Original article

LEVERAGING BEST PRACTICES IN ANCIENT EGYPTIAN COLLECTION MANAGEMENT: INSIGHTS FROM THE METROPOLITAN MUSEUM OF ART

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Abstract:
This paper delves into the best practices in ancient Egyptian collection management at the Metropolitan Museum of Art (MET) and explores avenues for other institutions to glean from the MET's expertise. Renowned as a pioneer in museum operations, particularly concerning the preservation and interpretation of ancient Egyptian artifacts, the MET employs meticulous cat-aloging, innovative conservation methods, and strategic knowledge dissemination to ensure the long-term sustainability of its collection. This study elucidates the key principles and methodologies embraced by the MET and elucidates how museums worldwide can leverage these practices to bolster their own collection management strategies. By embracing the MET's expertise, insti-tutions can elevate standards of preservation, research, and public engagement, thereby fostering the global promotion and understanding of ancient Egyptian heritage. This collaborative approach not only enriches the value of museum collections but also fortifies their significance as educational and cultural pillars in the contemporary era of digitization and globalization.

1. Introduction

Museums serve as custodians of humankind's tangible and intangible heritage, committed to ethical and professional stewardship of their collections. Collections management, encompassing information, preservation, access, ensuring the safeguarding and sustainability of cultural objects [1]. Museums adhere to rigorous collection management and documentation standards to create a secure environment and facilitate access to their collections [2]. These instit-utions are dedicated to creating, organizing, sustaining, and disseminating information about their collections, disti-nguishing them from similar cultural entities. Collection documentation plays a vital role in protecting museum collections while enhancing their value through historical and cultural insights. It serves multiple functions, including facilitating object identification, aiding in research, and enriching visitor experiences [3]. As technology advances, digital collection management systems have revolutionized the organization and accessibility of museum information, furthering the mission of these institutions in preserving and sharing cultural heritage. Documentation practice is the basis upon which all other uses of collections are built (exhibitions, publications, educational programs, multimedia presentations, etc.) and practices of interpretations [4]. In this frame, the ICOM code of ethics and similar texts rel-ating to professional ethics such as AAM code of ethics require that museum collections be documented. "Museum collections should be documented according to accepted professional standards. Such documentation should include a full identification and description of each item, its associa-

tions, provenance, condition, treatment, and present location. Such data should be kept in a secure environment and be supported by retrieval systems providing access to the information by the museum personnel and other legitimate users." ICOM code of ethics, article 2.20 [5].

2. Methodology of the Research

The Metropolitan Museum of Art was taken as case study as it represents one of the pioneer museums in documenting and managing its ancient Egyptian collection. The Literature review has been done to collect the latest and current studies and findings on the collection management and documen-tation practices and knowledge making at the Met. Open ended interviews with registration and documentation dir-ectors, registrars, and curators at the Met has been applied to get close and in deep information and to collect insights about the collection management policies, guidelines which they apply, and challenges they are facing while managing their collection and collecting their data within the museum collection management. Additionally, field observation has been performed inside the museum departments for three months in 2023. This aimed at getting a closer knowledge and experience about the current state of collection mana-gement and documentation system, practices, and quality of data recorded within the Met database.

3. Results

The Metropolitan Museum of Art (MET) in New York City, is the largest art museum in the Americas [6]. The

MET's earliest history dates to 1866, while the museum opened to the public in April 1870. The MET objective was to bring art and art's education to the American society, the willingness and responsibility to share art widely with various audiences and to promote a better understanding of diverse cultures and its creativity [7]. On March 1880, the MET opened to the public at its current museum building near to the Central Park [8]. The Met collection of ancient Egyptian antiquities consists of approximately 30000 objects of historical, aesthetic, and cultural significance, dating from the Palaeolithic to the Greco-Roman period [9].While most of the ancient Egyptian antiquities of the MET came from private collections donated to the museum, the ancient Egyptian artefacts that were discovered by the MET's excavations in Egypt, which began in 1906 and lasted for more than 35 years, represent more than half of the current museum's collection [10]. The first ancient Egyptian collection was acquired in 1874 from the private collection from Luigi di Cesnola, the MET's first director, followed in 1886 by important collection from the funerary equipment from the family tomb of Sennedjem, which had been purchased from the Egyptian government. This early collection expanded mainly at the end of the 19th and early 20th centuries through financial support for the MET's excavations organized by the Egypt Exploration Society EES. The MET was able to form a unique collection from ancient Egypt that was discovered in the archaeological sites of Upper Egypt, such as the tombs of Abydos, the temples of Deir Al-Bahari and the tombs of Dendera [11].

3.1. *The MET's collection management system*

Documentation must be carefully managed, as if the link between the object and the records are lost, both will lose their value. Therefore, the documentation policy may include a retention schedule for records and documentation. The retention schedule provides guidelines for classifying objects by category and makes recommendations for the length of time records in each category should be retained by the museum and where permanent collection records should be housed [12]. Furthermore, the MET documentation policy states that "The museum, through its curatorial, registrar and conservation departments, shall maintain accurate, up-to-date records on the identification, location and condition of all objects in the collection, as well as of ongoing activities such as exhibitions, loans, research and correspondence with donors, artists and scholars. These records should be recorded in the Museum's collections management database (TMS). Additionally, any original paper files regarding the acquisition of objects should also be retained. Each curatorial department maintains coherent, organized records on accessioned, non-accessioned and deaccessioned works of art, departmental loans, exhibition loans, and works of art brought into the Museum for possible purchase or gift. Moreover, curatorial departments are responsible for updating and maintaining TMS records for their collections and for administering TMS rights to ensure limited and appropriate access to confidential records [13]. The Met's permanent collection in general is more than one million pieces. The collection is curated and managed by seventeen separate departments, each department consists of specialized curators, researchers, and scholars, as well as six dedicated conservation departments. Moreover, the MET maintains one

central collections management system (The Museum System TMS) [14], it combines all the most up to date basic data relating to the description and history of every object inside the MET such as the historical relevance, condition, current and past storage, or gallery location, as well as an image of each object [15]. It worth mentioning that the MET also relies on other collection management systems that assist the TMS such as netx, Trillo file manager and Jira [16]. It is a relational, web-based image database designed for managing museum collections. It effectively handles both homogeneous and heterogeneous collections. The system adheres to international data standards such as CIDOC CRM-(a), LIDO, Getty vocabularies (including the Art and Architecture Thesaurus (AAT) and Thesaurus for Geographic Names (TGN)), and Dublin Core Metadata standards. TMS comes preloaded with Getty Research Institute's AAT and TGN, which are versatile thesauri applicable to all types of artifacts, but additional thesauri can also be integrated into the system [17]. Furthermore, the collections management capabilities of the core TMS is a very smart and flexible system that can be integrated with additional applications from the TMS and other applications. In the case of the MET, TMS is integrated with the digital asset management system netx and Jira software for conservation collection management. While TMS is primary an internal-use software, it supports the development of the MET public-facing records on the MET's website and allows for complete control over which parts of the record will be published online [18]. The standard version of TMS enables the publication of information from up to two modules online, making the museum collection accessible to the public. It is an open-architecture database that supports cataloging, registration, and data entry for the MET collection. The system includes a fully documented data schema and dictionary to ensure compatibility with other enterprise systems. It features 10 interlinked modules on its home screen for managing and tracking all collection data and activities as follows:

3.1.1. Objects module

The cataloguing process for museum objects includes essential details like images, accession numbers, descriptions, and acquisition information. The Egyptian Art dept. has over 10 members, divided between curators who handle cataloguing, conservation, and exhibitions and non-curators who manage the physical handling of objects. Curators use various resources, Probably the most foremost of them are the academic research, publications, excavations' field records, fig. (1), archival materials, and documents such as the acquisition forms and correspondences, to create accession cards, which are the main tool for documenting object data. Furthermore, the Collection Information department has also developed a manual for TMS cataloguing standards after consolidating 23 previous databases [20]. The manual is consistent in the day-to-day use and the cataloguing process of the collection within the system, and it is also written to meet the specific needs of the curatorial departments and their collection. Additionally, the manual is a very realistic and usable document for all the curators inside the MET. It is considered the primary reference on how to catalogue and document the objects, and how to use the system [21].
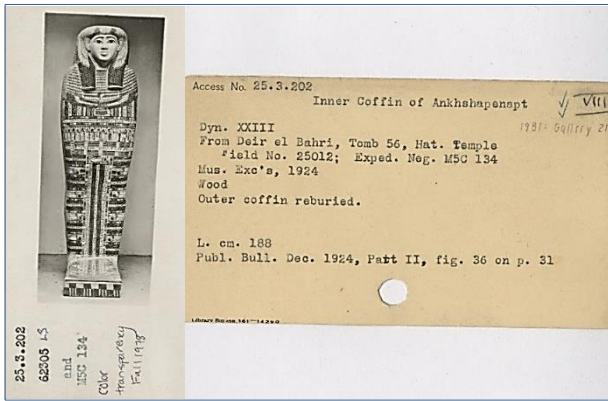
Figure (1) accession card and archival photo © The Metropolitan Museum of Art 2022

The TMS manual outlines best practices and standards for using the system's diverse fields and modules, applicable to both two-dimensional and three-dimensional artworks, such as statues, paintings, prints, drawings, and photographs. It provides guidelines for data entry, including word limits for text fields. Although the manual aims to ensure data consistency, some inconsistencies persist, despite most workflows being standardized. To address this inconsistency, the MET has implemented "clean-up" procedures. This process involves reviewing and correcting object data, including accession numbers, medium, previous and current locations, image quality (with re-photographing if necessary), and object descriptions [22], fig. (2). A key role of the clean-up task is to identify and resolve duplicate accession numbers across the museum. With an estimated 20,000 objects exhibiting duplicate numbers, the Collection Information team and curators have distinguished these duplicates by adding a dash at the end of the accession numbers within TMS [23].
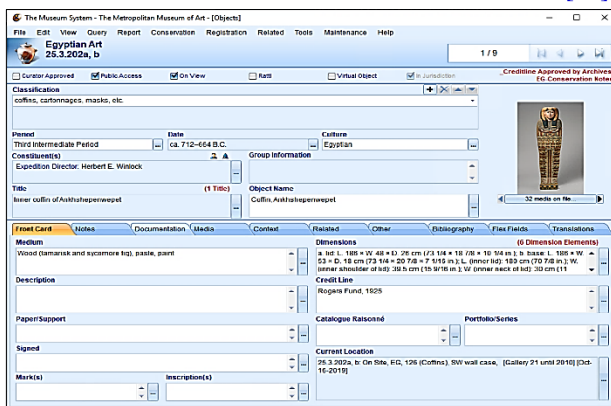

Figure (2) the object module the MET collection management system TMS © The Metropolitan Museum of Art 2022

3.1.2. Media module
The Met uses netx as a separate digital asset management system (DAMS), which stores digital files and their associated metadata for various working, research, and archival purposes, and it is available to all staff with a MET network login [24]. Moreover, it is integrated with the media module of the TMS. According to those records uploaded to netx and to the media files into the TMS media records, it makes some objects' data accessible for public use on the MET website and define the order in which images are displayed online [25], fig. (3). The museum's digital assets are all the digitized files related to the object including the digitization of excavations' field notes, excavation images, and access-

ion cards in addition to the new-born digital images for objects [26]. Digital assets at the MET are produced by imaging professionals, staff, and external sources. Furthermore, Metadata for these assets is managed by curatorial, editorial, imaging, and digital staff, as well as fellows and volunteers. In April 2016, the MET adopted the digital asset management system netx, migrating data and digital assets from its previous system, MediaBin, which had been in use since around 2007/2008 [27]. The netx is considered an integral tool for managing the MET digital assets especially because the TMS cannot store the collection's high resolution files and their associated metadata as TMS images are small and suitable for reference purposes and reporting only. Therefore, the main objective of netx is to store files of the highest quality and all their associated technical, descriptive, and copyright metadata, from which derivatives can be made by users on demand. This is in addition to the fact that not all staff can access TMS whereas all staff have access to netx [28].
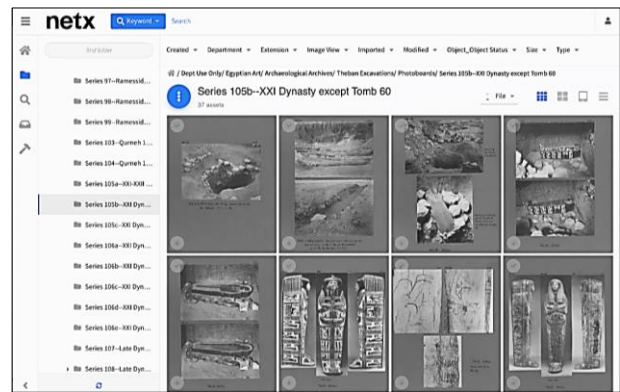

Figure (3) netx digital asset system © The Metropolitan Museum of Art 2022

3.1.3. Exhibitions
The Exhibition module tracks the history of objects' exhibitions to enhance understanding of their context, role, and connections to other objects and institutions. It records details such as the object's accession number, title, image, exhibition title, dates, curators, and any related loans. To ensure clear and consistent data presentation, the Collection Information dept., developed a manual that outlines data input standards for exhibitions. This manual complements curatorial and administrative criteria, detailing requirements for documenting current and upcoming exhibitions, both within and outside the MET. It also covers administrative and legal aspects, including paperwork for loans, logistics, lender agreements, insurance, and indemnity reports. While the criteria for exhibition history and administrative documentation are separate, both aim to provide consistent and accurate exhibition records [29].

3.1.4. The constituents
The constituent module institutional or personal information in TMS includes details about individuals, owners, vendors, dealers, donors, and institutions related to the artifact. This module stores all the personal and institutional information associated with the object's record [30]. For example, if an ancient Egyptian artifact is donated by the Egypt Exploration Fund (EEF), TMS links that record to all artifacts from EEF. This system avoids repetitive data entry and centralizes control, allowing multiple objects to be linked to a single name and vice versa. All relevant details about a person or

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institution, such as life dates, addresses, and nationality, are stored in one place [31]. TMS records should clearly differentiate between individuals and institutions based on their relationship with the museum's collection. For example, searching for "Egypt Exploration Fund EEF" in TMS will display all objects donated or purchased from EEF. The key advantage of the constituent module is its ability to manage all acquisition sources, whether objects are gifted, donated, or purchased. This functionality helps the museum trace the acquisition history and ownership changes of each object over time.

3.1.5. The events

The module provides comprehensive context for events related to museum objects. The Egypt Art dept., uses it to document two main types of events: vandalism or damage and researcher study requests. For vandalism or damage, the curatorial team records the date, time, and responsible party, noting the object's condition and specific types of damage, such as scratches or stains, and images showing the damage caused by vandalism [32]. For study requests, the module tracks details like the researcher's name, request date, country, and the nature of the study. This documentation ensures thorough records of both incidents and academic inquiries involving museum objects [33].

3.1.6. Loans

It tracks the outgoing and incoming loans, records, and document all the relevant info-rmation about the loan period and dates (long term loan/short term loan), loan's objects, constituents, loan borrower or lender, and loan venues. This in addition to recording all the documents and corresp-ondences related to the loan, this includes the loan request, acceptance/decline letter, borrowing/lending agreement, and the cancelation agreement. Loan Purpose tab describes the type of outgoing loan of object in the permanent collection, or the type of incoming loan of an object from another institution or individual. The purpose of the loan is required so that curatorial and administrative approvals can be properly executed according to the Met Policy governing loans.

3.1.7. Shipping

It manages comprehensive details related to the transportation of objects, including shipment dates, types, reports, requirements, crates, borrowers, lenders, and associated documents. It integrates with the Loans, Constituent, and Exhibitions modules to ensure seamless tracking and documentation throughout the shipping process.

3.1.8. Bibliography

Records all the information about the object references, documentation such as academic research, articles, catalogues, and manuscripts.

3.1.9. Sites

Includes places and sites from where the MET collections originated.

3.1.10. Insurance

Tracks insurance policies through valuation information in the objects module [34].

4. Discussion

Based on the literature review, the interviews and discussions conducted with the MET experts and observation tasks. It was identified that the growing presence of artifacts in the MET collections increased the importance of digital documentation as a central focus of collection management. However, collections management systems in general have limitations in adequately presenting rich forms of documentation. While collections management systems often struggle with presenting detailed and comprehensive documentation, the MET has effectively addressed these limitations through targeted initiatives. Specifically, the museum has implemented several strategic practices to enhance documentation. This includes leveraging in-depth academic research to support the management of the collection and utilizing advanced digital platforms. For example, the MET has developed custom digital tools that integrate with their collections management system to improve the accuracy and accessibility of documentation for their collections. These tools facilitate better record-keeping, streamline data entry, and enhance the overall management of collection records, thereby overcoming common challenges associated with traditional documentation methods. Moreover, collaborative digital asset management systems such as netx came into focus as a superior choice for managing related digital documentation data and media files [35]. Online access to the collection on the MET website also represents one of the most straightforward and widespread applications of digitized collections [36]. While traditionally museum websites simply duplicated familiar museum objects and information, the growing adoption of new technologies has given rise to complete virtual experiences of collections for art lovers and museum visitors in online exhibitions [37]. Accordingly, It enhances accessibility to trusted and authoritative content and its related information by complementing the real visitors' experience of physical collections. The MET has effectively unified various practices, data sources, and materials into a single, cohesive system. This integration has enabled the museum to manage complex documentation requirements efficiently. For instance, the system supports multiple iterations of data related to constituents, vendors, and institutions, ensuring accurate and up-to-date information. It also establishes and maintains clear connections between different elements of artifact documentation, such as provenance records, acquisition details, and exhibition history. As a result, the MET is able to provide a comprehensive and organized view of each artifact's background and related content, improving overall data integrity and accessibility [38]. In implementing digital documentation and creating a digital museum, the MET recognized the importance of the relationship between people and collections. As a result, user experience has become a crucial focus for museum researchers and curators. In recent years, traditional methods of artifact description and interpretation have been supplanted by approaches that enhance visitor engagement and provide a more impactful, immersive experience at the MET [39]. According to that, the MET divided the user experience into several aspects: information visualization, personalization, education, and data repackaging. The MET curators believed that these key aspects could offer the museum collection meaningful documentation value and the visitors with a meaningful experience and help improve communication between users, curators, and the museum's collection.

4.1. Information visualization

Recently, types of information visualization [40] have appeared to explore the challenges of data curation and information presentations to be accessible for people from

different experiences and various backgrounds rather than targeting domain-expert [41] audiences [42]. This form of information visualization is applied in physical and virtual public spaces such as museums, art galleries, and libraries [43]. Examples of information visualizations are used on the MET web and social platforms, where visual presentations of the museum's collection are accessible and can be explored, analyzed, and commented on by many museum audiences. The information visualization in the MET encompassed many effective projects, this includes curatorial highlights, MetCollects [44] which, highlights the new acquisitions, and the Met 360 Project [45] for Dandur temple, which offers the web site visitors a virtual tour through the temple corners and its walls details. #Metkids [42], is a digital platform for museum collections designed for children to evoke, explore and learn about the MET collection, fig. (4). This platform enables the children, through interactive maps, to select an object by its location in the galleries, offering them a store of data about each object interpreted in a simple and interactive manner.
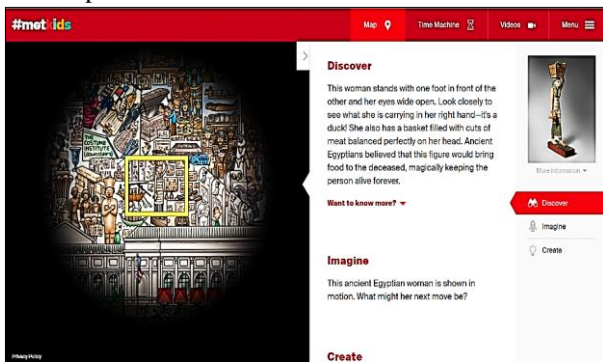

Figure (4) #Metkids interactive map © The Metropolitan Museum of Art web site 2024

4.2. *Personalization*

The personalization [45] aspect is one of the fundamental tools for the achievement of digital documentation and collection accessibility via the website. The proper use of this tool could not only provide curators with better opportunities to understand the needs of museum website users but also the necessity to develop and update the information and knowledge about the collection. The MET's web personalization allowed the curators to offer content, news, and information about the collections that were following the interests, needs, and characteristics of the website users, consistent with the information obtained during users' navigation on the MET's Web site. The curators realized the importance of the Internet as a powerful tool that can ensure the digital documentation, spread and dissemination of their collection to a wide range of the public [46]. In addition to the growing number of visitors searching for online information concerning the museum collections and programs, it has become essential for the MET to try to enhance its visitors' ability to navigate online and access the collection information in the most effective and beneficial way. Personalization assisted the MET website navigation via its online database (The MET Collection) [47], fig. (5). The system helps users quickly find and filter objects in the collection by name, culture, and location, saving them time. It personalizes search results and suggests additional collections based on user behavior, making it easier for users to find relevant information and explore the museum's catalogue efficiently.
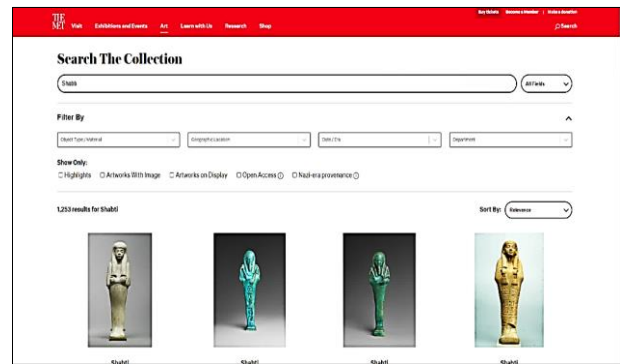

Figure (5) the MET online database © The Metropolitan Museum of Art web site 2024

4.3. *Education*

Formerly, the MET galleries tend to comprise actual objects with limited interpretation, which are always written by curators on the labels or pre-recorded in the audio device as a personal guide during the visit [48]. However, such forms of interpretation have negative impacts, for example creating gabs between objects and visitors, not educational, as well as make collection more isolated as they do not have the opportunity to communicate with the visitor. Interactive activities proved they can lead culture and art into visitors lives by bridging the gaps between visitors and museum collections [49]. Therefore, the capacity of the MET became a multi-dimensional educational and research-oriented institution, where the museum curators and visitor can restore the information for collections, publications, and approach to the additional resources about the collections like in a tutorial. In this view, the MET as a cultural institution has been deemed a repository and a producer of knowledge based on preserving collections of physical objects. The MET has evolved into an educational institution that not only organizes and interprets information from its objects but also communicates cultural content. The intangible assets created by the MET—such as data and knowledge—add significant value to its physical collection. Through its libraries, research center, and Archives department, both curators and visitors can deepen their understanding of the collection. Curators engage in art and academic research that extends beyond the museum's existing knowledge base, utilizing resources from the library and archives [50].

4.4. *Data repackaging*

It refers to the process of transforming, reformatting, or representing data to make it more accessible, usable, or valuable for different audiences or purposes. This concept is often applied in various fields, including information management, digital content, and data analytics. The capabilities of collection information exchange and data repackaging were important considerations for the collection digitization at the MET. As the collection information department has considered the ability of data repackaging at the early design phase in the collection digitization system and process [51]. The data repackaging process at the MET involves efficiently collecting and organizing materials in the TMS, analyzing them, and creating updated information packages. These packages are then made available on the website, supporting digital preservation and enriching the museum's intellectual, social, and cultural impact.

5. Conclusion
The Metropolitan Museum of Art showcases a model of excellence in collection management, documentation, and information accessibility.

Its meticulous cataloging processes ensure that artworks and artifacts are thoroughly recorded, offering valuable insights for researchers, scholars, and the public alike. The museum's initiatives to enhance digital access significantly broaden its reach, allowing audiences worldwide to engage with its extensive collections from anywhere. Moreover, the Met's commitment to transparency and educational outreach enriches the visitor experience, making art more approachable and relatable. By integrating advanced technologies and user-friendly platforms, the museum not only preserves cultural heritage but also invites diverse interpretations and discussions around its collections. This strategic focus on accessibility and engagement ultimately strengthens the museum's role as a vital cultural institution in the global art community. *Egyptian museums can significantly benefit from adopting the Metropolitan Museum of Art's approach to collection management, documentation, and accessibility. By implementing robust cataloging systems like those at the Met, Egyptian institutions can enhance the accuracy and comprehensiveness of their collections, making it easier for researchers and the public to find and learn about artifacts. Furthermore, leveraging digital technologies is crucial. Egyptian museums could develop user-friendly online platforms that provide virtual tours, high-resolution images, and detailed descriptions of their collections, thereby reaching a global audience and promoting cultural exchange. Incorporating interactive features, such as augmented reality experiences or educational resources, can further engage visitors and make the historical context of artifacts more relatable. Collaboration with international museums, like the Met, could also foster knowledge exchange and best practices in curatorial techniques and conservation methods. By* prioritizing accessibility and transparency, *Egyptian museums can not only preserve their rich heritage but also enhance public understanding and appreciation of Egyptian art and culture. Ultimately, these strategies can help elevate the profile of Egyptian museums on the global stage, attracting more visitors and enriching cultural dialogue. By forming partnerships with the Met and other leading institutions, Egyptian museums can benefit from shared expertise in curatorial practices, conservation techniques, and educational outreach. Such collaborations could include joint exhibitions, research projects, and professional development programs for staff.*

Endnotes

(a) The CIDOC CRM has been developed in a manner that is intended to promote a shared under-standing of cultural heritage information by providing a common and extensible semantic framework for evidence-based cultural heritage information integration. It is intended to be a common language for domain experts and implementers to formulate requirements for information systems and to serve as a guide for good practice of conceptual modelling. In this way, it can provide the "semantic glue" needed to mediate between different sources of cultural heritage information, such as that published by museums, libraries, and archives.

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