to include certifications in our courses?
- How can faculty (other than those present) become aware of how to make partnerships with certification bodies? How can mapping course curriculum to training for certifications be done in a time-efficient manner?
- How do certification bodies feel about the process of working with universities? How do we better prepare faculty for these discussions?

Are There Current Models To Base Our Work On?

- In this room, is there a university model of certifications embedded into undergraduate or graduate programs? If so, how do you design educational experiences (or can you design educational experiences) to serve degree-seeking students and working professionals at the same time?
- Is there anyone doing this well – incorporating certifications into four-year degrees?

What Do Other Stakeholders Want Or Need?

- What are the barriers to integrate certification into academia from the perspective of the different communities involved?
- Better understanding of the decision tree (not administrative hierarchy) a university would use to determine whether or not a certification fits within a program – how are they valuing the certification – ANSI? Alumni? Industry? Cost? Etc.?
- We have a very active industry advisory (IA) group for our programs/departments, and they help us to identify the skills/competency gaps as well as the strengths of our programs; in our discussions, our IAs have not explicitly told us that they want our students to be certified in X (or hold a certain certification), rather the discussions are focused on specific skills, knowledge, or competencies that they seek in their employees. Is this the experience of other institutions? Does this signal the significance of "certifications"?
- "Soft skills" is a broad term – what are the specific soft skills being sought by employers of cybersecurity personnel? Are any certification bodies incorporating soft skills into their body of knowledge?

What About The Extra Costs?

- If the student needs to work just for basic living expenses, and still comes out with some tuition and fee-based debt, then who is going to pay for the certification?
- How can industry or certification bodies address students' concerns over the cost of certifications, and how do you motivate faculty to incorporate certification into curricula?
- How do we get the resources to train faculty in these "new" fields and get buy in from them to change curriculum to include certifications?

Are There Other Options?

- Where might other on-ramps begin for security roles prior to the completion of a bachelor's degree – short term/ fast track programs, associate's degrees?
- Precollege programs are on every campus now, and many are non-credit programs – why is no one working with these students to put them on a career trajectory? Universities would get to introduce

students to campus and provide them with a tangible credential that could then be accepted for transfer credit at that university or any other

- How do we look at lifetime educational needs, not just initial degrees?

How Do We Move This Forward/What Are Next Steps?

- How do we bring the numerous entities discussed today (certification bodies, universities, accrediting bodies, etc.) to the table for partnership opportunities, quickly and in a rapidly changing cyber environment?
- How will we actually make something happen here?
- Template for partnerships – how do we integrate degrees and certifications while being open with the students about the value of each? How to ensure that the different pathways created are not creating different pathways for different socio-economic classes?
- What action items can each participant take away from this session and what is the reporting forum we have for follow up?
- Who will own this initiative after these convenings are complete? What are the steps forward?
- Roadmaps for partnership development

Other Questions

- How do academia and certification bodies anticipate changes in technology?
- How do faculty participants feel about these partnerships?
- What does being a center of excellence do for a college?
- What is the gap between cybersecurity textbooks and certification preparation materials?

Action Items

Develop Relationships With Convening Participants

- Reach out to universities/circle back with some of the certification bodies to explore more options
- Speak with Purdue Global for more information
- Further relationship with certification bodies and universities participating in the NSA National Centers for Academic Excellence program

Share Information With Internal Staff

- Relay the information to board of directors, committees, management/senior staff, and other certification staff
- Follow up with folks about how we might leverage frameworks and KSAs in our educational work
- Apply some of the educational perspectives and strategies with our education players
- Already have college partnerships so there is an opportunity for expansion
- Discuss the value of certification with the career services director
- Inform faculty of the status/scale of certification
- Brief university leadership/administration/deans/provosts/colleagues on discussions of convening about integrating certification within curricula
- See how conversations can be started with others in university about moving this forward

- Reach out to our cybersecurity/data science/computer science/IT department heads about enhancing the program and/or influencing curriculum development

Further Research

- Further research the current models of certification alignment programs to academic areas, and possibly develop future products with this alignment in mind
- Review current partnerships between universities and develop industry-specific relationship models
- Have a conversation around market competition; work to identify certifications applicable to entry/mid/senior level positions to assist with overall curriculum alignment
- Evaluate current certification partnerships and determine opportunities/needs
- Look specifically about revising and revitalizing cybersecurity credit programs
- Explore bodies of knowledge and try to align curriculum

Other Action items

- Being open to future collaboration with university programs which could align with certifications, and continue to work on partnerships and determine a model that works
- Work with the U.S. Department of Labor, U.S. Department of Defense, and U.S. Department of Homeland Security to help address the challenge on a national scale