INTERNATIONAL STANDARD

**ISO
8459-3**

Information and documentation — Bibliographic data element directory —

Part 3:
Information retrieval applications

Information et documentation — Répertoire des éléments de données bibliographiques —

Partie 3: Applications à la recherche documentaire

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.

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.

International Standard ISO 8459-3 was prepared by Technical Committee ISO/TC 46, *Information and documentation*, Subcommittee SC 4, *Computer applications in information and documentation*.

ISO 8459 consists of the following parts, under the general title *Information and documentation — Bibliographic data element directory*:

— *Part 1: Interloan applications*

— *Part 2: Acquisitions applications*

— *Part 3: Information retrieval applications*

Annex A forms an integral part of this part of ISO 8459. Annexes B and C are for information only.

Introduction

Data are interchanged for the purpose of starting or supporting a process. In order to transmit information required to support a process, the various elements of data in the interchanged messages must be fully under-standable to the processes concerned. This part of ISO 8459 describes, in the form of a directory, data elements used to support information re-trieval processes or applications.

The data elements that may occur in an information retrieval transaction are presented in four ways:

a) A data element directory (see clause 4) with annexes containing code values and description for messages (see A.1) and date time qualifier (see A.2);

b) An index (see clause 5) giving reference numbers and names for data elements and data element values including names assigned to date/time qualifiers and messages;

c) A structured order of data elements (see clause 6) which relates similar data elements in a hierarchical fashion;

d) A matrix (see clause 7) showing the data elements pertaining to spe-cific information retrieval messages.

ISO 8459 will, when complete, comprise a comprehensive data element directory for bibliographic use. This part of ISO 8459 is primarily intended for new documentation and information retrieval systems.

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Information and documentation — Bibliographic data element directory —

Part 3:
Information retrieval applications

1 Scope

This part of ISO 8459 specifies and describes data elements required in the interchange of data between information retrieval systems (i.e. terminal-to-computer or computer-to-computer). It also identifies messages and their data elements which are used in information retrieval transactions.

It is intended to support both batch and interactive information retrieval transactions. Annex B provides examples of how this part of ISO 8459 may be used.

The structuring of the data elements in support of information retrieval applications falls outside the scope of this part of ISO 8459. For sample structuring of these data elements, see ISO 8777 (commands for interactive searching), ISO 10162 (search and retrieve application service definition for open systems interconnection) and ISO 10163 (search and retrieve application protocol specification for open systems interconnection).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 8459. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8459 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 639:1988, *Code for the representation of names of languages*.

ISO/IEC 646:1991, *Information technology — ISO 7-bit coded character set for information interchange*.

ISO 2108:1992, *Information and documentation — International standard book numbering (ISBN)*.

ISO 2709:1981, *Documentation — Format for bibliographic information interchange on magnetic tape*.

ISO 2788:1986, *Documentation — Guidelines for the establishment and development of monolingual thesauri*.

ISO 3297:1986, *Documentation — International standard serial numbering (ISSN)*.

ISO 4217:1990, *Codes for the representation of currencies and funds*.

ISO 5426:1983, *Extension of the Latin alphabet coded character set for bibliographic information interchange*.

ISO 5427:1984, *Extension of the Cyrillic alphabet coded character set for bibliographic information interchange*.

ISO 5428:1984, *Greek alphabet coded character set for bibliographic information interchange.*

ISO 7498-3:1989, *Information processing systems — Open Systems Interconnection — Basic Reference Model — Part 3: Naming and addressing.*

ISO 8601:1988, *Data elements and interchange formats — Information interchange — Representation of dates and times.*

ISO 8777:1993, *Information and documentation — Commands for interactive text searching.*

ISO 9040:1990, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Service.*

ISO 9041-1:1990, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Protocol — Part 1: Specification.*

ISO/IEC 10027:1990, *Information technology — Information Resource Dictionary System (IRDS) framework.*

ISO 10162:1993, *Information and documentation — Open Systems Interconnection — Search and Retrieve Application Service Definition.*

ISO 10163-1:1993, *Information and documentation — Open Systems Interconnection — Search and Retrieve Application Protocol Specification — Part 1: Protocol specification.*

3 Definitions

For the purposes of this part of ISO 8459, the following definitions apply.

3.1 character string: A combination of letters, digits, punctuation marks or other symbols.

3.2 data element: A basic unit of identifiable and definable data. It has a data element name represen-... a tag or identifier, and one or more values for expressing (a) particular fact(s).

3.3 data element directory: A listing of data elements with specifications of representative data element values, as appropriate.

3.4 data element group: A set of related data elements.

3.5 data element group name: One or more words in a natural language identifying a data element group.

3.6 data element name: One or more words in a natural language identifying a data element.

3.7 data element value: A fact expressed by codes, digits or natural language corresponding to the data element description and representation.

3.8 information retrieval: The action, methods and procedures for recovering from stored data information on a given matter or references to pertinent documents.

3.9 message: A structured combination of data elements used in an information retrieval transaction.

3.10 record: A group of data usually treated as a unit.

3.11 representation: The way in which a particular data element value is expressed using one or more number(s), letter(s) or symbol(s).

3.12 result set: The group of records, citations, items, or other information units retrieved by the use of a FIND command in the search process.

3.13 search request: A structured query which describes the data elements and their values that the retrieved items should satisfy.

3.14 tag: An identifier allocated for use in place of a data element name or data element group name. (In this part of ISO 8459, a group of three digits.)

3.15 transaction: The creation or modification of a message required to support the retrieval of full text or secondary information request for the source document and associated payments.

4 Directory

The directory names and defines data elements and data element groups used to support information retrieval transactions. The information pertaining to each data element or data element group is presented in four separate columns, labelled tag, name, description and representation. A "tag" is used to identify a data element as well as a data element group. "Name" contains data element names and data element group names. Data element group names are printed in bold letters to differentiate them from data element names. "Description" includes a definition for each data element or data element group followed by a list of corresponding tags for data elements that comprise the group. "Representation and remarks" includes

explanatory text about conventions and/or standards used to represent values applicable to a data element or a data element group as well as sample values, if applicable.

To ensure that the data element names, definitions and values are maintained in a timely fashion, ISO 8459-5 will provide specific procedures to be followed in processing updates to this part of ISO 8459.

Tag	Name	Description	Representation and remarks
001	**Message identification**	Data used to identify a particular message Group identifier for data elements 002-010.	
002	Message name	Phrase or code identifying the function of a message.	See A.1.
003	Date	Year, month and day on which a transaction is performed.	Also used in conjunction with date/time qualifier (905). See A.2 for the various qualifiers that can be specified. See ISO 8601.
004	Time stamp	Time at which a message was sent or received.	Used by automated systems to indicate the precise hour, minute and second that a transaction occurred. Used in conjunction with date/time qualifier (905). See A.2.
010	Transaction number	Code or number assigned to identify a transaction in support of information retrieval services (i.e. invoice, claim, etc.).	This code or number is assigned by the institution or system responsible for creating the specific type of document or message (i.e. invoice, claim, etc.).
040	**Session details**	Data which identify various details about a specific session. Group identifier for data elements 050-110, 120, 550, 848, 849, 900-910.	
050	**Transaction participant**	Data which identify each party associated with a transaction and the role performed by that party. Group identifier for data elements 060-078, 110, 120.	
060	Participant's function	Word or code which specifies the function or role performed by a party to an information retrieval session.	Possible functions or roles include: 0 = information service provider 1 = database producer 2 = gateway 3 = user 4 = directory
076	Password	Code used by a system to authenticate the identity of an individual or automated process that has requested or is using a system function or service.	This code may be revised periodically to preserve its security. A password is typically supplied by the user at session initiation time but it could also be requested at any time during a session. Other mechanisms for user authentification are being standardized, for example, security architecture, ISO 7498-2 and new work item on authentication framework. This data element is used in conjunction with user's identifier (122), an institution identifier (113) and telenetwork user ID (165).

Tag	Name	Description	Representation and remarks
077	Password edition	Code or phrase used to identify the current and previous password(s)	Two editions of passwords are defined to support password revision. These are: 0 = old password 1 = current password
078	Password type	Code or phrase used to indicate the specific services allowed to the password holder.	This data element is used by systems to support multiple levels of authentication. Possible values include: 0 = system connection 1 = database connection 2 = read access 3 = write access 4 = delete privileges 5 = output instructions Security level (849) is used to control access to classified information. Related to access privileges (724), which provides various details associated with type of privilege (078).
080	Session identifier	Code or number used to identify a specific period of interaction between a user and an automated system.	A session typically covers all transactions between user and system from log-on to log-off. Sessions may be aborted prematurely by unusual systems or telecommunications events to produce an artificial log-off point. Sophisticated systems allow sessions to be suspended and resumed later or to change applications during a particular session.
081	Subsession identifier	Code or number used to identify a period of interaction with one specific service provided within a single session on an automated system.	May be used as a qualifier for session identifier (080).
086	Reference identifier	Code or number assigned to a system to system communication.	This number is used to monitor and verify that all system interactions have been transferred and processed in the proper sequence.
087	Continue flag	Instruction that processing should continue even though resource constraints (090, 091, 092, 725) have been exceeded.	Possible values include: 0 = continue 1 = stop
088	Suspend flag	Indication whether processing has been suspended whenever resource constraints have been exceeded (090, 091, 092, 725).	Possible values include: 0 = processing not suspended 1 = processing suspended
090	Cost constraint	Predefined monetary value, which if exceeded will result in a specific system action.	Cost constraints are frequently used to limit the system resources that may be consumed by any one user over a given period of time.
091	Hit constraint	Maximum number of records authorized to be retrieved in any given search	
092	Session length constraint	Predefined time limit, which if exceeded will result in a predefined system action.	A system will typically terminate session after a set amount of time of system usage or inactivity.

Tag	Name	Description	Representation and remarks
093	Transmission speed	Number used to designate the rate of data transmission between two pieces of computer equipment measured in bits per second.	
094	Packet size	Number of octets in a packet.	Packet formats are based on the general structure as defined in X.25. A single X.25 interface can theoretically handle 4 095 virtual channels, packet sizes up to 2 048 octets
095	Resource usage type	Code or phrase used to indicate the type of system resource that has been utilized within a session or given time period.	face is limited to the current capacity of the network's access node. Systems typically maintain information on the following resources in order to support planning, monitoring and controlling of these resources: 0 = CPU time 1 = connect time 2 = records retrieved online 3 = records retrieved offline 4 = number of sessions 5 = octets of disk storage 6 = number of saved profiles 7 = packets transmitted 8 = memory 9 = terminal transactions 10 = number of disk accesses 11 = number of tapes Used in conjunction with amount of usage (097).
096	System performance	Data collected to inform management about system performance.	Typical system performance measures include: 0 = start-up delay 1 = percentage of downtime 2 = number of system malfunctions 3 = number of telecommunication interruptions 4 = average response time Used in conjunction with amount of usage (097).
097	Amount of usage	Quantities which measure the values established under resource usage type (095) and system performance (096).	
098	Records returned	An integer indicating the number of database and/or diagnostic records returned.	

Tag	Name	Description	Representation and remarks
101	User types	Identification of the category, chosen for management purposes, to which a user belongs.	Possible values are: 0 = intermediary 1 = end user 2 = government 3 = university 4 = scientific institution
102	Search type	Identification of the type of search made against a database.	Used to indicate: bibliographic, directory, numeric, graphic and other types of searches.
103	Database type	Identification of the type of database, both generic and specific.	Used to indicate: bibliographic, directory, numeric, graphic and other types of databases.
110	**Institution identification**	Data elements intended to identify an institution participating in a session. Group identifier for data elements 111-113 and 130-137.	
111	Name of institution	Word, phrase or initialism intended to identify an institution or corporation.	
112	Abbreviated name	Short form of an institution's name (111).	
113	Institution identifier	Unique number or code used by an information retrieval system to identify an institution.	
120	**User identification**	Data elements intended to identify an individual using an information retrieval system, or for whom the system is used. Group identifier for data elements 121-123 and 130-137.	
121	User's name	Name of the person that initiated the information retrieval session.	
122	User's identifier	Unique number or code used by an information retrieval system to identify a person initiating a session.	
123	User's affiliation	Identification of the institution with which the user is associated.	
130	**Address**	Code or phrase which gives the geographic location or place associated with an individual or an institution. Group identifier for data elements 131-137.	This element may be used in conjunction with institution name (111) or user's name (121). For telenetwork addresses see (160).
131	Address instruction	Word or code which indicates the address to which the search results, Selective Dissemination of Information (SDI) profiles, invoices, etc. are to be sent if different from the address for the source of a message.	This data element is used in conjunction with address (130). Possible values include: 0 = ship to 1 = bill to

Tag	Name	Description	Representation and remarks
132	Post office box	Box number assigned by the postal authority.	May be used in conjunction with an institution name (111) or user's name (121).
133	Street and number	Number and phrase used to identify a location within a city or rural area.	
134	City	Word or phrase used to identify a city, including suburb or postal area.	
135	Region	Word or phrase identifying an area within a country, e.g. state, province, county.	
136	Country	Word or phrase used to identify a country.	
137	Postal code	Code assigned by the postal authorities of a country which uniquely identifies an address or group of addresses.	
150	Telecom-munications carrier	Word, phrase or initialism used to identify the telecommunications carrier facilities being used to access a remote system.	It may be necessary to identify more than one carrier.
160	**Telenetwork address**	Unique number or code used to identify a device within a communications network. Group identifier for data elements 161-166.	
161	Telephone number	Unique number assigned to a telephone line.	
162	Telefacsimile number	Telecommunications number used for sending and receiving telefacsimiles.	
164	Electronic mail identifier	Unique number assigned to an electronic mail box or service connection.	
165	Telenetwork user identifier	Unique code assigned ... munications network.	... same value as institution identifier (113) or user's identifier (122).
166	Host system network address	Unique number or code used to identify a host system within a communications network.	See ISO 7498-3.
200	System prompt	Character, string of characters or menu used to support and guide user interaction with an automated system.	Systems should provide user prompts to guide user interaction.
230	**Command expression**	Request for the performance of an operation or for the execution of a particular computer program. Group identifier for data elements 232-281, 610.	A command expression typically consists of a command word (240) and a command specification (250). Certain expressions may consist of a command word only, e.g. instruction to terminate session. A command specification when present follows the command word and qualifies the computer operation invoked by the command word.
232	Search history	Listing of command expressions previously used during a session.	

Tag	Name	Description	Representation and remarks
233	Search profile	Named set of one or more command expressions which may be executed periodically against one or more databases.	The name may be a word, phrase or code.
235	Command identifier	Number or code which is assigned to a command expression and which can be used to reference it.	Separate classes of identifiers could be provided for each type of command expression, for example, search set identifier which is used in ISO 8777 to identify a search expression.
240	Command word	Specific word or abbreviation used to initiate a command expression.	These are usually self-explanatory action verbs that express the sense of the function to be performed. See ISO 8777.
250	**Command specification**	String of characters following a command word and specifying how and on what the command expression is to operate. Group identifier for data elements 252-281.	A command specification may consist of one or more data elements from the sequence 255-281.
252	Completeness attribute	Phrase or code that specifies the completeness of a search expression.	Used to indicate: incomplete field, complete field, etc. For possible values, see ISO 10163:1993, annex D.
253	Term structure attribute	Attribute that specifies the structure of a search term.	Used to indicate: phrase, word, etc. For possible values, see ISO 10163:1993, annex D.
254	Positional attribute	Attribute that specifies the position of a type of search term (name, subject, etc.) within a search expression.	Used to indicate: first in field, first in subfield, etc. For possible values, see ISO 10163:1993, annex D.
255	Search term	One or more words, numbers or symbols used in the search statement of the command specification of a FIND command expression.	The search term identifies the target of the search, that is, of the FIND command. See ISO 8777.
257	Field label	Code or numeric value used to identify an element of information in an index, thesaurus, query, database record, etc. Field labels are provided for units of information such as abstracts, columns within tables, author.	
258	Related terms	Code or phrase indicating that the search is for entries which are logically related to the specified search term.	Entry relationships are typically defined in controlled vocabularies or hierarchically arranged directories. For possible values, see ISO 2788.
261	Masking symbol	Designated character within a character set that is used to indicate that the exact value is non-critical for a specific number of characters of a search term.	A separate character may be used to indicate the number of characters that are being masked. See ISO 8777.
262	Truncation symbol	Masking symbol (261) that is applied for one or more characters at either end of a search term.	

Tag	Name	Description	Representation and remarks
263	Connector	Symbol that introduces a qualifier used in conjunction with a search term.	The equal sign (=) is used in a number of systems as a connector. For example, FIND TI = SMOKING, indicates that the search term must be part of the title to satisfy the command expression. Possible values are specified in ISO 8777.
264	Separator	Designated character used to mark off or set apart components of a command expression.	Possible values specified in ISO 8777 include space, comma, semicolon, etc.
265	Restoration symbol	One or more symbols or characters used to restore the literal meaning of reserved words, operators or symbols whenever they must be used as part or all of a search term.	In order to use a reserved command word, abbreviation, operator, or symbol as a search term, double quotation marks (") shall enclose the word to restore its literal meaning.
266	Weighting factor	Numeric value that is assigned to a search term or a command expression in order to rank or restrict the number of records that are retrieved.	
271	Boolean operator	Reserved term or symbol used to express logical realtionships between search terms, result sets, or both.	See ISO 8777 for specific Boolean operators.
272	Proximity operator	Code or phrase used to specify the sequence of and distance between search terms.	See ISO 8777 for specific proximity operators.
273	Ranging operator	Code or phrase used to assign ranges of consecutive values to search parameters.	See ISO 8777 for specific ranging operators.
274	Relational attribute	Code or phrase used to indicate relative values.	Relative values are conveyed by terms such as less than, equal. For possible values see ISO 8777 and ISO 10163.
280	Result set identifier	Word, phrase or code assigned by the system to the result set of an executed search command.	
281	Result set qualifier	Code or phrase which qualifies a result set identifier.	Possible values include: 0 = proposed 1 = actual
282	Result set size	Numeric value which identifies the number of records that have been retrieved from an executed FIND command.	
300	Item description	Data elements used to identify an item, usually consisting of descriptive information and headings.	An item may be either a component part within a host publication or an independent publication. See the corresponding parts of ISO 8459 to determine which data elements are used to describe an item for specific applications.
420	**Service charge**	Data concerning the nature of charges associated with the use of specified information retrieval services. Group identifier for data elements 421-473.	