



## **PROBLEM TITLE**

Representation of Competencies

## **BACKGROUND**

In the learning, development, and occupational domains, the term “competencies” refers to a formal way of describing the knowledge, skills, attitudes, and other characteristics that an individual or team possesses or that a given job requires. Competencies are typically defined at different levels of expertise (e.g., novice, intermediate, expert), and they have many non-exclusive and multidirectional relationships with one another. For example, an expert pianist likely possesses some ability in musical theory and might be able to learn other instruments more rapidly. These relationships are defined in “competency frameworks.” Competencies and competency frameworks are the common currency for learning and development. The translation of knowledge, skills, and experiences into universal competency definitions will allow the military to make personnel data—and by extension, the individuals, themselves—more interoperable across systems and jobs, both within and beyond the Department of Defense (DoD).

The DoD is developing the “Future Learning Ecosystem,” where various training, education, and human resources technologies function as an integrated system across a person’s career—all informed by competency data. However, many challenges remain. For instance, the competency descriptions currently used by human reviewers fail to adequately support software systems. Further, organizations often define and organize their competencies differently, limiting their interoperability, and even when described universally, the same competency (e.g., leadership) may apply differently in different contexts. Consequently, the Advanced Distribution Learning (ADL) Initiative seeks a robust way to represent competencies and competency frameworks.

## **CHALLENGE**

The Advanced Distribution Learning Initiative needs a definitive way to represent and employ competencies and competency frameworks in the “Future Learning Ecosystem.”

## **OPERATIONAL CONSTRAINTS**

- Define the data elements needed for each Competency and address related technical challenges, such as how to define Competencies that fall into multiple domains, represent uncertainty, or degrade estimates of a person’s competence over time.
- Define principles for Competency Frameworks, such as how to represent the relationships among nodes, make inferences, and visualize the knowledge graphs.
- Outline system-wide policy, process, and governance risks and recommendations, such as how to review and update Competencies over time.
- The results of this definition may be incorporated into DoD Instruction 1322.26 and used across DoD.

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