To whom it may concern,

Please find attached to this email message requested changes and feedback to the NICE framework from Data Governance within USCYBERCOM. This message is not the official submission from the Commander, USCYBERCOM. As the Chief Data Officer for USCYBERCOM, I wanted to provide you with my feedback on the framework and suggestions for modifications.

If you have any questions or would like additional detail, please feel free to reach out to either myself or Barb Houck (on copy), Deputy CDO USCYBERCOM.

Regards,

Jason

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Jason Schwier
Chief Data Officer/Strategist
US Cyber Command

# Point Paper

Request to add data management work roles to the National Initiative for Cybersecurity Education Cybersecurity Workforce Framework, NIST Special Publication 800-181, in response to public comment period 19 November 2019 – 13 January 2020.

# Background

The National Initiative for Cybersecurity Education (NICE) Cybersecurity Workforce Framework, herein referred to as the NICE Framework, documented in National Institute of Standards and Technology (NIST) Special Publication (SP) 800-181, is one of the foundational documents upon which the Department of Defense Cyber Workforce Framework (DCWF) is based. The DCWF provides definitions; tasks; and knowledge, skills and abilities (KSAs) to ensure DoD personnel understand what is needed to execute key functions of specific work roles. The definitions, tasks, and KSAs for the work roles set in the DCWF for all DoD cybersecurity work roles are analogous to the work roles established by NIST within the NICE Framework.

Further, in line with the Federal Data Strategy Draft Action Plan (reference A), modifying the NICE Framework will support the practice of Prioritizing Data Governance. It will further enable only the development of a functional data governance structure (Action 12) across agencies, as well as enable the identification of opportunities to increase staff data skills (Action 14).

# Issue

The current NICE Framework, dated August 2017, has a clear gap in work roles for the field of data management, governance, and strategy, which is represented by the Chief Data Officer and associated staff within an organization. The current work roles provided within the NICE Framework and DCWF associated with data do not adequately describe the role, function, and skills required of data officers and managers.

- Operate and Maintain (OM)/Data Administration (DTA)/Database Administrator (OM-DTA-001): As described, this work role specifically was created for personnel to administer databases and/or data management systems. Data managers prescribe the rules for database administrators to follow with respect to storage and labeling of data, which is not a function of a database administrator.
- OM/DTA/Data Analyst (OM-DTA-002): As described, this work role was created to represent the data science aspect of database administration through algorithm and process development to enable data mining and activities performed by data scientists. Data managers prescribe the rules for data analysts to follow with respect to these activities.
- OM/Knowledge Management (KMG)/Knowledge Manager (OM-KMG-001): As described, this work role was created to represent the creation of processes and structure to enable the organization to identify and access its information. On the surface, this role appears to represent data officers and managers, but in practice, knowledge management is separate from data governance because the focus of the roles is different. Data governance work roles specifically focus upon the operational usage of data to ensure it is providing greatest benefit to

the current functions of the organization, compared to knowledge management focus on the long-term identification, retention, and recall of data/information.

## Solution

USCYBERCOM Data Governance requests the following change requests to the NICE Framework.

### Add Work Role: Data Officer

- Description: Develops and oversees data governance, strategy, and policy to support and align with organizational initiatives for strategic lifecycle data management, manage the data assets of the organization, and ensure maximum usage of data within the organization.
- Recommended Specialty Area: Oversee and Govern (OV)/Cybersecurity Management (MGT)
- Tasks:
  - Develop data standards, policies, and procedures
  - Define data requirements and specifications
  - Align data governance processes and standards as part of Enterprise Data Management to ensure data access quality, and interoperability
  - Leverage data analytics, artificial intelligence, such as machine learning, to generate efficiencies within military and cyber domains
  - Review existing and proposed policies with stakeholders
  - Coordinate with the Chief Information Security Officer to ensure alignment between security and privacy practices
- Knowledge:
  - Familiarity with foundational IT, cloud engineering, data architecture, and data security principles
  - Experience overseeing the collection, storage, management, quality and protection of data.
  - Have a thorough understanding of data strategy and system design and implementation
  - Knowledge of cybersecurity principles
  - Knowledge of relevant laws, legal authorities, restrictions, and regulations pertaining to offensive and defensive cyber activities (OR: knowledge of relevant laws, regulations, and policies)
  - Knowledge of the organization's enterprise information technology (IT) goals and objectives
- Skills:
  - Strong leadership with experience building coalitions, managing change, and implementing large technical projects
  - Excellent oral and written communication skills
- Abilities:
  - Ability to maintain a technical edge through participation in relevant conference and through established government, academic, and industry forums.
  - Ability to understand, evaluate, and authoritatively speak on emerging technology options.
  - Ability to synthesize complex concepts from individuals and teams

## Add Work Role: Data Steward

- Description: Responsible for the implementation and maintenance of data governance instruction and policy to ensure support to data users across the organization. Responsible for managing data assets on behalf of others and in the best interest of the organization. (Reference B)
- Recommended Specialty Area: Operate and Maintain (OM)/Data Administration (DTA)
- Tasks:
    - Ensure that data governance policies and initiatives are adhered to
    - Document business rules, data quality rules, and data and standards, and ensure there is consensus about them within the organization and that they are use consistently
    - Oversee policy standards and implementation strategies to ensure procedures and guidelines comply with cybersecurity policies
    - Provide recommenations on data structures and databases that ensure correct and quality production of reports/management information
    - Present technical information to technical and non-technical audiences
- Knowledge:
    - Knowledge of laws, regulations, policies, and ethics as they relate to cybersecurity and privacy.
    - Knowledge of cybersecurity and privacy principles.
    - Knowledge of data standardization policies and standards
    - Knowledge of organization issues, objectives, and operations in cyber as well as regulations and policy directives governing cyber operations
- Skills:
    - Skill in conducting queries to analyze data structures.
    - Skill in developing data dictionaries.
    - Skill in developing data models.
    - Skill in generating queries and reports.
    - Skill in developing format mappings to establish consistent representations of data.
    - Skill in using data mapping tools.
    - Skill to identify sources, characteristics, and uses of the organization's data assets.
- Abilities:
    - Ability to influence decisions to ensure that data is managed in ways that support the overall goals of the organization

## Modify Skill: S0013

- Change description to: Skill in developing algorithms.
- Rationale: The skill for developing algorithms is separate from the skill of conducting queries. For data management, conducting queries is necessary to understand how data is being stored in a system, but algorithm development to understand this is not.

## Add Skill: S0013A (number TBD)

- Describe: Skill in conducting queries to analyze data structures.
- Rationale: See modification request for S0013 for justification.

## Add Skill: S0113A (number TBD)

- Describe: Skill in developing format mappings to establish consistent representations of data.
- Rationale: In order for skill S0113 to be successful, data managers must do the engineering work of establishing the format mappings for format conversion software to be created. This request acknowledges the skill need for the engineering and governance work to be done before the current development skill.

## References

A: Federal Data Strategy Draft Action Plan https://strategy.data.gov/action-plan/#draft-action-steps

B: DAMA-DMBOK: Data Management Body of Knowledge, 2nd Edition