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Information and documentation — RFID in libraries —

Part 1: Data elements and general guidelines for implementation

Information et documentation — RFID dans les bibliothèques

Partie 1: Éléments de données et lignes directrices générales pour la mise en œuvre

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Contents

Page

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.

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

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member 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 shall not be held responsible for identifying any or all such patent rights.

ISO 28560-1 was prepared by Technical Committee ISO/TC 46, *Information and documentation*, Subcommittee SC 4, *Technical interoperability*.

ISO 28560 consists of the following parts, under the general title *Information and documentation — RFID in libraries*:

— *Part 1: Data elements and general guidelines for implementation*

— *Part 2: Encoding of RFID data elements based on rules from ISO/IEC 15962*

— *Part 3: Fixed length encoding*

Introduction

Libraries are implementing RFID (radio frequency identification) as item identification to replace bar codes. RFID streamlines applications like user self-service, security, and materials handling. A standard data model for encoding information on RFID tags could increase the cost-effectiveness of the technology within libraries particularly through greater interoperability of RFID tags and equipment, and enhance support for resource sharing between libraries.

Tags that are currently used in libraries will use proprietary rules adopted by vendors or follow the rules of historic national RFID models. In general, there will be no interoperability between tags with a data model compliant with ISO 28560 and tags that carry a non-ISO 28560-compliant data model.

Several countries have undertaken preliminary work on standardization. The Netherlands developed a data model for public libraries and in Denmark “RFID Data Model for Libraries” has been published. Finland has adopted the Danish model, but with a few changes. There is a French data model that differs from the Danish and Dutch models. Other libraries in different parts of the world have installations based on various proprietary systems offered by technology and library system suppliers. All of these constitute the installed base of RFID systems, but only account for a small minority of the total of libraries globally.

There is an opportunity to develop a standard data model, taking into account the lessons learned from the national schemes and vendor solutions, and provide migration options for those libraries that have already invested in the technology. Because new items are continually being purchased, a number of migration options can be adopted based on factors relevant to each library.

This part of ISO 28560 deals with data elements and provides general guidelines for implementation. Other parts of ISO 28560 describe encodings and choice of frequency.

Communication between the RFID reader and the library system (or other applications) is handled by, for example, SIP-2 and NCIP (see Bibliography).

ISO 28560 provides essential standards-based information about RFID in libraries. Ongoing advice needs to be provided because of the evolving nature of RFID technology, and the opportunities to migrate between different types of legacy system and encoding rules of ISO 28560.

Information and documentation — RFID in libraries —

Part 1:
Data elements and general guidelines for implementation

1 Scope

This part of ISO 28560 specifies a model for the use of radio frequency identification (RFID) tags for items appropriate for the needs of all types of libraries, including academic, public, corporate, special and school.

This part of ISO 28560 provides the framework to ensure interoperability between libraries that exchange library items with RFID tags, the freedom of the library to acquire or renew equipment or library items from different vendors and interoperability of a single RFID application from the vendor's perspective.

This part of ISO 28560 specifies a set of data elements and general guidelines for implementation, to meet the needs for:

— circulation of library items;

— acquisition of library items;

— interlibrary loan processes;

— data requirements of publishers, printers and other suppliers of library items;

— inventory and stock checking of items.

This part of ISO 28560 gives guidelines for item security, profiles, privacy, implementation, migration, label design and location of the RFID label.

This part of ISO 28560 specifies the data model, system data elements and user data elements to be used in conjunction with ISO 28560-2, ISO 28560-3 and any future parts of ISO 28560.

A source of additional information about implementation issues is provided in Annex A.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 15961-3, *Information technology — Radio frequency identification (RFID) for item management: Data protocol — Part 3: RFID data constructs*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
distributor
wholesaler that purchases products from manufacturers and sells them to retailers or other wholesalers

NOTE In the context of ISO 28560, a distributor is a wholesaler that purchases library materials such as books or audiovisual materials from publishers and sells them to libraries or retailers.

3.2
interlibrary loan
ILL
service where a library borrows an item from another library

3.3
item
unit tracked in a library system

NOTE An item, which can be a set (3.7), can be loanable or non-circulating, but is always loaned in its entirety.

3.4
jobber
specialized distributor of library items that provides services such as the attachment of labelling and electronic information to items to make them ready for immediate shelving upon arrival at the destination library

3.5
library management system
enterprise resource planning system for a library, used to track items owned, items loaned, orders made, bills paid, and patrons

NOTE In some countries, this is known as an integrated library system.

3.6
part
individual physical entity included in an item

3.7
set
item consisting of a number of parts, all identified by the same item identifier and loaned in one transaction as a unit

3.8
supply chain
series of entities, typically beginning with a publisher and ending with a library, through which library materials flow as they are acquired by that library

4 User data elements

4.1 Overview of user data elements

Libraries may choose which data elements they want to store on the tag. It is unlikely that a library will place all the listed data elements on the tag. A number of data elements are reserved for local use. They should be ignored where the processing institution is not the owner of the item (as in ILL).

Table 1 lists the user data elements that are defined in ISO 28560.

Table 1 — User data elements

N[a]	Name of the data element[b]	Description[c]	Ref [d]	ISO 8459 mapping[e]	Status[f]	Relationship[g]
1	Primary item identifier	Unique identification of an item at least inside the library	4.2.1	Piece identifier	Mandatory for circulated items	None
2	Content parameter	Specifies the structure of the tag data	4.2.2	None	May be mandatory as specified in other parts of ISO 28560	None
3	Owner institution (ISIL)	The ISIL code for the institution that owns the item	4.2.3	Party identifier; Participant's function	Strongly recommended to create interoperability	Elements 3 and 23 are mutually exclusive
4	Set information	Number of parts in item and ordinal part number	4.2.4	Number of volumes; Component	Optional	None
5	Type of usage	Additional qualifying information about the item	4.2.5	None	Optional	None
6	Shelf location	Code for location of the item	4.2.6	Copy shelf locator	Optional	None
7	ONIX media format	ONIX media descriptor	4.2.7	Record content type	Optional	Data elements 7, 8 and 19 should be consistent
8	MARC media format	MARC 21 category of material descriptor	4.2.8	Record content type	Optional	Data elements 7, 8 and 19 should be consistent
9	Supplier identifier	Code for identification of supplier of the item	4.2.9	Party identifier; Participant's function	Optional	None
10	Order number	Number meaningful to the library and to the supplier of the item	4.2.10	Request identifier	Optional	None
11	ILL borrowing institution (ISIL)	ISIL code for the institution borrowing the item	4.2.11	Party identifier; Participant's function	Optional	Data elements 11 and 25 are mutually exclusive
12	ILL borrowing transaction number	Number identifying an interlibrary loan transaction	4.2.12	None	Optional	None
13	GS1 product identifier	GTIN-13 code of GS1	4.2.13	Resource identifier code	Optional	Data elements 13 and 18 should be consistent
14	Alternative unique item identifier	Possibly encoding in new tag architectures	4.2.14	None	Reserved for future use	
15	Local data A	Any locally defined purpose	4.2.15	None	Optional	None
16	Local data B	Any locally defined purpose	4.2.16	None	Optional	None
17	Title	The title/titles of the library item	4.2.17	Title	Optional	None

Table 1 (*continued*)

N[a]	Name of the data element[b]	Description[c]	Ref [d]	ISO 8459 mapping[e]	Status[f]	Relationship[g]
18	Product identifier local	Product identifier not based on GTIN-13	4.2.18	Resource identifier code	Optional	Data elements 13 and 18 should be consistent
19	Media format (other)	Media descriptor other than ONIX or MARC	4.2.19	Record content type	Optional	Data elements 7, 8 and 19 should be consistent
20	Supply chain stage	The stage of the supply chain in which the item currently resides	4.2.20	None	Optional	None
21	Supplier invoice number	Invoice number meaningful to the library and to the supplier of the item	4.2.21	Invoice identifier	Optional	None
22	Alternative item identifier	Optional identifier for an item	4.2.22	Piece identifier	Optional	None
23	Alternative owner institution	Code for the library institution other than ISIL	4.2.23	Party identifier; Participant's function	Optional	Data elements 3 and 23 are mutually exclusive
24	Subsidiary of an owner institution	Internal code defined within a library institution	4.2.24	Party identifier; Participant's function	Optional	None
25	Alternative ILL borrowing institution	Code for the ILL borrowing institution other than ISIL	4.2.25	Party identifier; Participant's function	Optional	Data elements 11 and 25 are mutually exclusive
26	Local data C	Any locally defined purpose	4.2.26	None	Optional	None
27	Not defined		4.2.27		Reserved for future use	
28	Not defined		4.2.28		Reserved for future use	
29	Not defined		4.2.29		Reserved for future use	
30	Not defined		4.2.30		Reserved for future use	
31	Not defined		4.2.31		Reserved for future use	

[a] This column specifies the data element number (*N*), i.e. the number identifying the data element.

[b] This column specifies the data element name (name of data element), i.e. the name identifying the data element.

[c] This column specifies the data element description, i.e. a brief description about the purpose of the data element.

[d] This column contains a reference to the clause where the data element is described.

[e] This column contains the mapping to the corresponding data elements in ISO 8459. The mapping is for information.

[f] This column classifies the data elements into categories (status).

[g] This column specifies possible relationships to other data elements (relationship).

4.2 Use of user data elements

4.2.1 Primary item identifier

The library's unique identification of an item shall be used as the primary item identifier. This data element is required for circulation. It may be absent in the acquisition process.

The primary item identifier can be, but need not be equivalent to the (former) bar code. It may be decided at a local or national level if the identifier should be unique outside the library and how this is to be achieved.

Annex B illustrates how the primary item identifier can be combined with other data to achieve increasing levels of uniqueness, ultimately global uniqueness.

4.2.2 Content parameter

The content parameter data element specifies the structure of the tag data. The parameter can have different forms for the various possible encoding methodologies specified in other parts of ISO 28560.

4.2.3 Owner institution (ISIL)

The owner institution (ISIL) data element is used for the ISIL code for the institution that owns the item.

The ISIL code shall be as defined in ISO 15511.

The list of ISIL agencies that are responsible for the issuing process of ISIL codes can be found at http://biblstandard.dk/isil/.

In exceptional cases, the ISIL code, or parts of the ISIL code, may be stored in data element 23 (alternative owner institution).

4.2.4 Set information

4.2.4.1 General

If the set information data element is encoded, it shall consist of two components:

a) “number of parts in item”, followed by

b) “ordinal part number”,

as specified in 4.2.4.2 and 4.2.4.3. These two component parameters are used to identify various permutations relating to sets.

A single part item is the default case. A system reading a tag that does not contain the set information data element may assume that the item has only a single part.

4.2.4.2 Numbers of parts in item

For sets with only a single part, the “numbers of parts in item” component shall take the value “1”.

For sets with more than a single part, the “numbers of parts in item” component shall take a value in the range 0 to 255, where a positive number indicates the total number of parts in the set, and 0 that the total number is not known.

4.2.4.3 Ordinal part number

For sets with only a single part, the “ordinal part number” component shall take the value “1”.

For sets with more than a single part, the “ordinal part number” component shall take a value in the range 0 to 255, under one of these two conditions.

— If all parts in the set carry an RFID tag, a positive ordinal part number corresponding to the placement of the part in the set shall be assigned to each part.

— If only some of the parts in the set carry an RFID tag, the first part shall be assigned the ordinal part number 0, and the following parts an ordinal part number corresponding to the placement of the part in the set. As a consequence, no part shall be assigned the ordinal part number 1.

4.2.4.4 Examples

EXAMPLE 1 A set with three parts, all with their own RFID tags:

Number of this part = 1 (first RFID tag): code = 31

Number of this part = 2 (second RFID tag): code = 32

Number of this part = 3 (third RFID tag): code = 33

EXAMPLE 2 A set consisting of a single part with one RFID tag:

Number of this part = 1: code = 11 (if present)

EXAMPLE 3 A set consists of 12 parts, and this is the fourth part:

Number of this part = 4 (fourth RFID tag): code = 1204

EXAMPLE 4 A set having four parts but one part does not carry an RFID tag:

Number of this part = 1 (first RFID tag): code = 40

Number of this part = 2 (second RFID tag): code = 42

Number of this part = 3 (third RFID tag): code = 43

Number of this part = 4 (no RFID tag)

NOTE 1 The “0” of the first part serves two functions:

a) it indicates that not all parts have an RFID tag, and

b) it indicates that this is the first part.

EXAMPLE 5 A set having an unknown number of parts or increasing in number of parts over time.

Number of this part = 1 (first RFID tag): code = 01

Number of this part = 2 (second RFID tag): code = 02

Number of this part = 3 (third RFID tag): code = 03

Number of this part = 4 (fourth RFID tag): code = 04

NOTE 2 The initial “0” indicates that the number of parts is not fixed.