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Information technology — Information Resource Dictionary System (IRDS) framework

*Technologies de l'information — Cadre pour le gestionnaire de ressources du
système d'information (IRDS)*



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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. 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.

International Standard ISO/IEC 10027 was prepared by Technical Committee ISO/IEC JTC 1, *Information technology*.

International Standard ISO/IEC 10027 is one of a series of International Standards on Information Resource Dictionary Systems.

Information technology — Information Resource Dictionary System (IRDS) framework

1 Scope

This International Standard describes the framework for a number of International Standards that specify a specialised information system, called an Information Resource Dictionary System (IRDS). An IRDS is used to control and document an enterprise's information resources.

This International Standard defines the data levels relevant to an IRDS. It defines the IRDS interfaces which are prescribed by other International Standards in the IRDS family of standards. It also defines the kinds of data content that are prescribed by other International Standards in the family.

2 Normative references

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

ISO 7498 : 1984, *Information processing systems - Open Systems Interconnection - Basic Reference Model*.

ISO/IEC 9075:1989 *Information processing systems - Database Language SQL with integrity enhancement*.

3 Definitions

Definitions in this clause are those IRDS definitions used in this Framework. These definitions are referenced in other International Standards where they are used. Further International Standards may define additional terminology.

When each term listed in this clause is introduced in a later clause of this International Standard, it is printed in bold type.

3.1 Term defined in ISO 7498 and used in this International Standard

The following term is defined and used in the OSI Reference Model. It is used in the same way in this IRDS Framework International Standard.

3.1.1 real system.

3.2 Terms originally defined in ISO 7498 and adapted for use in this International Standard

The following terms were originally defined and used in the OSI Reference Model and other OSI International Standards. Their use in this IRDS Framework is based on that in the OSI International Standards, but a revised definition is preferred.

Some terms are prefixed in OSI with "(N)-" to indicate the layer. Since the IRDS Framework does not have a formal layer concept the prefix is omitted.

3.2.1 server: A role filled by a processor when it provides services to another processor.

3.2.2 service: A capability provided by a processor to other processors.

3.3 Terms defined in this International Standard

For the purpose of this International Standard the following terms apply.

3.3.1 access control: A capability to restrict the use of services accessing data to users who have been previously authorised.

3.3.2 application level: The data level on which instances of application data are recorded.

3.3.3 application level pair: The term used to describe both the application level and its schema at the IRD level.

3.3.4 application schema: A set of definitions which control what may exist at any time in an application.

3.3.5 auditing: A process of checking that previously made changes to a collection of data have been made correctly and by an appropriately authorised user at an appropriate time.

3.3.6 client: A user requesting the services provided at an interface of a server.

3.3.7 constraint: A statement of one or more valid states of some part of a database, based on the conditions which values in the database must satisfy at any time.

3.3.8 data container: A conceptual area of storage in which data instances can be recorded.

3.3.9 data level: A stratum in a multi-level data architecture on which objects may be recorded conforming to a type definition on the next higher data level.

3.3.10 data modelling facility: A set of data structuring rules and an associated set of data manipulation rules.

3.3.11 database: A collection of interrelated data stored together with controlled redundancy according to a schema to serve one or more applications.

3.3.12 database integrity: The consistency of a collection of data in a database.

3.3.13 export: The function of extracting information from an IRDS and packaging it to an export/import file.

3.3.14 export/import file: A file created by an export function and accepted by an import function.

3.3.15 import: The function of receiving data from an export/import file into an IRDS.

3.3.16 Information Resource Dictionary (IRD): A part of a repository managed by an IRDS in which the information resources of an enterprise may be recorded.

3.3.17 Information Resource Dictionary System (IRDS): A software product which maintains IRDs and IRD definitions.

3.3.18 information resource management: The task of maintaining and controlling information processing systems.

3.3.19 interface: A defined set of services made available by a processor.

3.3.20 IRD definition: A set of objects which collectively defines the data which may be held in an IRD.

3.3.21 IRD definition level: The data level at which potential IRDS content is defined.

3.3.22 IRD definition level pair: The term used to describe both the IRD definition level and its schema at the IRD Definition Schema level.

3.3.23 IRD definition schema: A set of definitions which control what may exist at any time in an IRD definition.

3.3.24 IRD definition schema level: A data level on which the types of object that may be recorded in an IRD definition are prescribed.

3.3.25 IRD level: The data level at which the information resources of an enterprise are defined.

3.3.26 IRD level pair: The term used to describe the IRD level and its schema at the IRD definition level.

3.3.27 IRD schema: A set of definitions which control what may exist at any time in an IRD.

3.3.28 level pair: Two adjacent data levels, the upper level of which will always contain the "type" information relevant to the "instances" on the lower level.

3.3.29 life cycle: A conceptual framework used to trace the evolution of objects over time.

3.3.30 life cycle phase: A sub-division of a life cycle.

3.3.31 partition: A logical sub-set of the objects in either an IRD or an IRD Definition.

3.3.32 processor: An abstract conceptualisation of an executable piece of code.

3.3.33 status of dictionary content: A status of a collection of data in a dictionary indicating whether the data may be freely modified, not modified, or is regarded as archived.

3.3.34 storage medium: A device on which data of any kind may be recorded.

3.3.35 user: A person or an application program which requests services for data management.

3.3.36 value: An abstraction with a single characteristic which can be compared with other values, and may be represented by an encoding of the value.

4 Conventions

4.1 Processors

This International Standard contains diagrams illustrating the processors and interfaces prescribed by the Standard.

A **processor** is an abstract conceptualisation of an executable piece of code.

Each processor is represented by a named icon as illustrated in figure 1.

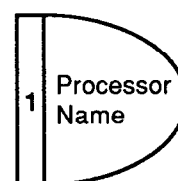


Figure 1 - Notation for a processor and its interface

The name in the icon is the name of the processor.

4.2 Interfaces

An **interface** is a defined set of services made available by a processor.

Each processor is defined as having one interface at which services are made available. The interface is represented by the rectangular part of the icon shown in figure 1. The number identifies the interface which is named and described in accompanying text.

4.3 Person

A person is represented by the icon shown in figure 2.



Figure 2 - Icon for a person

4.4 Storage medium

A **storage medium** is a device on which data of any kind may be recorded such as a hard disc, a floppy disc or tape. A storage medium is represented by the icon shown in figure 3.

Data will be held on some storage medium.

The name within the icon identifies the content of the storage medium.



Figure 3 - Icon for a storage medium

4.5 Client - Server association

Users of **services** provided at an interface are termed **clients**.

The processor that provides the services at an interface is termed the **server**. A processor may fill the role of client and the role of server. A processor can be the server to one interface. A processor may be a client of many interfaces.

A client may be a person or a processor depending upon the nature of the interface.

Use of an interface by a client is shown by a line connecting them. Use of a storage medium by a processor is shown by a line between them as illustrated in figure 4.

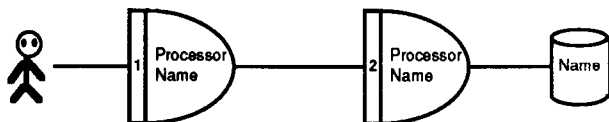


Figure 4 - Conventions to show Client - Server associations

4.6 Diagramming conventions

All figures using the conventions described above are drawn so that the client is shown to the left of the server. This convention is illustrated in figure 4.

5 The Structure of the IRDS Standards

5.1 Purpose of the IRDS Standards

The purpose of the family of International Standards for Information Resource Dictionary Systems is to provide a common basis for the development of Information Resource Dictionaries. This IRDS Framework International Standard defines the context within which the other parts of the IRDS family of International Standards are prescribed.

An **Information Resource Dictionary** is a shareable repository for a definition of the information resources relevant to all or part of an enterprise. This may include information about any or all of the following:

- a) data needed by the enterprise;
- b) the computerized and possibly non-computerized processes which are available for presenting and maintaining such data;
- c) the available physical hardware environment on which such data can be represented;
- d) the organization of human and physical resources which can make use of the information;
- e) the human resources responsible for generating that information.

An **Information Resource Dictionary System** (IRDS) is a system which provides facilities for creating, maintaining and accessing an Information Resource Dictionary (IRD) and its IRD definition.

It must be emphasized that this family of International Standards does not provide a standard definition for all of the above kinds of information. It does provide a framework for defining such information and in which the information can be represented and managed. The definition of those kinds of information to be represented in an Information Resource Dictionary, that are suitable for standardisation, are a subject for other International Standards in this family.

The content of an Information Resource Dictionary can be compared with the content of a typical application database. An application database contains data of relevance to the day to day operation of an enterprise. Such data may refer to things such as employees, suppliers, customers and purchase orders.

The data in an Information Resource Dictionary is in many ways similar to that in an application database, but it is on a higher level. Such data may refer to things such as data item types, data files, computer programs and sub-systems.

5.2 The IRDS family of Standards

This International Standard for an IRDS Framework specifies the overall architecture in which each member of the IRDS family of International Standards should be positioned. The Framework identifies, in general terms, the kinds of data together with the major processors and their