# INTERNATIONAL STANDARD

**ISO/IEC 11179-4**

Second edition
2004-07-15

# Information technology — Metadata registries (MDR) —

## Part 4:
## Formulation of data definitions

*Technologies de l'information — Registres de métadonnées (RM) —*

*Partie 4: Formulation des définitions de données*

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# Contents

# Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 11179-4 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

This second edition cancels and replaces the first edition (ISO/IEC 11179-4:1995), which has been technically revised.

ISO/IEC 11179 consists of the following parts, under the general title *Information technology — Metadata registries (MDR)*:

— *Part 1: Framework*

— *Part 3: Registry metamodel and basic attributes*

— *Part 4: Formulation of data definitions*

— *Part 5: Naming and identification principles*

— *Part 6: Registration*

The following part is under preparation:

— *Part 2: Classification*

# Introduction

Data processing and electronic data interchange rely heavily on accurate, reliable, controllable and verifiable data recorded in databases. A prerequisite for correct and proper use and interpretation of data is that both users and owners of data have a common understanding of the meaning and representation of the data. To facilitate this common understanding, a number of characteristics, or attributes of the data have to be defined. These characteristics of data are known as "metadata", that is, "data that describes data". This part of ISO/IEC 11179 specifies requirements and recommendations on the formulation of data definitions that are specified in Metadata Registries. The purpose of these definitions is to specify, describe, explain, and clarify the meaning of data, to promote the standardization or reuse of data elements, and to promote data sharing and integration of information systems.

The structure of a *Metadata Registry* is specified in the form of a conceptual data model. The *Metadata Registry* is used to keep information about data elements and associated concepts, such as "data element concepts", "conceptual domains", and "value domains". Generically, these are all referred to as "metadata items". Such metadata are necessary to clearly describe, record, analyse, classify, and administer data.

The definitional requirements and recommendations specified in this part of ISO/IEC 11179 do not always apply to terminological definitions found in glossaries and language dictionaries. Differences exist between the requirements that apply in a language dictionary, and the requirements that apply in a metadata registry. The requirements for ISO/IEC 11179 are more restrictive than those for a natural language dictionary. For example, a language dictionary may have multiple definitions covering multiple senses of a term or word, whereas data definitions are developed for particular contexts and should not have multiple senses within any context. Data definitions are intended to explicate the concept or concepts, which are represented by a collection of data, a data value, a data element, or other metadata item. A single definition may be established as the reference definition, with other definitions asserted to be equivalent (e.g., a definition in one language may be established as a reference definition, with definitions in other languages asserted to be equivalent). Metadata items may have a single preferred definition within a particular context, with other deprecated definitions.

Many data definitions include terms that themselves need to be defined (e.g., "charge", "allowance", "delivery"). Some of these terms may have different definitions in different industrial sectors. Therefore, there is a need for most metadata registries to establish an associated *glossary or terminology reference* of terms used in the definitions.

# Information technology — Metadata registries (MDR) —

## Part 4:
## Formulation of data definitions

## 1   Scope

This part of ISO/IEC 11179 specifies requirements and recommendations for constructing definitions for data and metadata. Only semantic aspects of definitions are addressed; specifications for formatting the definitions are deemed unnecessary for the purposes of ISO/IEC 11179. While especially applicable to the content of metadata registries as specified in ISO/IEC 11179-3, this part of ISO/IEC 11179 is useful broadly for developing definitions for data and metadata.

These definitional requirements and recommendations pertain to formulating definitions for data elements and other types of data constructs such as entity types, entities, relationships, attributes, object types (or classes), objects, composites, code entries, metadata items, and the data referred to by XML tags.

## 2   Conformance

This part of ISO/IEC 11179 may be used independently, e.g., for defining data elements outside the context of a metadata registry. In such cases, compliance may be claimed if the requirements and recommendations have been followed in developing the definitions.

Where used in the context of an ISO/IEC 11179 metadata registry, this part of ISO/IEC 11179 shall constitute the criteria for definitions when establishing the registration status as specified in ISO/IEC 11179-6.