
**Information technology — Message
Handling Systems (MHS): Electronic Data
Interchange Messaging System**

*Technologies de l'information — Systèmes de messagerie (MHS): Système
de messagerie avec échange de données informatisé*

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

Attention is drawn to the possibility that some of the elements of this part of ISO/IEC 10021 may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 10021-9 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*.

This second edition cancels and replaces the first edition (ISO/IEC 10021-9:1995), which has been technically revised. It also incorporates Amendment 1:1998 and Corrigendum 1:1998.

ISO/IEC 10021 consists of the following parts, under the general title *Information technology — Message Handling Systems (MHS)*:

- *Part 1: System and Service Overview*
- *Part 2: Overall architecture*
- *Part 3: Abstract Service Definition Conventions*
- *Part 4: Message transfer system: Abstract service definition and procedures*
- *Part 5: Message store: Abstract service definition*
- *Part 6: Protocol specifications*
- *Part 7: Interpersonal messaging system*
- *Part 8: Electronic Data Interchange Messaging Service*
- *Part 9: Electronic Data Interchange Messaging System*
- *Part 10: MHS routing*
- *Part 11: Guide for Messaging Systems Managers*

Annexes A to J form a normative part of this part of ISO/IEC 10021. Annexes K to M are for information only.

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INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

**INFORMATION TECHNOLOGY – MESSAGE HANDLING SYSTEMS (MHS):
ELECTRONIC DATA INTERCHANGE MESSAGING SYSTEM**

1 Scope

This Recommendation | International Standard is one of a series on message handling. The entire set provides a comprehensive blueprint for a Message Handling System (MHS) realized by any number of cooperating open systems.

The purpose of an MHS is to enable users to exchange messages on a store-and-forward basis. A message submitted on behalf of one user, the originator, is conveyed by the Message Transfer System (MTS) and subsequently delivered to the agents of one or more additional users, the recipients. Access Units (AU) link the MTS to communication systems of other kinds (e.g. postal systems). A user is assisted in the preparation, storage, and display of messages by a User Agent (UA). Optionally, it is assisted in the storage of messages by a Message Store (MS). The MTS comprises a number of Message Transfer Agents (MTA) which collectively perform the store-and-forward message transfer function.

This Recommendation | International Standard defines the message handling application called EDI messaging (EDIMG), a form of message handling tailored for exchange of Electronic Data Interchange (EDI) information, a new message content type and associated procedures known as Pedi. It is designed to meet the requirements of users of ISO 9735 (EDIFACT), and other commonly used EDI systems.

This Recommendation | International Standard is one of a series on message handling. ITU-T Rec. X.402 | ISO/IEC 10021-2 constitutes the introduction to the series and identifies the other documents in it.

The architectural basis and foundation for message handling are defined in still other Recommendations | International Standards. ITU-T Rec. X.402 | ISO/IEC 10021-2 identifies those documents as well.

2 References

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunications Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

2.1 Presentation references

This Recommendation | International Standard cites the following Presentation specifications:

- ITU-T Recommendation X.680 (1997) | ISO/IEC 8824-1:1998, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation.*
- ITU-T Recommendation X.681 (1997) | ISO/IEC 8824-2:1998, *Information technology – Abstract Syntax Notation One (ASN.1): Information object specification.*
- ITU-T Recommendation X.690 (1997) | ISO/IEC 8825-1:1998, *Information technology – ASN.1 Encoding Rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER).*
- ITU-T Recommendation X.880 (1994) | ISO/IEC 13712-1:1995, *Information technology – Remote Operations: Concepts, model and notation.*

2.2 Directory references

This Recommendation | International Standard cites the following Directory specifications:

- ITU-T Recommendation X.500 (1997) | ISO/IEC 9594-1:1998, *Information technology – Open Systems Interconnection – The Directory: Overview of concepts, models, and services.*
- ITU-T Recommendation X.501 (1997) | ISO/IEC 9594-2:1998, *Information technology – Open Systems Interconnection – The Directory: Models.*
- ITU-T Recommendation X.520 (1997) | ISO/IEC 9594-6:1998, *Information technology – Open Systems Interconnection – The Directory: Selected attribute types.*
- ITU-T Recommendation X.521 (1997) | ISO/IEC 9594-7:1998, *Information technology – Open Systems Interconnection – The Directory: Selected object classes.*

2.3 Message Handling references

This Recommendation | International Standard cites the following Message Handling System specifications:

- ITU-T Recommendation F.400/X.400 (1999), *Message handling services: Message handling system and service overview.*
- ITU-T Recommendation F.435 (1999) | ISO/IEC 10021-8:1999, *Electronic Data Interchange Messaging Service.*
ISO/IEC 10021-1:1999, *Information technology – Message Handling Systems (MHS) – Part 1: System and service overview.*
- ITU-T Recommendation X.402 (1999) | ISO/IEC 10021-2:1999, *Information technology – Message Handling Systems (MHS): Overall architecture.*
- ITU-T Recommendation X.411 (1999) | ISO/IEC 10021-4:1999, *Information technology – Message Handling Systems (MHS): Message transfer system. Abstract service definition and procedures.*
- ITU-T Recommendation X.413 (1999) | ISO/IEC 10021-5:1999, *Information technology – Message Handling Systems (MHS): Message Store: Abstract service definition.*
- ITU-T Recommendation X.420 (1999) | ISO/IEC 10021-7:1999, *Information technology – Message Handling Systems (MHS): Interpersonal messaging system.*

2.4 Additional references

This Recommendation | International Standard cites the following specification:

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

3 Definitions

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

3.1 Common definitions for MHS

This Recommendation | International Standard uses terms defined in ITU-T Rec. X.402 | ISO/IEC 10021-2:

- Access unit;
- Body;
- Content;
- Distribution list;
- Encoded information types;
- Envelope;
- Message handling system;
- Message store;
- Message transfer agent;

- Message transfer system;
- Physical delivery access unit;
- Recipient;
- Submission identifier;
- Submission time;
- Telematic agent;
- Telex access unit;
- User;
- User agent.

3.2 Common definitions for abstract syntax notation one

This Recommendation | International Standard uses the full extent of the abstract syntax notation one (ASN.1) as defined in ITU-T Rec. X.680 | ISO/IEC 8824-1.

3.3 EDI service definitions

This Recommendation | International Standard uses terms defined in ITU-T Rec. F.435 | ISO/IEC 10021-8.

- EDI forwarding;
- EDI message;
- EDI notification;
- EDI user;
- EDIM responsibility.

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3.4 Other EDI definitions

The terms listed below may assume different meanings in the standards referenced.
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3.4.1 EDI for administration, commerce and transport

This Recommendation | International Standard uses terms defined in ISO 9735 (EDIFACT – Application level syntax rules).

- Acknowledgement request;
- Address for reverse routing;
- Application reference;
- Communications agreement;
- Component data element separator;
- Data element separator;
- Date/time of preparation;
- Decimal notation;
- Functional group header;
- Identification code;
- Identification code qualifier;
- Interchange control reference;
- Interchange control header;
- Interchange recipient;
- Interchange sender;
- Message header;
- Processing priority code;

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- Recipient identification code;
- Recipients reference qualifier;
- Recipients reference, password;
- Release indicator;
- Routing address;
- Segment terminator;
- Sender identification;
- Service string advice;
- Syntax identifier;
- Syntax version;
- Test indicator;
- UNA segment;
- UNB segment;
- UNH segment.

3.4.2 United Nations trade data interchange

This Recommendation | International Standard uses terms defined in the United Nations Trade Data Interchange (UNTDI) syntax rules (developed from the earlier syntax Recommendation UNGTDI) unanimously accepted by the United Nations Economic Commission for Europe, Working Party 4, in September 1985.

- Application reference;
- Date and time of transmission;
- Message header;
- MHD segment;
- Recipients reference/password;
- Start of transmission;
- Transmission priority code;
- Transmission recipient;
- Transmission sender.

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3.4.3 American National Standards Institute Committee X12 Definitions

This Recommendation | International Standard uses terms defined in the American National Standards Institute Committee X12 (ANSIX12) standard X12.5-1987.

- Authorization information qualifier;
- Authorization information;
- Functional group header;
- Interchange date;
- Interchange header;
- Interchange receiver id;
- Interchange sender id;
- Interchange time;
- ISA segment;
- Test indicator;
- Transactional set header, ST segment.

3.5 EDI messaging system definitions

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

- 3.5.1 EDI message store:** An EDI message store is a specialized message store for the purposes of EDI messaging.
- 3.5.2 EDI messaging system:** The EDI messaging system is the functional object by means of which all users communicate with one another in EDI messaging.
- 3.5.3 EDI user agent:** An EDI user agent is a specialized user agent for the purposes of EDI messaging.

4 Abbreviations

For the purposes of this Recommendation | International Standard, the following abbreviations apply.

ANSIX12	American National Standards Institute Committee X12
AU	Access Unit
DL	Distribution List
EDI	Electronic Data Interchange
EDI-MS	EDI Message Store
EDI-UA	EDI User Agent
EDIFACT	Electronic Data Interchange for Administration, Commerce and Transport
EDIM	EDI Message
EDIME	EDI Messaging Environment
EDIMG	EDI Messaging ISO/IEC 10021-9:1999
EDIMG user	EDI messaging user
EDIMS	EDI Messaging System
EDIN	EDI Notification
EIT	Encoded Information Type
FN	Forwarded Notification
MD	Management Domain
MHS	Message Handling System
MS	Message Store
MTA	Message Transfer Agent
MTS	Message Transfer System
NN	Negative Notification
PDAU	Physical Delivery Access Unit
PDS	Physical Delivery System
PN	Positive Notification
TLMA	TeLeMatic Agent
UA	User Agent
UNTDI	United Nations/Trade Data Interchange

5 Conventions

This edition of the EDI Specification, Version 2, replaces CCITT Rec. X.435 (1991) | ISO/IEC 10021-9:1995. For Message Store operation, this Recommendation | International Standard assumes use of the Message Store definition given in ITU-T Rec. X.413 (1995) | ISO/IEC 10021-5: 1996. The term "1994 Application Contexts" is used to distinguish this more recent mode of Message Store access from that used in Version 1. The EDI auto-forward auto-action (see 18.7.1) differs substantially from that defined in Version 1; with this exception, Versions 1 and 2 are compatible.

Additional descriptive conventions are listed below.

5.1 Terms

Throughout the rest of this Recommendation | International Standard, terms that refer to ASN.1 types are written with upper-case initial letters for all words in the ASN.1 type (for example, EDI Notification Requests).

5.2 ASN.1

ASN.1 definitions appear both in the main text and in the annexes. In case of inconsistency between a definition presented in the text, and a definition presented in an annex forming an integral part of this Recommendation | International Standard, the definition in the annex shall be used. ASN.1 notation is defined in ITU-T Rec. X.680 | ISO/IEC 8824-1.

This Recommendation | International Standard uses, for the indicated purposes, the following ASN.1-based descriptive conventions:

- a) to define the functional objects of EDI Messaging, and other data types and values of all kinds, ASN.1 itself;
- b) to define the functional objects of EDI Messaging, the MHS-OBJECT information class of ITU-T Rec. X.411 | ISO/IEC 10021-4;
- c) to define the abstract service of EDI Messaging, the PORT, ABSTRACT-OPERATION and ERROR information object classes of ITU-T Rec. X.411 | ISO/IEC 10021-4, and the CONTRACT information object class of ITU-T Rec. X.880 | ISO/IEC 13712-1;
- d) to define the protocol extensions, the EDIM-EXTENSION information object class of this Recommendation | International Standard;
- e) to define extended body part types, the EXTENDED-BODY-PART-TYPE information object class of ITU-T Rec. X.420 | ISO/IEC 10021-7;
- f) to define MS Auto-actions and MS attributes, the AUTO-ACTION and ATTRIBUTE information object classes of ITU-T Rec. X.413 | ISO/IEC 10021-5.

ASN.1 tags are implicit throughout the ASN.1 modules defined in any annex; the module is definitive in that respect.

NOTE – The use of ASN.1 to describe a class or piece of information does not in itself imply that information is transported between open systems. The fact that the information, by virtue of its description in ASN.1 and of ASN.1's basic encoding rules, has a concrete transfer syntax may be immaterial. Information actually conveyed between systems is designated as such by its inclusion in an application protocol.

5.3 Conventions for Attribute Types in Table 2

This Recommendation | International Standard uses the conventions listed below in its definition of attribute types for the MS abstract services.

For the columns headed "Single/Multi-valued" the following values can occur:

- S: single-valued,
- M: multi-valued.

For the columns headed "Support level by MS and UA" (where UA refers only to a UA that accesses an MS) the following values can occur:

- M: mandatory,
- O: optional.

For the columns headed "Presence in delivered EDIM", "Presence in submitted EDIM", "Presence in PN", "Presence in NN", "Presence in FN", "Presence in Delivery-log", and "Presence in Submission-log", the presence of each attribute type is described by one of the following values:

- P: "always present" in the entry because it is mandatory for generation by the MS or it is a mandatory or defaulted parameter in the relevant abstract operation.
- C: "conditionally present" in the entry. It will be present because it is supported by the MS and subscribed to by the user and it was present in an optional parameter in the relevant abstract operation.
- a hyphen (-) indicates "always absent", otherwise.

For the columns headed "Available for list, alert" and "Available for summarize", the following values can occur:

- N: No;
- Y: Yes.

5.4 Conventions for Attribute Types in Table 4

This Recommendation | International Standard uses the conventions listed below in its definition of attribute types for the MS abstract services.

For the columns headed "Source generated by", the following values can occur:

- Md: MessageDelivery abstract-operation;
 - Ms: MessageSubmission abstract-operation;
 - MS: MessageStore.
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6 Information objects

The information objects that users exchange in EDI messaging are of two kinds: EDI messages (EDIM), and EDI notifications (EDIN).

NOTE – The EDI messaging user (EDIMG user) is normally an EDI application or computer process, not a person. For brevity, the term user is used throughout the rest of this Recommendation | International Standard with the meaning of EDIMG user.

```
InformationObject ::= CHOICE {
    edim          [0] EDIM,
    edin         [1] EDIN }
```

7 Common data types

Information items of several kinds appears both in EDI messages and EDI notifications. These common items are defined below.

7.1 EDIM Identifier

An EDIM Identifier is an information item that unambiguously, globally and forever uniquely identifies an EDIM.

It comprises an OR-name and a string which may for example contain a time or sequence number or other sufficient information to make this EDIM unique.

```
EDIMIdentifier ::= SET {
    user                      [0] ORName,
    user-relative-identifier [1] LocalReference }
```

NOTE – OR-name is defined in 8.5.5 of ITU-T Rec. X.411 | ISO/IEC 10021-4.