

118TH CONGRESS
2D SESSION

S. _____

To expand the functions of the National Institute of Standards and Technology to include workforce frameworks for critical and emerging technologies, to require the Director of the National Institute of Standards and Technology to develop an artificial intelligence workforce framework, and periodically review and update the National Initiative for Cybersecurity Education Workforce Framework for Cybersecurity, and for other purposes.

IN THE SENATE OF THE UNITED STATES

Mr. PETERS (for himself and Mr. SCHMITT) introduced the following bill; which was read twice and referred to the Committee on

A BILL

To expand the functions of the National Institute of Standards and Technology to include workforce frameworks for critical and emerging technologies, to require the Director of the National Institute of Standards and Technology to develop an artificial intelligence workforce framework, and periodically review and update the National Initiative for Cybersecurity Education Workforce Framework for Cybersecurity, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Technology Workforce
3 Framework Act of 2024”.

4 **SEC. 2. WORKFORCE FRAMEWORKS FOR CRITICAL AND**
5 **EMERGING TECHNOLOGIES.**

6 (a) DEFINITIONS.—

7 (1) IN GENERAL.—In this section, the terms
8 “competencies”, “workforce categories”, and “work-
9 force framework” have the meanings given such
10 terms in subsection (f) of section 2 of the National
11 Institute of Standards and Technology Act (15
12 U.S.C. 272), as added by subsection (b) of this sec-
13 tion.

14 (2) AMENDMENT TO NIST ACT.—Section 2 of
15 such Act (15 U.S.C. 272) is amended by adding at
16 the end the following:

17 “(f) DEFINITIONS.—In this section:

18 “(1) COMPETENCIES.—The term ‘competencies’
19 means knowledge and skills.

20 “(2) WORKFORCE CATEGORIES.—The term
21 ‘workforce categories’ means a high-level grouping of
22 tasks that are performed by workers within an orga-
23 nization.

24 “(3) WORKFORCE FRAMEWORK.—The term
25 ‘workforce framework’ means a common taxonomy
26 and lexicon for any given domain that includes the

1 building blocks of tasks, knowledge, or skills that
2 can be structured to form work roles or competency
3 areas.”.

4 (b) EXPANSION OF FUNCTIONS OF DIRECTOR OF NA-
5 TIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY TO
6 INCLUDE WORKFORCE FRAMEWORKS FOR CRITICAL AND
7 EMERGING TECHNOLOGIES.—Section 2(b) of such Act
8 (15 U.S.C. 272(b)) is amended—

9 (1) in paragraph (12), by striking “; and” and
10 inserting a semicolon;

11 (2) in paragraph (13), by striking the period at
12 the end and inserting “; and”; and

13 (3) by adding at the end the following:

14 “(14)(A) to develop, maintain, and provide in-
15 dustry, government, research, nonprofit, and edu-
16 cational institutions with workforce frameworks for
17 critical and emerging technologies and other science,
18 technology, engineering, and mathematics domains
19 for the purpose of bolstering scientific and technical
20 education, training, and workforce development;

21 “(B) at least once every 3 years—

22 “(i) to determine if an update to any work-
23 force framework, or its components or associ-
24 ated materials, including work roles or com-

1 petency areas, provided pursuant to subpara-
2 graph (A) are appropriate; and

3 “(ii) if the Director determines it is appro-
4 priate under clause (i), to update such frame-
5 works and components;

6 “(C) consider including in all workforce frame-
7 works, or associated materials—

8 “(i) relevant professional skills or employ-
9 ability skills;

10 “(ii) relevant support or operations skills
11 or workforce categories, work roles, and com-
12 petency areas such as administration and fi-
13 nance, law and policy, ethics, privacy, human
14 resources, information technology, operational
15 technology, supply chain security, and acquisi-
16 tion and procurement;

17 “(iii) information for how individuals with
18 nontechnical or other nontraditional back-
19 grounds and education may utilize their skills
20 for work roles or tasks in such frameworks;

21 “(iv) distinctions between certifications,
22 certificates, and degrees, including—

23 “(I) the importance of each;

24 “(II) how each should be used; and

1 “(III) where each one is most bene-
2 ficial; and

3 “(v) methods for validation of skills;

4 “(D) consult, as the Director considers appro-
5 priate, with Federal agencies, industry, State, local,
6 Tribal, and territorial government, nonprofit, re-
7 search, and academic institutions in the development
8 of workforce frameworks, or associated materials;

9 “(E) to produce resources in multiple languages
10 to support global adoption of the frameworks pro-
11 vided pursuant to subparagraph (A); and

12 “(F) after each determination under subpara-
13 graph (B), to submit to Congress a report on such
14 determination and any plans to review and update
15 any workforce frameworks under this paragraph.”.

16 (c) NICE WORKFORCE FRAMEWORK FOR CYBERSE-
17 CURITY UPDATE.—

18 (1) REPORT ON UPDATES.—

19 (A) IN GENERAL.—Not later than 180
20 days after the date of the enactment of this
21 Act, and subsequently pursuant to paragraph
22 (14)(F) of section (2)(b) of the National Insti-
23 tute of Standards and Technology Act (15
24 U.S.C. 272(b)), as added by subsection (b) of
25 this section, the Director of the National Insti-

1 tute of Standards and Technology shall submit
2 to Congress a report that describes the process
3 for ongoing review and updates to the National
4 Initiative for Cybersecurity Education Work-
5 force Framework for Cybersecurity (NIST Spe-
6 cial Publication 800–181), or a successor
7 framework.

8 (B) REQUIREMENTS.—Each report sub-
9 mitted pursuant to subparagraph (A) shall—

10 (i) summarize proposed changes to
11 the framework;

12 (ii) identify, with regard to the work
13 roles, tasks, knowledge, and skills included
14 in the framework, how industry, academia,
15 and relevant government agencies are con-
16 sulted in the update; and

17 (iii) describe—

18 (I) the ongoing process and
19 timeline for updating the framework;
20 and

21 (II) the incorporation of any ad-
22 ditional work roles or competency
23 areas in domains such as administra-
24 tion and finance, law and policy, eth-
25 ics, privacy, human resources, infor-

1 mation technology, operational tech-
2 nology, supply chain security, and ac-
3 quisition and procurement.

4 (2) REPORT ON APPLICATION AND USE OF NICE
5 FRAMEWORK.—Not later than 3 years after the date
6 of the enactment of this Act and not less frequently
7 than once every 3 years thereafter for 9 years, the
8 Director shall, in consultation with industry, govern-
9 ment, nonprofit, research, and academic institutions,
10 submit to Congress a report that identifies—

11 (A) applications and uses of the framework
12 described in paragraph (1)(A) in practice;

13 (B) any guidance that the program office
14 of the National Initiative for Cybersecurity
15 Education provides to increase adoption by em-
16 ployers and education and training providers of
17 the work roles and competency areas for indi-
18 viduals who perform cybersecurity work at all
19 proficiency levels;

20 (C) available information regarding em-
21 ployer and education and training provider use
22 of the framework;

23 (D) an assessment of the use and effective-
24 ness of the framework by and for individuals
25 with nontraditional backgrounds or education,

1 especially individuals making a career change or
2 not pursuing a bachelor's degree or higher; and

3 (E) any additional actions taken by the Di-
4 rector to increase the use of the framework.

5 (3) CYBERSECURITY CAREER EXPLORATION RE-
6 SOURCES.—The Director, acting through the Na-
7 tional Initiative for Cybersecurity Education, shall
8 disseminate cybersecurity career resources for all
9 age groups, including kindergarten through sec-
10 ondary and postsecondary education and adult work-
11 ers.

12 (d) ADDITIONAL WORKFORCE FRAMEWORKS.—

13 (1) FRAMEWORK ASSESSMENT.—Not later than
14 180 days after the date of the enactment of this Act,
15 the Director shall assess the need for additional
16 workforce frameworks for critical and emerging
17 technologies, such as quantum information science.

18 (2) DEVELOPMENT OF ADDITIONAL FRAME-
19 WORKS.—

20 (A) IN GENERAL.—The Director shall de-
21 velop and publish a workforce framework for
22 each additional workforce framework that the
23 Director determines is needed pursuant to an
24 assessment carried out pursuant to paragraph
25 (1).

1 (B) REQUIRED AI FRAMEWORK.—Notwith-
2 standing paragraph (1) and subparagraph (A)
3 of this paragraph, not less than 540 days after
4 the date of the enactment of this Act, the Di-
5 rector shall develop and publish a workforce
6 framework, workforce categories, work roles,
7 and competency areas for artificial intelligence.

8 (3) MODEL.—In developing a workforce frame-
9 work under paragraph (2), the Director may use the
10 Playbook for Workforce Frameworks developed by
11 the National Initiative for Cybersecurity Education
12 that is modeled after the National Initiative for Cy-
13 bersecurity Education Workforce Framework for Cy-
14 bersecurity (NIST Special Publication 800–181), or
15 a successor framework.

16 (4) FRAMEWORK COMPONENTS.—Each frame-
17 work developed pursuant to paragraph (2) shall in-
18 clude appropriate support or operations skills or
19 workforce categories, work roles, and competency
20 areas such as administration and finance, law and
21 policy, ethics, privacy, human resources, information
22 technology, operational technology, supply chain se-
23 curity, and acquisition and procurement, as the Di-
24 rector considers appropriate, in alignment with para-
25 graph (14)(C) of section 2(b) of the National Insti-

1 tute of Standards and Technology Act (15 U.S.C.
2 272(b), as added by subsection (b).

3 (5) PROFESSIONAL SKILLS REQUIRED.—Each
4 framework developed pursuant to paragraph (2)
5 shall include professional skills or employability
6 skills, as the Director considers appropriate, in
7 alignment with paragraph (14)(C) of section 2(b) of
8 the National Institute of Standards and Technology
9 Act (15 U.S.C. 272(b), as added by subsection (b).

10 (6) NONTRADITIONAL BACKGROUNDS.—Each
11 framework developed under paragraph (2), or mate-
12 rials associated with each framework, shall include
13 information for how individuals with nontechnical or
14 other nontraditional backgrounds and education may
15 utilize their skills for such frameworks' roles and
16 tasks, in alignment with paragraph (14)(D) of sec-
17 tion 2(b) of the such Act (15 U.S.C.
18 272(b)(14)(D)), as so added.

19 (7) UPDATES.—The Director shall update each
20 framework developed under paragraph (2) in accord-
21 ance with subparagraph (B) of paragraph (14) of
22 section 2(b) of the National Institute of Standards
23 and Technology Act (15 U.S.C. 272(b)), as added by
24 subsection (b) of this section, and submit to Con-

- 1 gress reports in accordance with subparagraph (F)
- 2 of such paragraph.