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Information and documentation — Open Systems Interconnection — Search and Retrieve Application Service Definition

*Information et documentation — Interconnexion de systèmes ouverts
(OSI) — Définition du service d'application pour la recherche
documentaire*



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Foreword

ISO (the International Organization for Standardization) is a world-wide 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 10162 was prepared by Technical Committee ISO/TC 46, *Information and documentation*.

Annexes A and B of this International Standard are for information only.

Introduction

The purpose of the Search and Retrieve (SR) standard is to provide a set of Application Layer communication-related services which can be used to perform search activities in an Open Systems Interconnection (OSI) environment, as defined by ISO 7498.

The goal of Open Systems Interconnection is to allow with a minimum of technical agreement outside the interconnection standards, the interconnection of information processing systems:

- from different manufacturers;
- under different managements;
- of different levels of complexity; and
- of different technologies.

The SR service provides capabilities for an application process to search a database in another open system for records and receive a result set of records in response.

The purpose of the service definition is to define the communications aspects of SR processing in terms of a set of services provided to a user-process by an application-service-element (ASE).

The focus of SR activity is the database record, which represents, for example in the case of a bibliographic database, a book, periodical, journal article, microform, graphic, map, music, sound recording, computer file, etc. The SR application is concerned with procedures relating to the search and retrieval of these records between database applications.

The approach taken in this standard is to set the requirements that all open systems must support to the minimum level. Additional optional features are defined which allow implementors to achieve a greater degree of functionality if it is desired.

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This International Standard is one of a number of related standards supporting the interconnection of library systems. These standards can be used by themselves or in a cooperative manner to support library applications requiring a mixture of communications services. For example, ISO 10160 and ISO 10161 which support interlibrary loan could be used in conjunction with the SR protocol to obtain the loan of items. The control and management of interactions among such applications are local matters that are outside the scope of this International Standard. The application layer architecture for such combined use of several application-service-elements (or ASEs) is defined in the Application Layer Structure (ISO 9545).

Security, accounting, update, access control, resource control, and end-user assistance (explain and help) issues as they relate to SR operations will be studied further. The agenda for future standardization activities is set forth in more detail in annex A of this International Standard.

Information and documentation — Open Systems Interconnection — Search and Retrieve Application Service Definition

1 Scope

This International Standard is an Application Layer standard within the Open Systems Interconnection framework defined by ISO 7498. This International Standard defines the services for Search and Retrieve. These services are provided by the use of the SR protocol in conjunction with the supporting communications services of the connection-oriented Association Control and Presentation services (ISO 8649 and ISO 8822).

This International Standard does not specify individual implementations or products, nor does it constrain the implementation of entities and interfaces within a computer system. Computer systems may range from stand-alone workstations to mainframes.

This International Standard is primarily intended for use by systems supporting information retrieval services for organizations such as libraries, information utilities, and union catalogue centres.

There is no requirement for conformance to this service definition. Conformance is required only for the SR protocol specification.

This International Standard does not cover issues of security, accounting, update, access control, resource control, or end-user assistance (explain and help). Annex A provides information on planned future activities.

2 Normative references

The following 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 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 standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 7948:1984, *Information processing systems — Open Systems Interconnection — Basic Reference Model*.

ISO/TR 8509:1987, *Information processing systems — Open Systems Interconnection — Service conventions*.

ISO 8649:1989, *Information processing systems — Open Systems Interconnection — Service definition for Association Control Service Element*.

ISO 8777:—¹⁾, *Documentation — Commands for interactive text searching*.

ISO 8822:1990, *Information processing systems — Open Systems Interconnection — Connection oriented presentation service definition*.

ISO/IEC 9545:1989, *Information processing systems — Open Systems Interconnection — Application Layer structure*.

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

3 Definitions

3.1 Reference Model Definitions

This International Standard makes use of the following terms defined in ISO 7498.

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Application-entity: The aspects of an application-process pertinent to OSI.

application-process: An element within a real open system which performs the information processing for a particular application.

application-protocol-data-unit: A unit of data specified in an application-protocol and consisting of application-protocol-information and possibly application-user-data.

N-layer: A subdivision of the OSI architecture, constituted by subsystems of the same rank (N).

presentation-service: A capability of the Presentation Layer and the layers beneath it, which is provided to application-entities at the boundary between the Presentation and the Application Layer.

real-open-system: A real system which complies with the requirements of OSI standards in its communication with other real systems.

3.2 Application Layer Structure Definitions

This International Standard makes use of the following terms defined in ISO/IEC 9545.

application-association, association: A cooperative relationship between two application-entity-involutions for the purpose of communication of information and coordination of their joint operation. This relationship is formed by the exchange of application-protocol-control-information using the Presentation-Service.

application-context: A set of rules shared in common by two application-entity-involutions in order to enable their cooperative operation.

application-context-definition: The description of an application-context.

application-service-element: A set of application-functions that provides a capability for the interworking of application-entity-involutions for a specific purpose.

3.3 Service Conventions Definitions

This International Standard makes use of the following terms defined in ISO/TR 8509.

confirm (primitive): A representation of an interaction in which a service-provider indicates, at a particular service-access-point, completion of some procedure previously invoked, at that service-access-point, by an interaction represented by a request primitive.

confirmed-service: A distinct part of the total SR-service which results in an explicit confirmation from the service-provider to the initiating service-user.

indication (primitive): A representation of an interaction in which a service-provider either:

- a) indicates that it has, on its own initiative, invoked some procedure; or
- b) indicates that a procedure has been invoked by the service-user at the peer service-access-point.

non-confirmed-service: A distinct part of the total SR-service which does not result in an explicit confirmation from the service-provider to the initiating service-user.

service primitive; primitive: An abstract, implementation-independent representation of an interaction between the service-user and the service-provider.

request (primitive): A representation of an interaction in which a service-user invokes some procedure.

response (primitive): A representation of an interaction in which a service-user indicates that it has completed some procedure previously invoked by an interaction represented by an indication primitive.

service-user: An entity in a single open system that makes use of a service through service-access-points.

service-provider: An abstract of the totality of those entities which provide a service to peer service-users.

3.4 SR Definitions

For the purposes of this International Standard, the following definitions apply.

3.4.1 database provider: The server application which provides access to one or more databases under its control.

3.4.2 database user: The client application which accesses a remote database.

3.4.3 parameter: A functionally related group of one or more data elements.

3.4.4 origin: The database user.

3.4.5 origin application: The application that initiates an association and is the source of requests during the association.

3.4.6 result set: An ordered list of the identifiers for each of the records selected by a search request.

3.4.7 target: The database provider.

3.4.8 target application: The application that accepts an association and is the destination for requests during the association.

3.4.9 provider: (Same as service-provider)

3.4.10 user: (Same as service-user)