

Establishing and Disseminating the K-Museum Data Standard at the National Museum of Korea(NMK)

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Abstract

The National Museum of Korea has led the standardization, integration, and opening of museum collection data in Korea through the establishment and dissemination of the K-Museum data standard, the release of public data, and the operation of eMuseum, an integrated public access platform. This presentation introduces the development and major achievements of museum data standardization in Korea through the case of the National Museum of Korea's eMuseum, and further explores possible directions for the future application of global data standards. In particular, it examines how the practical experience of reorganizing collection information that had previously been managed differently across institutions into a more consistent structure and linking it to integrated search and public access services can serve as a foundation for establishing and disseminating the K-Museum data standard. eMuseum is a representative platform where the achievements of data openness are brought together, allowing users to explore and use collection information from most museums in Korea within a single digital environment. This presentation examines the main components and implementation of the K-Museum data standard, and discusses how standardized data has supported the operation and enhancement of eMuseum as well as wider public access to museum collection information. Building on this domestic standardization experience, it also considers the practical challenges and institutional implications that need to be addressed when applying global data standards to the Korean museum environment.

1. Introduction

The digital transformation of museums has progressed beyond simply making collection information available online. It has entered a new stage in which data serve as the foundation for both new knowledge services and an environment conducive to artificial intelligence (AI) applications. Traditionally, museum data practices have focused on accurately recording the information required for collection management—such as registration numbers, storage locations, materials, dimensions, and quantities. From the perspective of future AI training and applications, existing museum data and the broader data environment require more than the ongoing accumulation of data. In the age of AI, the potential value of data depends less on volume than on consistency in structure and meaning.

The National Museum of Korea has continued to establish data standards and provide public access to museum data through the Cultural Heritage Standard Management System and eMuseum. This paper first examines how the National Museum of Korea's Cultural Heritage Standard Management System and eMuseum have laid the foundation for the standardization of museum data in Korea, and then considers directions for building on this foundation to establish the K-Museum data standard. The broader aim

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is to facilitate the further development and sharing of the museum data accumulated to date and to enhance interoperability with international standards.

2. Foundations of Museum Data Standardization in Korea: The Cultural Heritage Standard Management System and eMuseum

The National Museum of Korea has accumulated cultural heritage data over decades through research on the classification and digitization of museum collections and the institutionalization of these practices. Relevant discussions began in the 1980s and led to the establishment of a preliminary framework for the standardization of object classification in 1993, a unified standard for national museums in 1995, and a unified standard for museums nationwide in 1996. Following a 2016 study on improving the classification system, its scope of application was further broadened. Museum practitioners, academic specialists, information technology experts, standardization professionals, and linguists participated in this process, resulting in a common management framework for museums across Korea.

The Cultural Heritage Standard Management System is the core infrastructure through which these achievements in standardization are put into practice. The system supports the development and management of databases on the collections held by museums and art galleries. It comprises 16 mandatory fields common to all institutions, including collection category, accession number, quantity, and object name, as well as optional subfields—covering management, movement, and genre-specific information—that institutions may adopt according to their needs. Each field is managed using coded values and a hierarchical classification structure, enabling institutions to accumulate data within a consistent framework. With 744 institutions currently using the system nationwide, it functions not merely as an internal tool but as a national infrastructure for museum data management.

The management data accumulated in this way are made publicly accessible through eMuseum. Indeed, eMuseum offers a unified digital environment in which users can search and use collection information registered by multiple institutions in the Cultural Heritage Standard Management System. It also defines the terms of use for publicly accessible images in accordance with the applicable category of the Korea Open Government License (KOGL). The linkage between the two systems has made the collection management information used within individual institutions available through integrated search and public access, which represents a significant achievement in Korea's museum data policy. In particular, nationwide data collection, the use of common fields, the management of codes, and experience in operating public access services collectively provide a practical foundation for establishing and disseminating the K-Museum data standard. These achievements, however, do not in themselves ensure international interoperability; the existing framework must therefore be reinterpreted and extended to meet the requirements of a new data environment.

3. The Need to Extend Data Standards

Although the Cultural Heritage Standard Management System has contributed effectively to the stable management of collections and the use of common classifications across institutions, its underlying structure remains oriented primarily toward object attributes and administrative metadata. Cultural heritage objects, in particular, carry distinctive information—including relational and contextual information of a narrative nature. The meanings attributed to these objects may shift depending on institutional and operational contexts. An object, for example, may have a primary name, a commonly used name, an officially designated name, a name used on an exhibition label, or an English name. When all of these are managed within a single field, their respective characteristics and intended uses cannot be clearly distinguished.

When combined with differences in the quality of data among institutions, this semantic ambiguity can make it even more difficult to link data across institutions. The extent to which fields are populated and the descriptive practices used vary across institutions using the Cultural Heritage Standard Management System. Moreover, unpopulated fields are not readily apparent on the public-facing interface. These issues reflect not merely shortcomings at the institutional or system level, but the inherent complexity of cultural heritage information.

The fact that eMuseum operates primarily in Korean also limits its international use and multilingual search. In the absence of well-developed authority files and persistent identifiers (PIDs) for persons, organizations, places, and subject terms, it is difficult to connect museum data with external knowledge bases such as Wikidata. Furthermore, because the existing codes and fields have evolved to meet collection management needs in Korea, systematic mapping principles are also required to define their relationships with international standards and frameworks such as Dublin Core, CIDOC CRM, and IIF.

What is needed, therefore, is neither to discard the existing framework nor to adopt international standards without adaptation. Rather, a phased extension is required that preserves the management experience and institutional foundations developed by museums in Korea while adding semantic clarity, the representation of relationships, multilingual capabilities, and international interoperability. The K-Museum data standard offers a framework for this transition. It should be designed to preserve the distinctive names and periodization associated with cultural heritage, along with its religious, ritual, and iconographic contexts, while enabling external systems to interpret and link these elements.

4. Directions for Establishing and Disseminating the K-Museum Data Standard

Rather than imposing a single uniform format on all museum data in Korea, the K-Museum data standard should be developed as an application framework that combines common core elements, domain-specific extensions, and mapping rules for

international standards. Common core elements should first be defined in the areas of identification, naming, time and place, physical properties, classification, context, and use. The development of authority control systems and unique identifiers should proceed alongside the refinement of these common elements. For key entities and concepts such as persons, organizations, places, periods, and subject terms, their preferred and alternative labels, names in Chinese characters, English names, and former names should be linked to one another, and mappings to external identifiers should also be provided. This would enable the same concepts to be identified consistently and support multilingual search and linkage to external data sources. On this basis, object-centered metadata should be extended into an event- and relationship-centered structure.

Alignment with international standards is essential if this structure is to be used in a global environment. Dublin Core, CIDOC CRM, and IIIF, however, serve different purposes and functions. They should therefore be used selectively according to their respective roles rather than adopted in parallel as though they formed a single specification. A governance framework should also be established to ensure that the standard remains current rather than becoming a static set of guidelines. This framework should include version control, change logs, expert review, consultation with institutions, and data quality indicators.

For the standard to be effective in practice, phased pilot testing should be conducted in a representative domain with a complex semantic structure. Korean Buddhist sculpture, for example, combines naming conventions, iconography, religious functions, rituals, production techniques, and interactions across periods and regions. It is therefore well suited to testing both the distinctive characteristics of Korean cultural heritage and its international comparability. A pilot model should be developed through a process comprising the selection of the target domain, refinement of the classification system, definition of metadata elements, data creation, expert validation, and mapping to international standards. The issues identified and the results achieved through this process should then inform the extension of the model to other genres and institutions. This phased approach would improve the overall quality of the standard while also facilitating its adoption across the museum sector.

5. Conclusion

The National Museum of Korea's Cultural Heritage Standard Management System and eMuseum constitute the core infrastructure for managing museum collection information in Korea within a common framework and making it publicly accessible. By bringing together data from institutions across the country and enabling nationwide public access to these resources, the two systems demonstrate the tangible outcomes of museum data standardization in Korea.

In the current environment, where AI, multilingual services, and links to global platforms have become increasingly important, the existing management-centered structure must be expanded to support interoperable, semantically rich, and relation-

ship-centered data resources. The K-Museum data standard is not a new specification that disregards what the existing systems have achieved; rather, it is an institutional and technical framework for building on those achievements to support international connectivity and the use of museum knowledge. The objective of the K-Museum data standard is to establish structured links between the attributes and contexts of museum objects and to develop the resulting data into enduring public knowledge assets for use in research, education, exhibitions, and AI services.

References

- [1] National Museum of Korea, "Standardized Artifact Classification for Computerized Museum Artifact Management," National Museum of Korea, 1996.
- [2] National Museum of Korea, "A Study on Improvement Measures for the Standardized Classification System for National Museum of Korea," 2016.
- [3] National Museum of Korea, *The Theory and Practice of Museum Management*. National Museum of Korea, 2000, pp. 51–80.
- [4] J.-e. Jung, "A Study on the Development and Utilization Strategies on the Cultural Heritage Standard Management System," in *Proceedings of the 19th Dongwon Academic Conference*, National Museum of Korea, Korea Institute of Archaeology and Art History, 2017, pp. 1–12.
- [5] H. Kang and H.-s. Kwon, "The Public Website on Museum Collections in Korea "eMuseum" and the Website of the National Museum of Korea," *The Review of Korean Studies*, vol. 26, no. 2, pp. 175–189, 2023.
- [6] J.-g. Kim, "Current status and challenges of digital heritage development at the National Museum of Korea," *Museum and Research*, pp. 36–67, 2025.