Leverage Employer-Defined Employability Skills to Strengthen Your IT Program

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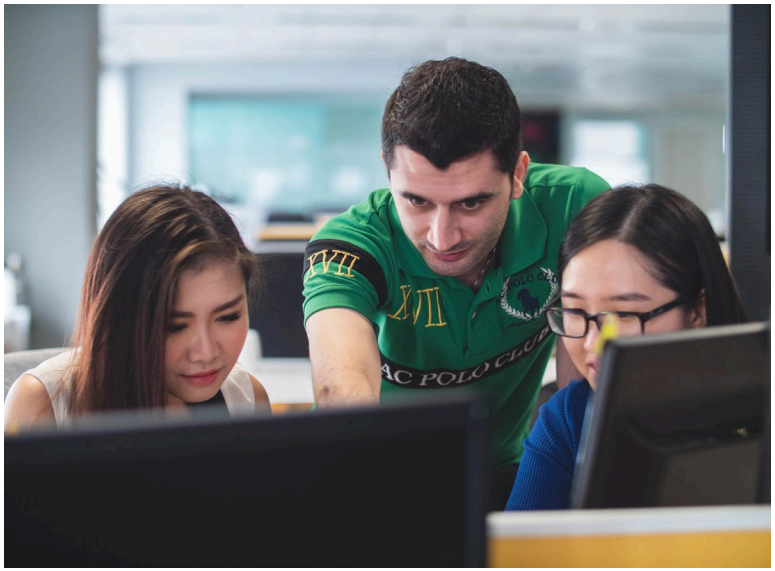
Why Are Skill Standards Important?

Provide a blueprint for how the technical knowledge and skills in the IT high-performance workplaces are organized and how the roles of workers contribute to the success of the enterprise.

They make IT careers more accessible to students and employers because they provide transparency regarding the knowledge, skills, and abilities (KSAs) as well as the performance needed for success in the job market.

Business and Industry want to hire students who can integrate products, not just one vendor experts

Why Are Skill Standards Important?



EDUCATORS use skill standards to create curriculum that is relevant, current, and future-facing to better prepare students to meet employers' job requirements.

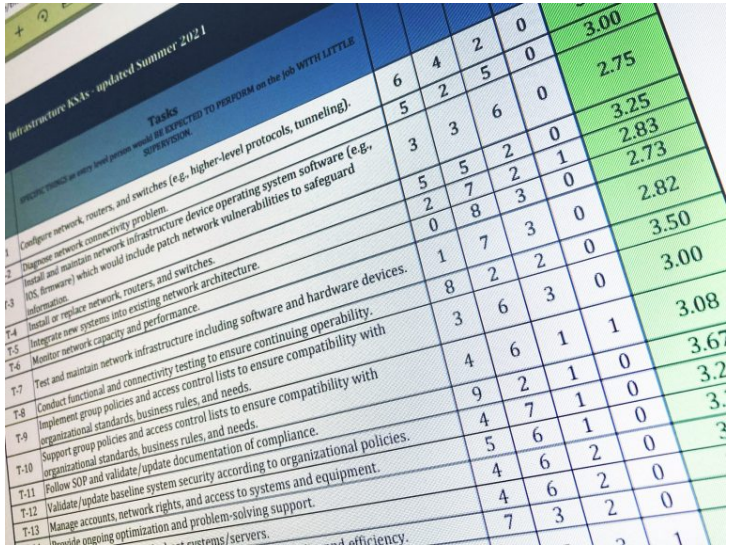
EMPLOYERS use skill standards to improve communications about job openings so they hire the most qualified candidates to address their current and emerging needs, and to improve their internal training and development.

ITSS 2020's Purpose

- **WIDEN** the pipeline of qualified IT workers.
- **CREATE** a contemporary and future-facing set of IT Skill Standards.
- **ASSIST** both employers and educators to more easily apply the standards.

ITSS Engages Employers with BILT

- **Business & Industry Leadership Team** process is the basis for work with employers to identify what they want graduates to know 12-36 month into the future
- **Employers co-lead** the work, not just advise



BILT Model Created by the National Convergence Technology Center www.connectedtech.org

ITSS Thought Leaders Identified Critical Job Clusters

Approximately 100 Thought Leaders were recruited and vetted to identify the first set of project Job Clusters

- Thought Leaders are typically CTO's, CIO's, CISO's or other individuals responsible for "seeing the future" to keep their companies in business.
- Goal was to identify 8-10 of the most critical and difficult to fill job clusters for the future through four facilitated meetings
- Project team synthesized results
- Employer consensus was obtained for 7 job clusters initially
- A second set of Thought Leader meetings were held to identify remaining 2 to 3 clusters; several skill sets under consideration instead

Job Cluster Definitions

- **The thought leaders defined what each job cluster included**
  - **Example:** "Technical Project Management comprises the planning and management of a technical initiative from concept through to a concrete deliverable. This includes overall responsibility for outcomes and requires specific knowledge of technologies, applied methodologies and development models to ensure success in planning, managing budget, estimation and execution of the project. Additionally, this area is responsible for change management. The Technical Project Management serves as the liaison between the business and technical experts. This definition was adapted from Iasa Global with input from national IT Thought Leaders."

First 7 Job Clusters Identified

Skill standards completed

- Infrastructure Connectivity Administration and Engineering
- Technical Support
- Technical Project Management
- Software Development and Engineering (recently completed)
- Data Management and Engineering (the IT side of Data)
- Data Analytics and Predictive Modeling

Skill standards in process

- Cybersecurity (more details to follow)

Employers SMEs Drove Job Cluster Meetings

- **The Project Team compiled pro forma KSAs and Tasks** for employer evaluation using a variety of existing skill standards (e.g. NICE and NIST, ACM, various state standards) – no reinvention of the wheel

- **Employer SMEs voted** on the pro forma KSAs and Tasks they want workforce ready grads to do/have in the future using the structured, repeatable process from the BILT, followed by discussion

- **Employer SMEs could add, change, and delete** items during the 2-3 meetings per job cluster that were held

- **Employers identified the appropriate level of Employability Skills** needed per job cluster

Task, Knowledge, Skill and Ability

This is a snippet of a KSA and Task list the entire list contain a minimum of 100 items across all sections.

We will do a live demo later in this presentation

Technical Support Tasks and KSAs		
		Avg
Tasks SPECIFIC THINGS an entry level person would BE EXPECTED TO PERFORM on the job WITH LITTLE SUPERVISION.		
	Install, Configure, Update, Maintain	
T-1	Install and maintain network infrastructure device operating system software (e.g., IOS, firmware).	3.0
T-2	Install and configure hardware, software, and peripheral equipment for system users in accordance with organizational standards.	3.7
T-3	Manage changes/updates for both internal and external customers when policies and procedures cha	3.4
T-4	Maintain computer hardware.	3.6
T-5	Provide technical support for software maintenance or use.	3.7
Knowledge Knowledge focuses on the understanding of concepts. It is theoretical. An individual may have an understanding of a topic or tool or some textbook knowledge of it but have no experience applying it. For example, someone might have read hundreds of articles on health and nutrition, many of them in scientific journals, but that doesn't make that person qualified to dispense advice on nutrition.		
K-1	Knowledge of the basic operation of computers.	3.9
K-2	Knowledge of computer networking concepts and protocols, and network security methodologies.	3.5
K-3	Knowledge of operating environments, organizational software and applications.	3.6
K-4	Knowledge of practices of internal, external, and global customers (as applicable).	3.2
K-5	Knowledge of internal organizational communication processes.	3.3
Skills The capabilities or proficiencies developed through training or hands-on experience. Skills are the practical application of theoretical knowledge. Someone can take a course to gain knowledge of concepts without developing the skills to apply those concepts. Development of skills requires hands-on application of the concepts.		
S-1	Skill in identifying possible causes of degradation of system performance or availability as well as skill in initiating actions needed to mitigate this degradation.	3.3
S-2	Skill in using the appropriate tools for repairing software, hardware, and peripheral equipment of a s	3.4
S-3	Skill in conducting research for troubleshooting novel client-level problems.	3.1
S-4	Skill in configuring and validating network workstations and peripherals in accordance with approved standards and/or specifications.	3.4

Employability Skills – 3 Possible levels

Technical Support Employability Skills

Workplace Professionalism & Work Ethics	Level 1 - Employee learns expectations of workplace environment (professional behavior and ethics) and adheres to practices with some guidance. Level 2 - Employee exhibits sound professionalism, judgment, and integrity and accepts responsibility for own behavior. Employee exhibits these qualities without guidance but occasionally refers to policies as needed.
Written Communication	Level 1 - Employee understands written instructions and executes tasks with guidance and feedback from supervisor. Employee clearly communicates concepts in writing. Level 2 - Employee comprehends and executes written instructions with minimal guidance. Employee composes well-organized written documents.
Oral Communication	Level 1 - Employee understands oral instructions and executes tasks with guidance and feedback from supervisor. Employee communicates concepts orally while clarifying for meaning. Employee develops listening skills. Level 2 - Employee comprehends and executes oral instructions with minimal guidance and exhibits good listening skills. Employee clarifies for meaning without needing prompting from supervisor.
Teamwork	Level 1 - With guidance and feedback from supervisor, employee obeys team rules and understands team member roles. Employee actively participates in team activities, volunteers for special tasks, and establishes rapport with co-workers. Level 2 - Employee demonstrates commitment, enthusiasm and supports team members. Employee follows up on assigned tasks and leads by example.

Focuses on these 12 areas

- Workplace Professionalism & Work Ethics
- Written Communication
- Oral Communication
- Teamwork
- Problem Solving & Critical Thinking
- Organization & Planning
- Adaptability & Flexibility
- Initiative
- Accuracy
- Cultural Competence
- Self Development & Career Development

After The Initial Job Cluster Meetings

- **Project team** synthesized data across meetings (votes + discussion)
- **Follow-up meeting** addressed
  - **Employer SMEs verifying the synthesis** done by the team and changing anything they did not approve
  - **Employer SMEs voting on Key Performance Indicators (KPIs)** for Tasks
- **Educator SMEs** also developed **Student Learning Outcomes** after the second employer SME meetings
- **ITSS worked with ~200 different business SMEs** over first 6 job clusters

State Recognition of Our Work

- 5 job clusters recognized September 3, 2021
  - Infrastructure Connectivity Administration and Engineering
  - Technical Support
  - Technical Project Management
  - Data Management and Engineering Data Analytics and Predictive Modeling

- Request by Texas State Skill Standard Board for submission for recognition on December 3, 2021
  - Software Development and Engineering

TEXAS SKILL STANDARDS

Subject Matter Experts Per Job Cluster

Business SMEs Additionally

- Assist with dissemination
- Provide ideas to sustain updates

Educator Subject Matter Experts Per Cluster

Educator SMEs breakdown

- Participate in Skill Standards work
- Assist in converting final Tasks and KSAs to Student Learning Outcomes for model curriculum, so that a broader range of educators can better-prepare students for the workforce
- Crosswalk discussions on what can be reasonably expected to be covered in 2-yr and in 4-yr Applied Technology Degrees
- Assist with dissemination

Components Of Each Job Cluster's Skill Standards

- **Created by employers using the BILT processes**
  - **Tasks + KSAs** with numerical average of votes across SME meetings
    - PDF and Excel formats
  - **Key Performance Indicators (KPIs)** for Tasks
  - Levels of Key **Employability Skills**

- **Created by educators** from the employer-determined KSAs
  - **Student Learning Outcomes** to use in creating and updating curriculum

How To Access The Skill Standards

All job cluster results are posted on the ITSS 2020 website https://itskillstandards.org.

Helpful videos

Signing In and Commenting: https://youtu.be/lBFgl3nvdV8

Comment and Registration: https://youtu.be/3CzrvUs4Ys4

How to Access The Skill Standards – No Login Needed

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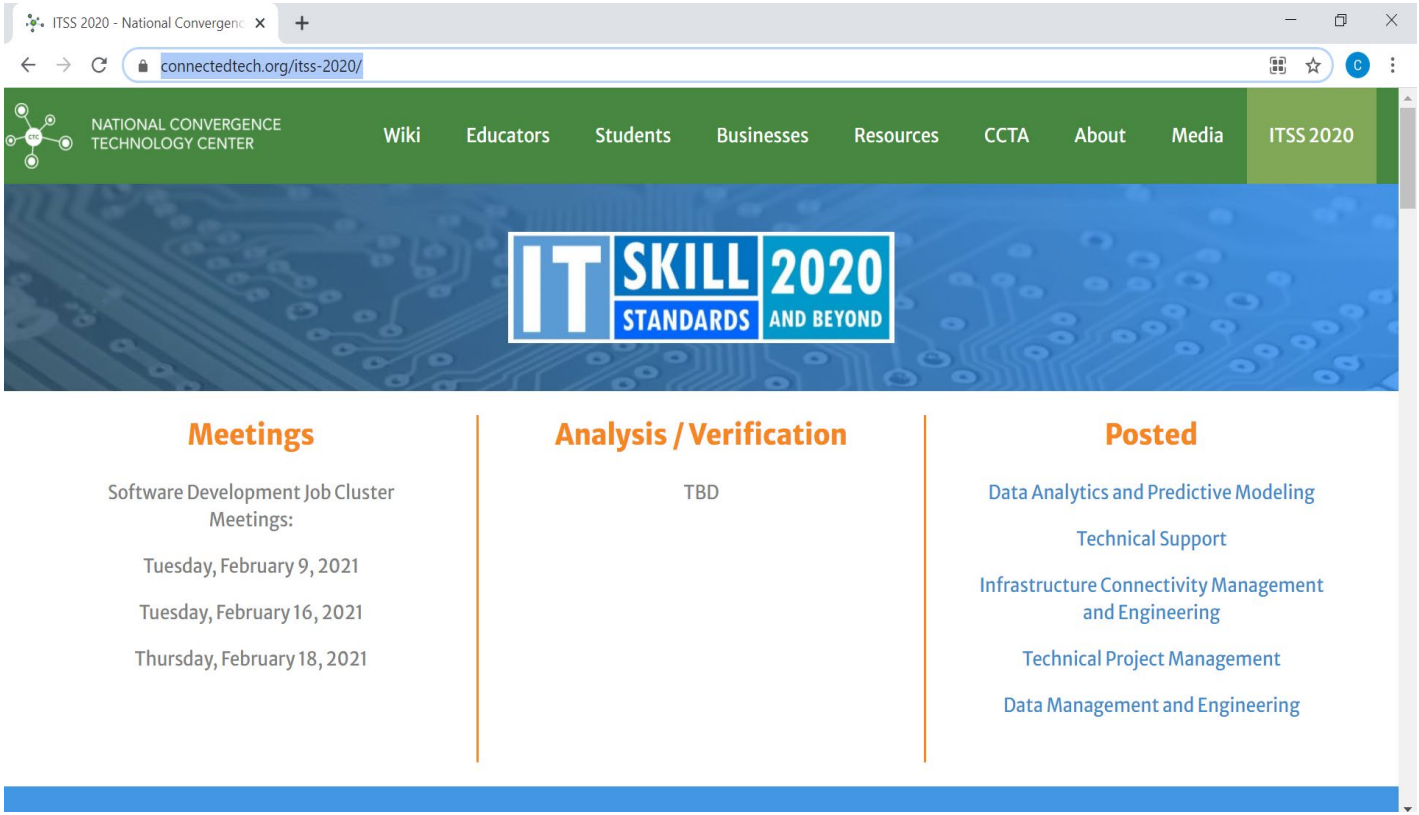
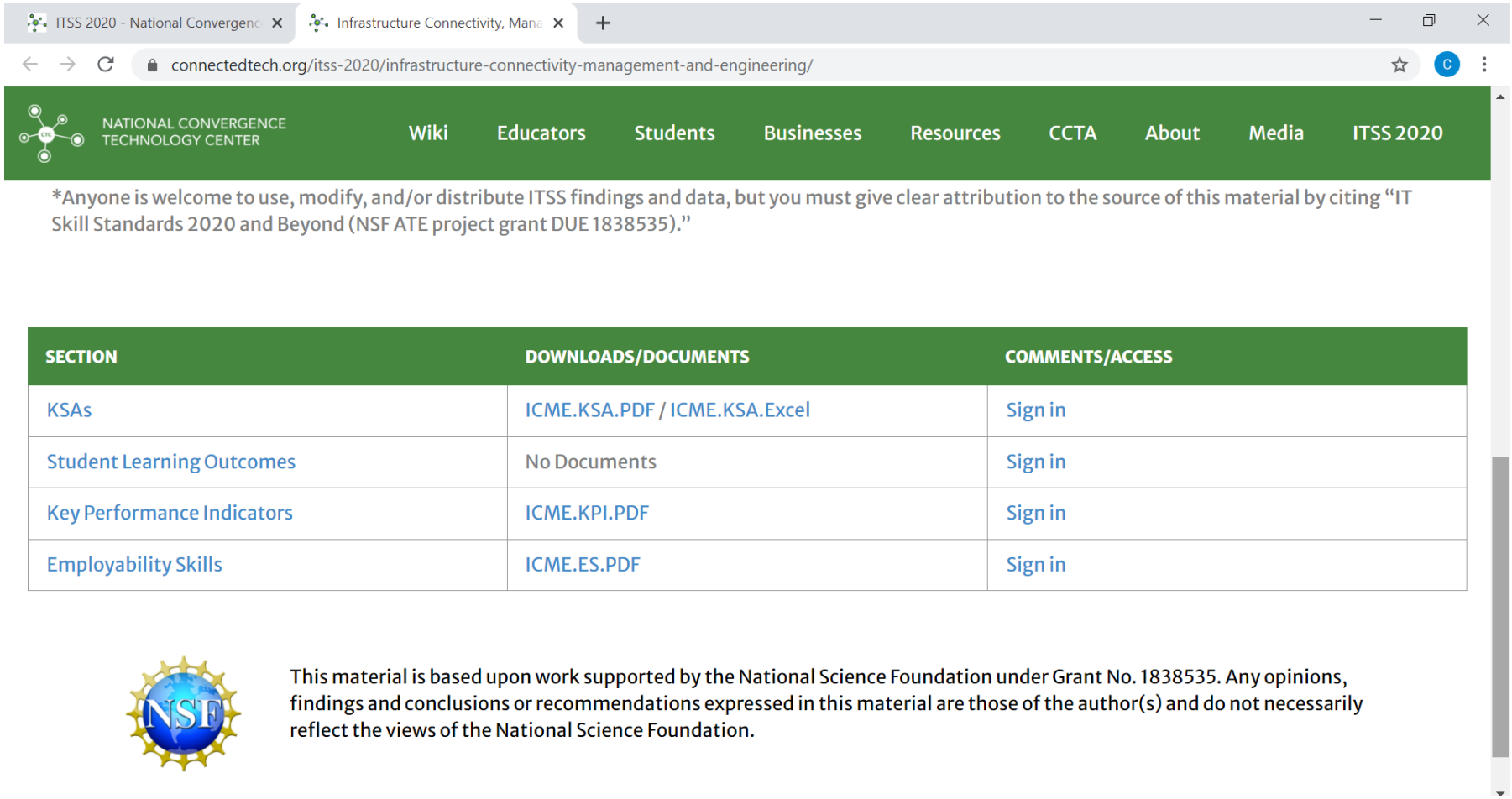


Components Available Per Job Cluster



Website Demonstration

Using The IT Skill Standards

For existing IT programs:

- Compare the KSAs, Tasks, and SLOs from the ITSS website (itskillstandards.org) to your own curriculum content and outcomes
- Use the comparison as fuel for discussion for the next faculty meeting
  - Note: some changes many require new modules or tweaks to existing modules, not whole new courses and my be able to be rapidly implemented.
- Use the comparison information working with your next Business Advisory Council (Preferably Business & Industry Leadership Team) to consider curricular updates.

Using The IT Skill Standards

For new IT programs:

- Validate/clarify the KSAs and Tasks from the ITSS website with your employers at your next meeting, and use the KSA process from CTC to determine how curriculum might be created (adapted) to implement a new program

- Be sure to consider labor market demand into the future as new programs take time to construct and obtain approval.

Skill Sets

To complete the work the thought leaders want 3-4 skill sets that will over lay the previous clusters

- The following areas are tentative:
  - AI,
  - ML,
  - Blockchain,
  - 5G (integrated into infrastructure),
  - IoT,
  - IT Automation,
  - AR/VR

Sustainability

Ongoing process

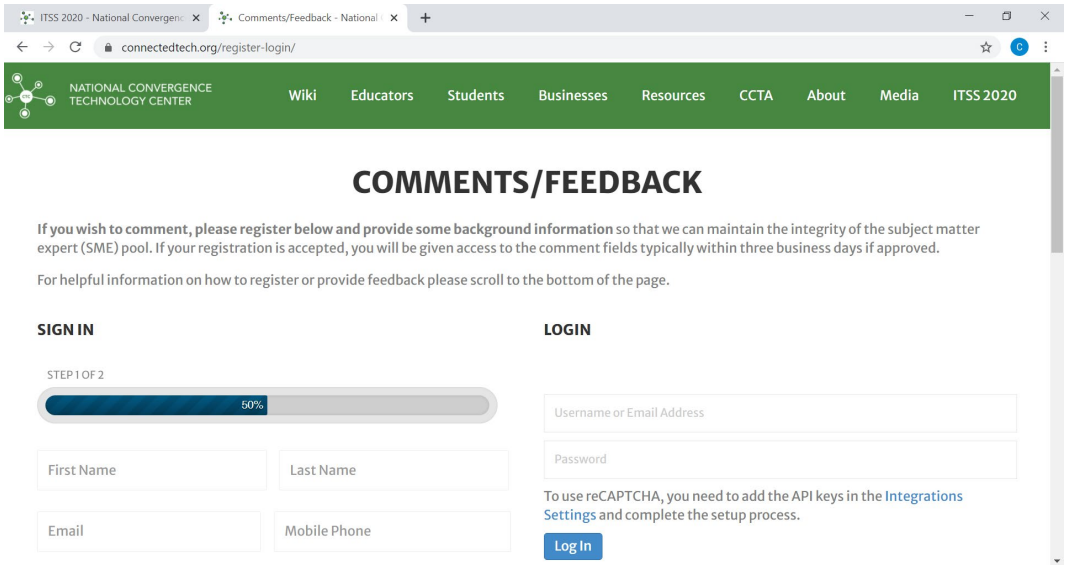
- **Piloting a crowd-sourcing** approach to keep the job skills updated (Currently testing thru the ITSS 2020 website)
- **Seeking industry financial support** and leadership for continuing support

Other Opportunities For Engagement

- **Provide feedback** on the Skill Standards already posted on ITSS website (http://www.itskillstandards.org)
- **Apply to be an educator SME** for upcoming skill sets that are within your expertise
- **Apply to be an employer SME** for upcoming skill sets that are within your expertise
- **Learn more about how to use the Skill Standards** to update curriculum

How to Register to Provide Feedback – Requires Login

- Registration Page: https://connectedtech.org/register-login/
- Helpful videos
  - Signing In and Commenting: https://youtu.be/lBFgl3nvdV8
  - Comment and Registration: https://youtu.be/3CzrvUs4Ys4



Upcoming Professional Development

Using Skill Standards to Advance Your College IT Curriculum

- November 12, 2021
- 2 pm – 3 pm ET
- https://bit.ly/ITSSTraining2

Contact Us!

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