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Australian STANDARD

Information and documentation – A reference ontology for the interchange of cultural heritage information

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Australian Computer Society
Australian Library and Information Association
Charles Darwin University
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Education and Communities (NSW)
Institute for Metadata Management
Northern Territory Library
Tertiary Library Networks
University of Southern Queensland
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Information and documentation — A reference ontology for the interchange of cultural heritage information

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Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee IT-019, Information and Documentation, Information Technology—Learning, Education, Training and Research.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to establish guidelines for the exchange of information between cultural heritage institutions. In simple terms, this can be defined as the information managed by museums, libraries, and archives.

This Standard is identical with, and has been reproduced from, ISO 21127:2014, *Information and documentation — A reference ontology for the interchange of cultural heritage information*.

As this document has been reproduced from an International Standard, the following applies:

(a) In the source text 'this International Standard' should read 'this Australian Standard'.

(b) A full point substitutes for a coma when referring to a decimal marker.

The terms 'normative' and 'informative' are used in Standards to define the application of the appendices or annexes to which they apply. A 'normative' appendix or annex is an integral part of a Standard, whereas an 'informative' appendix or annex is only for information and guidance.

Contents

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 46, *Information and documentation*, Subcommittee SC 4, *Technical interoperability*, in collaboration with the International Council of Museums Committee for Documentation (ICOM CIDOC).

This second edition cancels and replaces the first edition (ISO 21127:2006), which has been technically revised.

Introduction

This International Standard is the culmination of more than a decade of standards development work by the International Committee for Documentation (CIDOC) of the International Council of Museums (ICOM). Work on this International Standard began in 1996 under the auspices of the ICOM-CIDOC Documentation Standards Working Group. The document[1)] provided by CIDOC formed the basis for ISO 21127 which was first published in 2006. While the initial impetus for the work came from the museum community, it has since spread to encompass other types of cultural heritage institution. This International Standard has been appropriated and extended to meet the needs of other institutions dealing with cultural heritage.

The primary purpose of this International Standard is to offer a conceptual basis for the mediation of information between cultural heritage organizations such as museums, libraries, and archives. This International Standard aims to provide a common reference point against which divergent and incompatible sources of information can be compared and, ultimately, harmonized.

ISO 21127 is an ontology[2)][1] for cultural heritage information: a formal representation of the conceptual scheme, or "world view", underlying the database applications and documentation systems that are used by cultural heritage institutions. It is important to note that this International Standard aims to clarify the logic of what cultural heritage institutions do in fact document; it is not intended as a normative specification of what they *should* document. The primary role of this International Standard is to enable information exchange and integration between heterogeneous sources of cultural heritage information. It aims to provide the semantic definitions and clarifications needed to transform disparate, localized information sources into a coherent global resource, be it within an institution, an intranet, or on the Internet.

The specific aims of this International Standard are to:

— serve as a common language for domain experts and IT developers when formulating requirements,

— serve as a formal language for the identification of common information contents in different data formats; in particular to support the implementation of automatic data transformation algorithms from local to global data structures without loss of meaning. These transformation algorithms are useful for data exchange, data migration from legacy systems, data information integration, and mediation of heterogeneous sources,

— support associative queries against integrated resources by providing a global model of the basic classes and their associations to formulate such queries, and

— provide developers of information systems with a guide to good practice in conceptual modelling.

The ISO 21127 ontology is expressed as a series of interrelated concepts with definitions. This presentation is similar to that used for a thesaurus. However, the ontology is not intended as a terminology standard and does not set out to define the terms that are typically used as data in cultural heritage documentation. Although the presentation provided here is complete, it is an intentionally compact and concise presentation of the ontology's 86 classes and 137 unique properties. It does not attempt to articulate the inheritance of properties by subclasses throughout the class hierarchy (this would require the declaration of several thousand properties, as opposed to 137). However, this definition does contain all the information needed to infer and automatically generate a full declaration of all properties, including inherited properties.

1) The CIDOC CRM Special Interest Group continues to maintain a version of this original document, usually known as the "CIDOC Conceptual Reference Model" or CIDOC CRM.

2) In the sense used in computer science, i.e. it describes in a formal language the relevant explicit and implicit concepts and the relationships between them.

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1 Scope

This International Standard establishes guidelines for the exchange of information between cultural heritage institutions. In simple terms, this can be defined as the information managed by museums, libraries, and archives.

A more detailed definition can be articulated by defining both the intended scope, a broad and maximally inclusive definition of general principles, and the practical scope, which is defined by reference to a set of specific museum documentation standards and practices.

The intended scope of this International Standard is defined as the exchange and integration of heterogeneous scientific documentation relating to museum collections. This definition requires further elaboration.

— The term "scientific documentation" is intended to convey the requirement that the depth and quality of descriptive information that can be handled by this International Standard need to be sufficient for serious academic research. This does not mean that information intended for presentation to members of the general public is excluded, but rather that this International Standard is intended to provide the level of detail and precision expected and required by museum professionals and researchers in the field.

— The term "museum collections" is intended to cover all types of material collected and displayed by museums and related institutions, as defined by ICOM[3]. This includes collections, sites, and monuments relating to fields such as social history, ethnography, archaeology, fine and applied arts, natural history, history of sciences and technology.

— The documentation of collections includes the detailed description of individual items within collections, groups of items, and collections as a whole. This International Standard is specifically intended to cover contextual information (i.e. the historical, geographical, and theoretical background that gives museum collections much of their cultural significance and value).

— The exchange of relevant information with libraries and archives, and harmonization with their models, falls within the intended scope of this International Standard.

— Information required solely for the administration and management of cultural institutions, such as information relating to personnel, accounting, and visitor statistics, falls outside the intended scope of this International Standard.

The practical scope[4] of this International Standard is the set of reference standards for museum documentation that have been used to guide and validate its development. This International Standard covers the same domain of discourse as the union of these reference documents; consequently, for any data that is correctly encoded in accordance with any of these reference documents, a form of encoding can be created that is both compatible with the current standard and which entails no semantic loss.

2 Conformance

Users intending to take advantage of the semantic interoperability offered by this International Standard should ensure conformance with the relevant data structures. Conformance pertains either to data to be made accessible in an integrated environment or intended for transport to other

3) The ICOM Statutes provide a definition of the term "museum" at <http://icom.museum/statutes.html#2>.

4) The practical scope of the CIDOC CRM, including a list of the relevant museum documentation standards, is discussed in more detail on the CIDOC CRM website at < http://cidoc-crm.org/scope.html >.