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STANDARD

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**Information and documentation — Open
Systems Interconnection — Interlibrary
Loan Application Protocol Specification —**

Part 1:
Protocol specification
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*Information et documentation — Interconnexion de systèmes ouverts
(OSI) — Spécification du protocole d'application pour les prêts entre
bibliothèques —*
Partie 1: Spécification du protocole



Reference number
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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.

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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.

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International Standard ISO 10161 was prepared by Technical Committee ISO/TC 46, *Information and documentation*.

Annexes A to D form an integral part of this International Standard. Annexes E and F are for information only.

ISO 10161 consists of the following parts, under the general title *Information and documentation — Open Systems Interconnection — Interlibrary Loan Application Protocol Specification*:

- *Part 1: Protocol specification*
- *Part 2: Protocol implementation conformance statement proforma*

Introduction

This standard is one of a set of International Standards produced to facilitate the interconnection of computer systems. It is related to other international standards in the set as defined by the Reference Model for Open Systems Interconnection (ISO 7498). The Reference Model subdivides the area of standardization for interconnection into a series of layers of specification, each of manageable size.

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

- a. from different manufacturers,
- b. under different managements,
- c. of different levels of complexity,
- d. of different ages.

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This International Standard provides a protocol specification for Interlibrary Loan (ILL) communication. The ILL protocol operates in the Application Layer and allows the parties involved in an ILL-transaction to progress through the ILL-transaction in an orderly and defined way.

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The ILL protocol has been designed to support the ILL services defined in ISO 10160, the ILL Application Service Definition.

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 10163, which supports remote access to bibliographic databases, could be used in conjunction with the ILL protocol to obtain item identification information. The control and management of interactions among such bibliographic applications are local matters that are outside the scope of this International Standard.

Security and accounting issues as they relate to ILL operations are for further study.

The specification technique used in this International Standard is consistent with techniques used in defining other OSI protocols. Within most of this document, the technique is self-explanatory. The Abstract Syntax of the ILL Application Protocol Data Units (APDUs) is defined by means of the ASN.1 specification technique specified in ISO 8824.

This International Standard contains six annexes. Annexes A to D are normative. Annex A specifies the state tables for the ILL protocol. Annex B specifies the encoding rules for generating a transfer syntax compatible with EDIFACT as defined in ISO 9735. Annex C specifies the object identifiers assigned in this standard and registration requirements.

Annex D defines the registration procedures for ILL EXTERNAL data type definitions. Annex E is an example of an ILL EXTERNAL data type definition registry entry and annex F describes the possible mappings of this protocol onto supporting services.

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Information and documentation — Open Systems Interconnection — Interlibrary Loan Application Protocol Specification — Part 1: Protocol specification

1 Scope

This International Standard defines the protocol for an ILL application-service-element (ASE). It specifies the behaviour which must be exhibited by a system in order to take part in the provision of the ISO interlibrary loan service.

It provides a formal statement of the rules of behaviour of each of the two or more entities participating in an ILL transaction. It specifies:

- a. the actions to be taken on receiving request service primitives issued by an ILL service-user;
- b. the actions to be taken on receiving application-protocol-data-units (APDUs);
- c. the actions to be taken as a result of events within the local system.

It provides a specification (in clause 9) of the abstract syntax required to convey the ILL protocol APDUs.

It states the conformance requirements to be met by implementors of this protocol (in clause 10).

The scope of the ILL protocol is restricted to the interconnection of systems; it does not specify or restrict the possible implementation of interfaces within a computer system. Computer systems may range from stand-alone workstations to mainframes.

This International Standard is intended for use by libraries, information utilities such as union catalogue centres, and any other system which processes bibliographic information. These systems may participate in an interlibrary loan transaction in the role of requester (i.e. an initiator of ILL requests), responder (i.e. a provider of bibliographic material or information) and/or intermediary (i.e. an agent that acts on behalf of a requester to find suitable responders).

Various interworking topologies are supported, ranging from simple two-party interactions, to multi-party interactions.

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 646:1983, *Information processing systems — ISO 7-bit coded character set for information interchange.*

ISO 2108:1978, *Documentation — International standard book numbering (ISBN).*

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

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

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

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

ISO 8459-1:1988, *Documentation — Bibliographic data element directory — Part 1: Interloan applications.*

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

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

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

ISO 8650:1988, *Information processing systems — Open Systems Interconnection — Protocol specification for the Association Control Service Element.*

ISO 8822:1988, *Information processing systems — Open Systems Interconnection — Connection oriented presentation service definition.*

ISO/IEC 8824:1990, *Information technology — Open Systems Interconnection — Specification of Abstract Syntax Notation One (ASN.1).*

ISO/IEC 8825:1990, *Information technology — Open Systems Interconnection — Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1).*

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

ISO 9735:1988, *Electronic data interchange for administration, commerce and transport (EDIFACT) — Application level syntax rules.*

ISO 9834-1:—¹⁾, *Information technology — Open Systems Interconnection — Procedures for the operation of OSI Registration Authorities — Part 1: General procedures.*

ISO/IEC 10021-4:1990, *Information technology — Text communication — Message-Oriented Text Interchange Systems (MOTIS) — Part 4: Message Transfer System: Abstract Service Definition and Procedures.*

ISO 10160:1993, *Information and documentation — Open Systems Interconnection — Inter-library Loan Application Service Definition.*

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

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3 Definitions

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

3.1 Reference Model Definitions

This International Standard is based on the concepts developed in ISO 7498:1984 and makes use of the following terms found in it. These terms are replicated here as a convenience to the reader.

- 3.1.1 Application Layer:** The seventh and highest layer in the Reference Model for Open Systems Interconnection (OSI); it serves as the window between correspondent application-processes which are using the OSI to exchange meaningful information.
- 3.1.2 application-entity:** The aspects of an application-process pertinent to OSI.
- 3.1.3 application-process:** An element within a real open system which performs the information processing for a particular application.
- 3.1.4 application-protocol-data-unit:** A unit of data specified in an application-protocol and consisting of application-protocol-information and possibly application-user-data.
- 3.1.5 application-service-element:** That part of an application entity which provides an OSI environment capability, using underlying services when appropriate.
- 3.1.6 (N)-service:** A capability of the (N)-layer and the layers beneath it, which is provided to (N+1)-entities at the boundary between the (N)-layer and the (N+1)-layer.

NOTE — An application-service does not provide a capability to higher layer entities, but rather to application-processes.

- 3.1.7 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.
- 3.1.8 transfer syntax:** The concrete syntax used in the transfer of data between open systems.

3.2 Abstract Syntax Notation One Definitions

This International Standard makes use of the following terms defined in ISO 8824:1990.

- 3.2.1 data type; type:** A named set of values.
- 3.2.2 simple type:** A type defined by directly specifying the set of its values.

- 3.2.3 **structured type:** A type defined by reference to one or more other types.
- 3.2.4 **component type:** One of the types referenced when defining a structured type.
- 3.2.5 **value:** A distinguished member of a set of values.

3.3 Presentation Service Definitions

This International Standard makes use of the following term defined in ISO 8822:1988.

- 3.3.1 **abstract syntax:** Those aspects of the rules used in the formal specification of data which are independent of the encoding technique to represent the data.

3.4 Application Layer Structure Definitions

This International Standard makes use of the following terms defined in ISO 9545:1989.

- 3.4.1 **application-association:** A cooperative relationship between two application-entity-invocations 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.
- 3.4.2 **application-context:** A set of rules shared in common by two application-entity-invocations governing their behavior in order to enable their cooperative operation.

NOTE — an application-context is a shared conceptual schema for the universe of discourse for communication.

- 3.4.3 **application-context-definition:** The description of an application-context.
- 3.4.4 **application-entity-invocation:** A specific utilization of part or all of the capabilities of a given application-entity in support of the communications requirements of an application-process-invocation.
- 3.4.5 **application-process-invocation:** A specific utilization of part or all of the capabilities of a given application-process in support of a specific occasion of information processing.

3.5 Service Convention Definitions

This International Standard makes use of the following terms defined in ISO TR 8509:1987.

- 3.5.1 **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.

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

3.5.3 provider-initiated service: A distinct part of the total (N)-service which is initiated by the service-provider rather than the service-user.

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

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

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

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

3.6 ILL Definitions

For the purpose of this International Standard, the following definitions apply to the ASN.1 value reference names and values which are associated with simple data types, as specified in clause 9. Of these definitions, the following are repetitions of those found in ISO 8459-1:1988:

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author
call number
client identifier
client-status
country
edition
place-of-publication
post-office-box
postal-code
publisher
sponsoring body
street-and-number
title
transportation-mode

volume-issue

NOTE — volume-issue are defined together here, but separately in ISO 8459-1: 1988.

- 3.6.1 account-number:** The number of an account to which a credit or debit is made. A requester typically has been assigned a separate account for each responder. (Variation of ISO 8459-1)
- 3.6.2 additional-no-letters:** (additional-numbers-letters) A number or code identifying an item.
- 3.6.3 already-forwarded:** Responder indication that an ILL request has already been forwarded.
- 3.6.4 already-tried-list:** List of institutions which have been approached but were unable to supply requested item.
- 3.6.5 answer:** A code representing a yes or no response.
- 3.6.6 at bindery:** Title is owned but the requested item is at the bindery.
- 3.6.7 author:** Name of the person or corporate body responsible for the intellectual or artistic content of an item, including composers, creators or originators of an item.
- 3.6.8 author-of-article:** Author of an item which is a component part of another item. (standards.iteh.ai)
- 3.6.9 badly-structured-APDU:** The structure of a received APDU does not conform to the standard notation and encoding defined in ISO 8824 and 8825, or to the EDIFACT encoding defined in ISO 9735 and Annex B of this International Standard. For example, a received APDU does not match its stated length.
- 3.6.10 being-processed-for-supply:** Item is being retrieved, copied, and/or packaged for delivery.
- 3.6.11 call-number:** Notation assigned to an item indicating its physical location in the owner institution.
- 3.6.12 can-send-CHECKED-IN:** An indication by the responder that it is capable of supplying the CHECKED-IN APDU.
- 3.6.13 can-send-RECEIVED:** An indication by the requester that it is capable of supplying the RECEIVED APDU.
- 3.6.14 can-send-RETURNED:** An indication by the requester that it is capable of supplying the RETURNED APDU.
- 3.6.15 can-send-SHIPPED:** An indication by the responder that it is capable of supplying the SHIPPED APDU.