MODERNIZATION OF USACE ENGINEER REPORTING ORGANIZATIONS

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1 Problem Statement

The US Army Corps of Engineers is undergoing continuous data modernization and improvement to increase understanding across the enterprise. The lack of enterprise guidance on the terminology and top-level organizational structure creates ambiguity for data system owners and data users to interpret the meaning behind the organizational data. This inconsistency in referencing organizations reduces the ability to have a data driven organization, clear definitions, and understanding of terminology for interrelated data. The benefits to solving this problem is that data integration is possible and becomes greatly simplified.

2 Background

The regulation ER 25-59-1, Department of the Army, Corps of Engineers, Information Management: Records Management Office Symbols[1], published in 2019 and managed by USACE Records and Information Management establishes policies and procedures for managing organizational elements and office symbols. The organizational policy states, *"A permanent order is required to enact proposed additions or deletions to the current list of USACE office symbols. Requests for changes will be coordinated after a new permanent order is issued. Office Symbols will be added or deleted upon receipt of a permanent order issued by the USACE Chief of Staff or the agency Commander. Changes to office symbols will be kept to a minimum. Office symbols will be deactivated or modified when: a. New organizational elements are created; b. Existing organizational elements are terminated; c. Organizational elements are divided or merged; d. Major organizational names change."*
The details in ER 25-29-1 lack the comprehensive data available in other sources, such as the rescinded ER 37-1-27[2]. ER 37-1-27 established a standard set of Engineer Reporting Organization Codes (EROC) for all USACE organizational elements used in system data, including Headquarters. However, no single source of this hierarchical agency information references the multiple codes and symbols of both Engineer Regulation publications.

The structure of USACE agencies and organizational offices is set up hierarchically, with USACE Headquarters being the top-level reporting agency. Agencies in USACE classify as Divisions, Districts, or other supporting organizations- including laboratories and centers. Agencies classified as Divisions, Laboratories, and Centers report directly to Headquarters. Districts report to a Division based on their geographical location[3]. An agency code and name designate each agency. Other data elements come from financial management in Corp of Engineers Financial Management System (CEFMS) and are referenced in ER 37-1-30. CEFMS references top level organization codes interchangeably with the EROC. Per the USACE CIO/-G-6 in ER 25-29-1, all authoritative names, codes, and symbols referencing USACE data and systems organizations should be processed and approved by the Enterprise Records Management Team for office symbol regulation.

The construct of reporting districts to a division does not follow a logical pattern. For example, Washington Aqueduct is considered a division of the Baltimore District on the USACE Missions section of the Baltimore District website[4]. Still, on the financial reporting system CEFMS[5] and ER 25-29-1, Washington Aqueduct is considered a district. For context, Baltimore District reports to the North Atlantic Division, and Washington Aqueduct, based on the EROC, reports to Baltimore District. None of

[1] ER 25-29-1: Department of the Army, Corps of Engineers, Information Management: Records Management Office Symbols
[2] ER 37-1-27 Department of the Army, US Army Corps of Engineers Financial Administration, Engineer Reporting Organization Codes (EROC)
[3] ER 25-29-1: Department of the Army, Corps of Engineers, Information Management: Records Management Office Symbols
[4] Baltimore District Website- Washington Aqueduct
[5] USACE Financial Center

the other districts, laboratories, or centers, based their EROC heirarchy, report to another district. All other laboratories, centers, and divisions report to headquarters, and all remaining districts report to a division. Subsequently, all districts have one or more Civil Works, Military, or Environment missions in USACE. Washington Aqueduct does not have any of those missions but has its own Washington Aqueduct Mission. This exception to the hierarchical construct of organizations within USACE does not conform to the same associations between the organizations and district missions.

Each district has at least one or more missions classified under Civil Works, Military, or Environment. Those missions break down further into areas of responsibility (AOR). These areas of responsibility are boundary locations that encompass the mission of the district. Unlike the areas of responsibility associated with Civil Works and Military Missions, Environment Missions do not have the same relationship between AOR and missions. FUSRAP AOR is both a Civil Works Mission and an Environment Mission, but that relationship is unclear on the USACE Missions[6] subpages and is listed as an Environment Mission. Areas of Responsibility are vital to understanding the coverage of a mission as they directly connect to boundaries in a district. It is essential to make this distinction in the organizational hierarchy between districts and other USACE organizations since the mission scope for a specific district connects to the relationships between districts and areas of responsibility.

Table 1-1: Example of Current Representations of USACE Organizations

EROC	FOA_CODE	DIST_DIV_CODE	FOA_NAME	USACE District Code	DISTRICT	DIST_SYM
H3	H3	LRN	NASHVILLE DISTRICT	Nashville District	Nashville District	LRN
L4	L4	SPA	ALBUQUERQUE DISTRICT	Albuquerque District	Albuquerque District	SPA

3 Potential Solutions

A few approaches identified will address the organizational reference problems in USACE Data Systems.

1. **Do-Nothing Alternative**: This approach would continue to use USACE organizational references in their current state. The pro to this approach is that there are no changes to make, and there is no cost involved. The con to this approach is that the enterprise will continue to be confused using

Table 1.1: Data elements from multiple databases used in USACE. Example of the absence of standardization of the column headers in different databases containing the same data elements.

organizational names, codes, symbols, and alternative names without a formal structure.

2. **Formal Ontology**: This approach would create a formal ontology of the USACE organizational structure using the authoritative ER 25-29-1 as the policy standard for implementing, referencing, and changing organizational references. The pro of this approach is that it solves the identification confusion that currently exists. It establishes a standard model in which the previously ambiguous structure from ER 25-29-1 was not enforced for use in USACE data systems. Another pro to this approach is that it allows users to view each organizational element's broader and narrower relationships. The con to this approach is that the formal ontology has the

[6] USACE Missions https://www.usace.army.mil/Missions/

flexibility of expression using alternate identifiers in linked schemas, leading to multiple references used for a single organization.

3. **Unified Relational Schema**: This approach mandates using a single relational schema when entering data into a system. The pro of this approach is that it solves the identifier uncertainty by applying standardized organizational references and terms used in the data. The con of implementing this approach is mandating a single relational schema is inflexible when considering existing relational schemas of USACE data systems.
4. **The Best of Both Worlds**: The last approach would be to implement a formal ontology solution and mandate a single relational schema used for entering data. This solution would be accessible from a single online location.

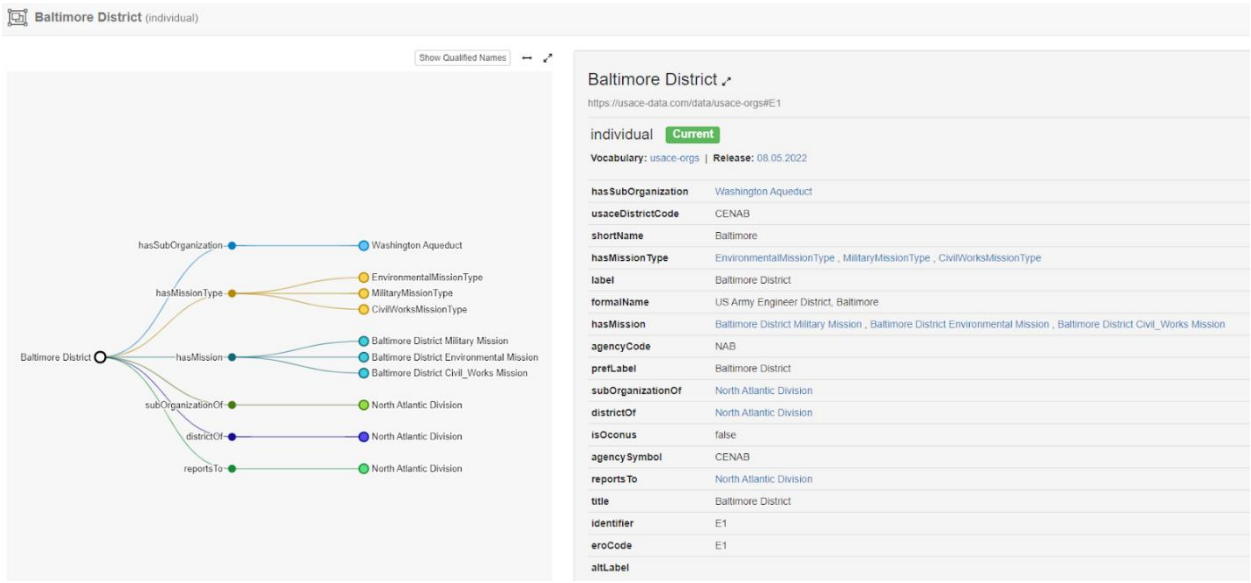

Figure 1: Baltimore District metadata, symbols and connections to division and sub-district organization as well as mission data shown in a formal ontology.

4 Recommendations and Conclusion

Based on the possible solutions for this organizational problem, the recommended approach would be option four- The Best of Both Worlds. The solution implements an ontology of the USACE organization structure and creates a unified relational schema. The ontology uses the recommended and standardized references of the organizational names, codes, and symbols for current and future USACE data systems. The unified relational schema uses logical naming conventions of schema elements of organizational references. A secondary action to the recommended approach identifies the USACE Record Officer as the "owner" of the ontology. The USACE Record Officer uses the authoritative policy stated in ER 25-29-1 to implement changes and update the ontology as needed when permanent orders are received indicating an office symbol change. The recommended solutions will additionally provide clarity, structure, and enforce the policy stated in ER 25-29-1. Enterprise guidance for approaching the organizational structure issues within USACE will achieve system interoperability and reduce confusion when using references in data. The path forward will allow increased interoperability within USACE data systems and advancement in modernization towards a data-driven organization.