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Australian Standard™

Information technology—Metadata registries (MDR)

Part 2: Classification for data elements

This Australian Standard was prepared by Committee IT-027, Data Management and Interchange. It was approved on behalf of the Council of Standards Australia on 21 April 2005. This Standard was published on 27 May 2005.

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PREFACE

This Standard was prepared by the Standards Australia Committee IT-027, Data Management and Interchange.

This Standard is identical with, and has been reproduced from, ISO/IEC 11179-2:2000, *Information technology—Specification and standardization of data elements*—Part 2: *Classification for data elements*.

The objective of this Standard is to provide procedures and techniques for associating data with classification schemes, to facilitate electronic data interchange and data sharing for use by electronic commerce and database designers.

This Standard is Part 2 of AS 11179, *Information technology—Metadata registries (MDR)*, which is published in parts as follows:

Part 1: Framework
Part 2: Classification for data elements (this Standard)
Part 3: Registry metamodel and basic attributes
Part 4: Formulation of data definitions
Part 5: Naming and identification principles for data elements
Part 6: Registration

As this Standard is reproduced from an international standard, the following applies:

(a) Its number appears on the cover and title page while the international standard number appears only on the cover.

(b) In the source text ‘this part of ISO/IEC 11179’ should read ‘this Australian Standard’.

(c) A full point substitutes for a comma when referring to a decimal marker.

INTRODUCTION

This part of ISO/IEC 11179 provides the basis for documenting, through a specific set of attributes, the classification aspects of data elements. There are many efforts underway to devise classification schemes and to use the schemes to build and populate classification structures. For the purpose of this part of ISO/IEC 11179, the following are all considered types of classification schemes of varying discriminatory power: key words, thesauri, taxonomies, and ontologies. These classification schemes have potentially great utility when associated with various aspects of data elements.

There are several purposes for applying classification to data elements. Classification assists users to find a single data element from among many data elements, facilitates data administration analysis of data elements and, through inheritance, conveys semantic content that is often only incompletely specified by other attributes, such as names and definitions.

The classification schemes accommodated in this Part have utility for

— deriving and formulating abstract and application data elements

— ensuring appropriate attribute and attribute-value inheritance

— deriving names from a controlled vocabulary

— disambiguating

— recognizing superordinate, coordinate, and subordinate data element concepts

— recognizing relationships among data element concepts and data elements

— assisting in the development of modularly designed names and definitions.

Each type of classification scheme mentioned above has particular strengths and weaknesses, and provides the foundation upon which particular capabilities can be built. Keywords, for example, are a quick way to provide users some assistance in locating potentially useful data elements. A thesaurus provides a more structured approach, arranging descriptive terms in a structure of broader, narrower, and related classification categories. A taxonomy provides a classification structure that adds the power of inheritance of meaning from generalized taxa to specialized taxa. Ontologies, with associated epistemologies, can provide rich, rigorously defined structures (e.g., directed acyclic graphs with multiple inheritance) that can convey information needed by software components, such as intelligent agents and mediators, which are useful in the provision of intelligent information services.

The term *data element* refers to *data element type;* the shorter term is used for convenience.

NOTES

AUSTRALIAN STANDARD

Information technology—Metadata registries (MDR)

Part 2:
Classification for data elements

1 Scope

This part of ISO/IEC 11179 provides procedures and techniques for associating data with classification schemes. Several components of data elements invite classification—components covered by ISO/IEC 11179—include object classes, properties, representations, value domains, and data element concepts, as well as data elements themselves. The procedures and techniques specified in ISO/IEC 11179-2 will enable Registration Authorities to apply classification schemes that better enable one to

— analyze object classes, data element concepts, and data elements

— make comparisons within the following categories: object classes, properties, representations, data element concepts, and data elements

— reduce the variety of data element concepts and data elements

— identify, describe, and define data element concepts and data elements unambiguously

— assist in the analysis of data elements for the purpose of assigning registration status

— address synonym and homonym problems

— retrieve data element concepts and data elements from a data register

— recognize relationships among data element concepts and data elements

— support the unique and unambiguous identification and referencing of object classes, data element concepts, and data elements in a manner that is linguistically neutral and information technology enabled.

The preparation of ISO/IEC 11179 has also been prompted by the need for standardized data design procedures that will ensure the emergence of data elements capable of supporting electronic data interchange.

This part of ISO/IEC 11179 develops a set of principles, methods, and procedures for specifying what is needed (at a minimum) to document the association between the various components of a data element and one or more classification schemes. This includes the names, nonintelligent identifiers, definitions, and other aspects of the classification scheme and its contents. These can be captured through use of a set of attributes. Particular attributes are specified in this part of ISO/IEC 11179, along with a structure for the contents of these attributes. Users may extend the set of attributes as necessary. Additional information may accompany a taxonomy or ontology; for example, to provide a suggested set of qualifiers that could be applied to the object class, property, or representation taxa to more fully qualify the classification of the particular data element. This part of ISO/IEC 11179 builds upon and utilizes the basic attributes specified in ISO/IEC 11179-3 of ISO/IEC 11179.

An example included in 3.4 shows how selected components of data elements can be associated with a classification scheme through the attributes specified herein. Use of one or more classification schemes is