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Information technology — Procedures for achieving metadata registry content consistency

Part 5: Metadata mapping procedure

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National foreword

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Part 5: Metadata mapping procedure

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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.

In exceptional circumstances, when the joint technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide to publish a Technical Report. A Technical Report is entirely informative in nature and shall be subject to review every five years in the same manner as an International Standard.

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 TR 20943-5 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

ISO/IEC TR 20943 consists of the following parts, under the general title *Information technology — Procedures for achieving metadata registry content consistency*:

— *Part 1: Data elements*

— *Part 3: Value domains*

— *Part 5: Metadata mapping procedure*

— *Part 6: Framework for generating ontologies*

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Introduction

Metadata differs in many ways, yet for the purposes of data and semantic interoperability, those differences must be bridged or harmonized. For example, synonyms may cause discrepancies. If two data elements mean the same thing but have different names, that difference may cause data under each to be flagged as incompatible when they aren't.

Usually, two systems do not share the same model, and that is because the categories represented in the models were not factored in the same way. This situation inhibits interoperability. There may be two or more metadata element sets applicable to an information object. For example, metadata schemas, such as DC (Dublin Core),[10] MARC (MAchine Readable Cataloguing),[11] and MODS (Metadata Object Description Schema)[12] can be used to describe books. So, the result might be significantly different data elements in different schemas, even though the schemas describe the same objects.

ISO/IEC 11179 provides a framework for achieving interoperability of metadata between systems. A metadata registry based on ISO/IEC 11179 offers a good way to secure interoperability among databases. However, there are many metadata sets which are not following ISO/IEC 11179. In order to mediate among plural data elements already developed or used, other measures are necessary. In general, interoperability may be achieved through conformity to some set of provisions. For example, metadata crosswalk is the most commonly used way to map a data element to another data element. However, the metadata crosswalk is meaningful only for exact matching; it provides a simple one-to-one mapping table between data elements without any explanation about the relationship. Therefore, the metadata crosswalk needs to be elaborated in order to cover cases other than exact matching.

Some other approaches have been tried to provide guidelines or a model for harmonization of metadata and data in especially the transport industry. A Model for Semantic Equivalence Discovery for Harmonizing Master Data,[9] presented at OTM 2009 Workshops, suggests a model for semantic mapping of master data. ISO/TR 25100[8] reviews four harmonization processes applicable to an ITS/TICS central data registry and ITS/TICS data dictionaries and recommends practical guidelines. Both literatures are examples restricted within the transport industry but including a rationale for the need of metadata mapping in general.

This part of ISO/IEC TR 20943 describes a metadata mapping procedure (MMP), which can maximize the interoperability among metadata.

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