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The role of metadata in information management in virtual museums

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Abstract. Through application of novel technologies, virtual museums try to deliver the data to their users in any form and at any time that this requires information and resource management. Therefore, the use of metadata that is in accordance with novel technologies is necessary in main virtual environments. Each of the metadata has distinct responsibilities and can sometimes cooperate and have complementary roles along with others. Findings indicate that metadata has a determining role in optimal information management in virtual museums.

Keywords: Information Management, Virtual Museums, Metadata.

1. Introduction

Wilson believes information management means efficient management of informational sources both in and out of the organization through proper use of information technology [1]. Having entered the museum, every cultural-historical object is organized with the purpose of assigning its identity, documenting and providing suitable condition for its conservation. A part of museum object's organization is organizing or managing its information which falls into the two categories of public and specialized information management. Since all cultural-historical objects have public and specialized information, it's necessary to record public information of the objects in a public certificate after separating and categorizing them in the first phase and then, in the next phase, to document their specialized information based on their genus-species and category [2].

In museums, the origination of the work is an important piece of information which plays an essential role in determining its name. Both the works origination and the nature of the work itself, along with other information regarding the item should be recorded in the register or card catalog. As a matter of fact, this register acts as a catalog through establishing a systematic limit about museum objects and artifacts. Recognition of items at the time of provision and record is often incomplete and time has provided a pile of information regarding it. Therefore, organization of items in the museums has evolved during time. The description of visual material often proves harder than explaining written works. The description of visual works is mostly based on individuals' interpretation. Therefore, organization should use its own terms to describe such objects [3]. Subject analysis of visual material is very difficult. Image represents its content through words. Furthermore, determination of the distance between subject description and analysis in museums collections is a hard and complicated issue. One of the barriers of cooperative cataloging in museums is that museums preserve unique objects. In addition to their main collection, museums can have sections like archive, record management program and library. Like archival materials, museum collections

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are for employee's use. Therefore, organizing items for both domestic use and for research requirements is an important principle [4].

Museum objects have different characteristics from those of information packages in other environments and this issue influences the description of records of recorded museum objects. Museum objects are unique. Even if the museum object is a part of a two-part unique object, it may have a different source. Furthermore, information about the objects often changes during time and with the appearance of other pieces of evidence. There's also the possibility that the object is fake or the judgment about it has been erroneous. Therefore, the societies possessing museums have not been able to come to an agreement, even within themselves, regarding what is recorded in the description of the objects [3].

Virtual museums are multi-dimensional environments that offer services in phonetic, visual and written forms in the widespread cyberspace services, information and education in widespread cultural-historical fields, in accordance with activities and objectives of the real museums [5].

With the help of novel technologies, virtual museums try to deliver information in any form and at any time to those who search for it. Therefore, in order to organize, recall and spread digital information like traditional environment, the need is felt for indexing, description, conservation and management. This, in a digital environment, is often done with the help of metadata, which, due to its specialized characteristics and because of attempts done to increase their efficiency, is one of the main bases in every digital environment [6]. As a result efficient organization in virtual museums depends on proper management and organization of this metadata.

2. Metadata

2.1. Definition of Metadata

In fact, appearance of new electronic environment and various digital sources and the weakness of information searching tools as well as ever increasing demands of users and network and digital serves, have proved the necessity of patterns, methods, standards and tools for storing, organizing and their fast and precise recalling. Based on this, metadata as an orderly method for identification, description and a better, faster and precise location of digital resources takes this role in virtual museums. The simplest definition of meta-data mentioned in most resources is "data about data" which means data that describe other data [7].

From Gill's point of view, metadata is explained as: metadata refers to a structured description that is stored as computer data and wants to explain fundamental characteristics of other data and computer asyndetic data [8].

We can consider metadata as data that describe the content, form or characteristics of a data record of an information source and can be used in description of totally structured resources or unstructured information such as written documents. Metadata can be used in digital resource, numerical data (including numerical images) and printed documents such as books, magazines and reports. Metadata can be placed in information source (like web sources) or can be kept separately in an information base [9].

Regarding what mentioned above, it becomes clear that metadata is a catalog- like and structured information about digital resources that is used for identification, description, cataloging and organization, exchange and precise, fast recalling of these resources based on international standards like MARC, Doblin Core and etc. in digital resources. Metadata can be used in description of totally structured resources, or unstructured information such as written documents. Also, it can be used to describe digital resources, numerical data (including numerical images) and printed document. Metadata cab be put inside an information source like (web sources) or be kept separately in an information base.

2.2. The Necessity of Using Metadata

All those who are involved in digital information management, mention metadata as a necessary tool for a developing information environment [10]. In fact, metadata is a systematic method that makes informational resources accessible and understandable for users [11].

Hinz in his books mentions the importance of metadata as follows: metadata improves recalling, that is, metadata can improve recalling through creation of grounds for specific descriptors. For example, the word

“Green” in author field or complier field shows the name of a person while “Green” in the title of a document, may be term for subject recalling. In fact, metadata tags around various data elements make it possible for the data to be searched in a more identifiable direction.

Metadata provides a way to manage digital resources. For example, content management systems use metadata to track. When a digital source is checked or updated for the last time, these systems are responsible to create it or to make its accessing conditions. It is the metadata relationship with digital resources that puts forth a common form for resource management and use.

Metadata can help with decision-making about data validity. Metadata offers an examining suffix to determine ownership and validity for a numerical digital source such as a digital image or document. A history of what has happened to a document or record during its lifetime is an important part of it. Metadata provides evidence and proof for the origin of the source.

2.3. The Uses of Metadata

The basis of metadata use is in facilitating the process of search, identification, choice, assessment and documentation of network resources that bring about faster and preciser recalling.

Lukas mentions 3 main functions for metadata:

1. In collection, it provides the capability to separately identify each informational entry/item.
2. It provides multi-mode methods to access and find each informational entry.
3. It places the existing information in each informational entries, information and knowledge [12].

Other uses of metadata are as follows:

- Organizing informational resources,
- Organizing resource ling through addressee, subject, …
- Using metadata designs, exchange protocols and sharing network resources,
- Classifying metadata results,
- Content analysis and indexing,
- Facilitating data analysis path,
- Preserving and conserving digital data,
- Tracking information resource record,
- Determining access level,
- Determining legal conditions regarding data use,
- Recognizing data structures,
- Data interaction capability,
- Assessment of informational resources,
- Finding resources through related subject,
- Placing similar resources side by side,
- Identifying and distinguishing dissimilar resources,
- Suggesting information location,
- Suggesting information that affects data users like legal conditions/ size/ etc,
- Suggesting data history like main source and every other subsequent change,
- Suggesting information about owner or creator of the source (to establish link)link e-mail address,
- Showing relationships with other sources such as links to previous and subsequent copies of the source,
- Helping to decide about what form and frame of the data should be recalled,
- Providing indexing possibility of large amount of different network information without need to network band width,
- Facilitating efficient search and recall of information sources and rendering complex and complete information search possible to designed elements for precise content analysis of the data,
- Organizing informational recourses present in the network,
- Describing informational bases, digital images, phonetic files and other non–written resources in the network,

- Content analyzing and indexing and organizing various informational sources in the network,
- The possibility of adapting, sharing and integrating and integrating dissimilar informational sources in the network,
- Providing the possibility to reuse various informational sources distributed in network environment through documenting information content,
- More precise management of large amount of information in network and digital libraries,
- Describing informational sources, like text, images, phonetic files and the like,
- Providing the possibility to access precise and related data by users [12].

2.4. Use of Metadata in Informational Source Management

Through expressing museum objects characteristic, metadata describes them in a systematic way:

Asadi (2002) regarding metadata importance for organizing informational resources in an article entitled "metadata understanding and its standards" deems it necessary to create new patterns and standards to store, organize and precisely recall digital resources while referring to metadata as a response to this new need. He introduces Doblin Core, METS and MODZ metadata designs that were introduced in this paper, as the most frequently used metadata designs in booting and organizing digital resources [13].

2.5. Metadata Use in Virtual Museums

Nowadays, metadata has found an important role in organizing digital resources and due to formation of metadata patterns, the need to use online public access catalog as a gateway to access these metadata collections in virtual museums seems necessary. Metadata conversion patterns enable virtual museums to extract metadata out of the access catalog in network environment and to convert it to frames like MARC as well as integrating it with informational base collections in these museums.

As a whole, of metadata uses in virtual museums, we can name:

- Facilitating search and recall of informational sources,
- Organizing information sources,
- Describing informational based, digital images, phonetic files other non-written resources,
- Analyzing content and indexing and organizing various information resources,
- Adapting, sharing and integrating dissimilar information resources,
- Observing data management,
- Delineating link with other resources (like links to previous copies),
- Helping to decide which form and frame of data should be recalled (in case several frames exist).

Regarding the above mentioned about metadata uses and the necessity to use if, it can be said that metadata is a reliable and precise tool to store, organize and fast recall of informational resources related to users' need in virtual museums [7].

2.6. Conclusion

The vital role of museums in human communities is an important-everlasting role which expands the rarest cultural phenomena. Museums are among the few centres to preserve the heritage of previous generation and are in fact the children of art and history. In today's scientific world, preserving material and spiritual heritage and the method of exhibition and classifying works in museums is of utmost important. Information management in virtual museums and creation of easy/fast access possibility to this information causes the importance of using metadata to become clearer. This study shows that metadata is of substantial basis of virtual museums to efficiently manage information.

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