
**Information technology — Message
Handling Systems (MHS): Interpersonal
messaging system**

*Technologies de l'information — Systèmes de messagerie (MHS):
Système de messagerie de personne à personne*

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CONTENTS

	<i>Page</i>
SECTION 1 – INTRODUCTION	1
1 Scope	1
2 Normative references	1
2.1 Open Systems Interconnection	1
2.2 Message Handling Systems	2
2.3 Directory Systems	2
2.4 Language Code	2
2.5 Character Sets	2
2.6 Telematic Services	2
2.7 File Transfer	3
2.8 Open Document Architecture	3
2.9 Digital Encoding of Sound	3
2.10 Cryptography	3
3 Definitions	3
4 Abbreviations	3
5 Conventions	3
5.1 ASN.1	4
5.2 Grade	4
5.3 Terms	5
5.4 Conventions for attribute-types used in Table 5	5
5.5 Interpretation of UTC Time values	5
SECTION 2 – ABSTRACT INFORMATION OBJECTS	5
6 Overview	5
7 Interpersonal Messages	6
7.1 Heading Field Component Types	6
7.1.1 IPM Identifier	7
7.1.2 Recipient Specifier	7
7.1.3 OR-Descriptor	8
7.1.4 IPMS Extension	8
7.2 Heading Fields	9
7.2.1 This IPM	9
7.2.2 Originator	9
7.2.3 Authorizing Users	9
7.2.4 Primary Recipients	9
7.2.5 Copy Recipients	9
7.2.6 Blind Copy Recipients	10
7.2.7 Replied-to IPM	10
7.2.8 Obsolete IPMs	10
7.2.9 Related IPMs	10
7.2.10 Subject	11
7.2.11 Expiry Time	11
7.2.12 Reply Time	11
7.2.13 Reply Recipients	11
7.2.14 Importance	11
7.2.15 Sensitivity	11
7.2.16 Auto-forwarded	12
7.2.17 Extensions	12
7.3 Body Parts	12
7.3.1 Extended Body Part	13
7.3.2 Body Part Encoding	14
7.4 Standard Body Part Types	15
7.4.1 IA5 Text	15
7.4.2 G3 Facsimile	15
7.4.3 G4 Class 1	16
7.4.4 Teletex	16

	<i>Page</i>
7.4.5 Videotex	17
7.4.6 Encrypted	17
7.4.7 Message	18
7.4.8 Mixed-mode	18
7.4.9 Bilaterally Defined	19
7.4.10 Nationally Defined	19
7.4.11 General Text	19
7.4.12 File Transfer	20
7.4.13 Voice	25
7.4.14 Report	27
7.4.15 Notification	27
7.4.16 Forwarded Content	27
7.4.17 PKCS7	28
8 Interpersonal Notifications	29
8.1 Common Fields	30
8.1.1 Subject IPM	30
8.1.2 IPN Originator	30
8.1.3 IPM Intended Recipient	30
8.1.4 Conversion EITs	31
8.1.5 Notification Extensions	31
8.2 Non-receipt Fields	31
8.2.1 Non-receipt Reason	31
8.2.2 Discard Reason	31
8.2.3 Auto-forward Comment	32
8.2.4 Returned IPM	32
8.2.5 NRN Extensions	32
8.3 Receipt Fields	32
8.3.1 Receipt Time	33
8.3.2 Acknowledgment Mode	33
8.3.3 Suppl Receipt Info	33
8.3.4 RN Extensions	33
8.4 Other Notification Type Fields	33
8.4.1 Absence Advice	33
8.4.2 Change of Address Advice	34
SECTION 3 – ABSTRACT SERVICE DEFINITION	35
9 Overview	35
10 Primary Object Types	35
10.1 Interpersonal Messaging System User	35
10.2 Interpersonal Messaging System	36
11 Primary Port Types	36
11.1 Origination	36
11.2 Reception	36
11.3 Management	36
12 Abstract Operations	36
12.1 Origination Abstract Operations	37
12.1.1 Originate Probe	37
12.1.2 Originate IPM	37
12.1.3 Originate RN	38
12.1.4 Originate ON	38
12.2 Reception Abstract Operations	39
12.2.1 Receive Report	39
12.2.2 Receive IPM	39
12.2.3 Receive RN	40
12.2.4 Receive NRN	40
12.2.5 Receive ON	40
12.3 Management Abstract Operations	40
12.3.1 Change Auto-discard	40
12.3.2 Change Auto-acknowledgment	41
12.3.3 Change Auto-forwarding	41

	<i>Page</i>	
13	Abstract Errors	42
	13.1 Subscription Error	42
	13.2 Recipient Improperly Specified	42
14	Other Capabilities	42
SECTION 4 – ABSTRACT SERVICE PROVISION		43
15	Overview	43
16	Secondary Object Types	43
	16.1 Interpersonal Messaging System User Agent	43
	16.2 Interpersonal Messaging System Message Store	43
	16.3 Telematic Agent	43
	16.4 Telex Access Unit	44
	16.5 Physical Delivery Access Unit	44
	16.6 Message Transfer System	45
17	Secondary Port Types	45
	17.1 Submission	45
	17.2 Delivery	45
	17.3 Retrieval	45
	17.4 Administration	45
	17.5 Import	45
	17.6 Export	45
18	User Agent Operation	46
	18.1 State Variables	46
	18.2 Performance of Origination Operations	46
	18.2.1 Originate Probe	46
	18.2.2 Originate IPM	47
	18.2.3 Originate RN	47
	18.2.4 Originate ON	48
	18.3 Performance of Management Operations	48
	18.3.1 Change Auto-discard	48
	18.3.2 Change Auto-acknowledgment	49
	18.3.3 Change Auto-forwarding	49
	18.4 Invocation of Reception Operations	49
	18.4.1 Receive Report	49
	18.4.2 Receive IPM	49
	18.4.3 Receive RN	50
	18.4.4 Receive NRN	50
	18.4.5 Receive ON	50
	18.5 Internal Procedures	50
	18.5.1 Auto-discard	50
	18.5.2 Auto-acknowledgment	51
	18.5.3 Auto-forwarding	52
19	Message Store Operation	53
	19.1 Binding to the IPMS-MS	53
	19.1.1 MS-Bind-argument	53
	19.1.2 MS-Bind-result	53
	19.2 Creation of Information Objects	53
	19.2.1 Mapping an IPMS Message to an MS entry	54
	19.2.2 Mapping of forwarding messages in the IPMS-MS	54
	19.2.3 Presence of General-attributes in child-entries	55
	19.3 Maintenance of Attributes	56
	19.4 Notification of Non-receipt	57
	19.5 IPMS-MS abstract-operation extensions	57
	19.5.1 MS-Bind extensions	57
	19.5.2 MS-Bind-Result extensions	58
	19.5.3 IPM -submission options	58
	19.5.4 IPM submission errors	60

	<i>Page</i>
19.5.5 Forwarding-request extension	60
19.5.6 Delete extensions	60
19.6 IPMS-MS Attributes	60
19.6.1 Summary Attributes	63
19.6.2 Heading Attributes	66
19.6.3 Body Attributes	71
19.6.4 Notification Attributes	74
19.6.5 Correlation Attributes	76
19.6.6 The IPMS-attribute-table information object class	83
19.6.7 Generation of the IPMS-specific Attributes	84
19.6.8 Attributes Subject to Modification	89
19.7 IPMS-MS matching rules.....	89
19.7.1 IPM-identifier-match.....	89
19.7.2 IPM-location-match	89
19.7.3 OR-descriptor-match.....	90
19.7.4 OR-descriptor-elements-match	90
19.7.5 OR-descriptor-substring-elements-match	90
19.7.6 OR-descriptor-single-element-match	90
19.7.7 Recipient-specifier-match	90
19.7.8 Recipient-specifier-elements-match.....	91
19.7.9 Recipient-specifier-substring-elements-match.....	91
19.7.10 Recipient-specifier-single-element-match.....	91
19.7.11 Circulation-member-match	91
19.7.12 Circulation-member-elements-match.....	91
19.7.13 Circulation-member-substring-elements-match.....	91
19.7.14 Circulation-member-single-element-match.....	92
19.7.15 Circulation-member-checkmark-match.....	92
19.7.16 Distribution-code-match	92
19.7.17 Information-category-match.....	92
19.8 IPMS-MS auto-actions.....	93
19.8.1 Auto-action performance	94
19.8.2 IPM Auto-forward.....	94
19.8.3 IPM Auto-acknowledgement.....	96
19.8.4 IPM Auto-correlate.....	97
19.8.5 IPM Auto-discard.....	98
19.8.6 IPM auto-advise.....	98
19.9 Procedures for the IPMS-MS	100
19.9.1 Additional procedures for Message-delivery and Report-delivery	100
19.9.2 Additional Procedures for MS-message-submission.....	104
19.9.3 Additional Procedures for Fetch	106
19.9.4 Additional Procedures for Delete and Auto-delete	106
19.9.5 Auto-discard of expired IPMs	106
20 Message Contents.....	107
20.1 Content	107
20.2 Content Type.....	107
20.3 Content Length.....	107
20.4 Encoded Information Types	108
21 Port Realization	108
22 Conformance	109
22.1 Origination Versus Reception	109
22.2 Statement Requirements.....	109
22.3 Static Requirements	109
22.4 Dynamic Requirements	110
Annex A – General IPMS Extensions	111
A.1 Heading Extensions.....	111
A.1.1 Incomplete Copy	111
A.1.2 Languages	111
A.1.3 Auto-submitted.....	111
A.1.4 Body Part Signature	111

	<i>Page</i>
A.1.5 IPM Security Label	112
A.1.6 Authorization Time	113
A.1.7 Circulation List Recipients	113
A.1.8 Distribution Codes	114
A.1.9 Extended Subject	115
A.1.10 Information Category	115
A.1.11 Manual Handling Instructions	116
A.1.12 Originator's Reference	116
A.1.13 Precedence Policy Identifier	116
A.2 Recipient Extensions	116
A.2.1 Circulation List Indicator	116
A.2.2 Precedence	117
A.3 Notification Extensions	117
Annex B – IPMS Security Extensions	118
B.1 Recipient Security Request	118
B.2 IPN Security Response	119
B.3 Security Diagnostic Code	119
B.4 Additional UA Procedures	121
B.4.1 Originate IPM	121
B.4.2 Originate IPN	122
B.5 Additional MS Procedures	124
B.6 MTS Extensions	124
B.6.1 Body Part Encryption Token	124
B.6.2 Forwarded Content Token	126
Annex C – Reference Definition of Object Identifiers	127
Annex D – Reference Definition of Abstract Information Objects	133
Annex E – Reference Definition of Extended Body Part Types	143
E.1 Equivalents of Basic Body Part Types	143
E.2 General Text	144
E.3 File Transfer	145
E.4 Voice	148
E.5 Report and Notification	148
E.6 Forwarded Content	149
E.7 PKCS7	150
Annex F – Reference Definition of Functional Objects	151
Annex G – Reference Definition of Abstract Service	152
Annex H – Reference Definition of IPM Extensions	155
Annex I – Reference Definition of Message Store Attributes	159
Annex J – Reference Definition of IPMS-MS auto-actions	174
Annex K – Reference Definition of IPMS Security Extensions	178
Annex L – Reference Definition of Upper Bounds	181
Annex M – Support of the Interpersonal Messaging Service	182
M.1 Support of Recipient Specifier Components	182
M.2 Support of Heading Fields	182
M.3 Support of Body Aspects	183
M.4 Support of Notification Fields	184
M.5 Support of Envelope Fields	184
M.6 Support of IPMS Message Store	184
Annex N – Security Model Supplement for IPMS	185
N.1 Introduction	185
N.2 Security Services	185
N.3 Supplements to Clause 10.2: Security Services	185
N.4 Body Part Encryption	185
N.5 Body Part Authentication and Integrity	185

	<i>Page</i>
N.6 IPM Security Labelling	185
N.7 IPN Authentication.....	186
N.7.1 Proof of Notification	186
N.7.2 Proof of Content.....	186
N.8 Non-repudiation of IPM Responsibility	186
N.8.1 Non-repudiation of Notification.....	186
N.8.2 Non-repudiation of Content	186
Annex O – ASN.1 Module for PKCS#7	187
Annex P – Differences Between ISO/IEC 10021-7 and ITU-T Recommendation X.420	192
Annex Q – Summary of Changes to Previous Editions	193
Q.1 Differences between CCITT Rec. X.420 (1984) and CCITT Rec. X.420 (1988).....	193
Q.2 Differences between CCITT Rec. X.420 (1988) and ISO/IEC 10021-7:1990	193
Q.3 Differences between ISO/IEC 10021-7:1990 and CCITT Rec. X.420 (1992).....	193
Q.4 Differences between CCITT Rec. X.420 (1992) and ITU-T Rec. X.420 (1996) ISO/IEC 10021-7:1997	194
Q.5 Differences between ITU-T Rec. X.420 (1996) ISO/IEC 10021-7:1997 and ITU-T Rec. X.420 (1998) ISO/IEC 10021-7:1999	194
Annex R – Index.....	196

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. 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 document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 10021-7 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems* in collaboration with ITU-T. The identical text is published as ITU-T Rec. X.420.

This third edition cancels and replaces the second edition (ISO/IEC 10021-7:1997), 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 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: MHS Routing — Guide for messaging systems managers [Technical Report]*

Introduction

This Specification is one of a set of Recommendations | International Standards for 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 (AUs) 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 (MTAs) which collectively perform the store-and-forward message transfer function.

This Specification defines the Message Handling application called *Interpersonal Messaging*, specifying in the process the message content type and associated procedures known as *P2*.

This Specification was developed jointly by ITU-T and ISO/IEC. It is published as common text as ITU-T Rec. X.420 | ISO/IEC 10021-7.

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**INTERNATIONAL STANDARD
ITU-T RECOMMENDATION**

**Information technology –
Message Handling Systems (MHS) –
Interpersonal Messaging System**

SECTION 1 – INTRODUCTION

1 Scope

This Recommendation | International Standard defines **Interpersonal Messaging**, a form of Message Handling tailored for ordinary interpersonal business or private correspondence.

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.

This Recommendation | International Standard is structured as follows. Section one is this introduction. Section two defines the kinds of information objects exchanged in Interpersonal Messaging. Section three defines the associated abstract service. Section four specifies how it is provided. Annexes provide important supplemental information.

The requirements for conformance to this Recommendation | International Standard are given in clause 22.

2 Normative references

[ISO/IEC 10021-7:2003](#)

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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 editions of the Recommendations and Standards listed below. Members of ISO and IEC maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

2.1 Open Systems Interconnection

This Specification cites the following OSI specifications:

- ITU-T Recommendation X.227 (1995) | ISO/IEC 8650-1:1995, *Information technology – Open Systems Interconnection – Connection-oriented protocol for the Association Control Service Element: Protocol specification.*
- 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.682 (1997) | ISO/IEC 8824-3:1998, *Information technology – Abstract Syntax Notation One (ASN.1) – Constraint Specification.*
- ITU-T Recommendation X.683 (1997) | ISO/IEC 8824-4:1998, *Information technology – Abstract Syntax Notation One (ASN.1) – Parameterization of ASN.1 Specifications.*
- 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).*

ISO/IEC 10021-7:2003 (E)

- ITU-T Recommendation X.880 (1994) | ISO/IEC 13712-1:1995, *Information technology – Remote Operations – Concepts, Model and Notation.*

2.2 Message Handling Systems

This Specification cites the following Message Handling System specifications:

- ITU-T Recommendation F.400/X.400 (1999), *Message handling: System and service overview.*
ISO/IEC 10021-1:2003, *Information technology – Message Handling Systems (MHS) – Part 1: System and service overview.*
- ITU-T Recommendation X.402 (1999) | ISO/IEC 10021-2:2003, *Information technology – Message Handling Systems (MHS) – Overall architecture.*
- CCITT Recommendation X.408 (1988), *Message handling systems: Encoded information type conversion rules.*
- ITU-T Recommendation X.411 (1999) | ISO/IEC 10021-4:2003, *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.419 (1999) | ISO/IEC 10021-6:2003, *Information technology – Message Handling Systems (MHS) – Protocol specifications.*
- CCITT Recommendation X.420 (1984), *Message handling systems: Interpersonal messaging user agent layer.*

2.3 Directory Systems

This Specification cites the following Directory System specifications:

- ITU-T Recommendation X.501 (1997) | ISO/IEC 9594-2:1998, *Information technology – Open Systems Interconnection – The Directory – Models.*
- ITU-T Recommendation X.509 (1997) | ISO/IEC 9594-8:1998, *Information technology – Open Systems Interconnection – The Directory – Authentication Framework.*
- ITU-T Recommendation X.520 (1997) | ISO/IEC 9594-6:1998, *Information technology – Open Systems Interconnection – The Directory – Selected Attribute Types.*

2.4 Language Code

This Specification cites the following Language Code specification:

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

2.5 Character Sets

This Specification cites the following Character Set specifications:

- ISO/IEC 2022:1994, *Information technology – Character code structure and extension techniques.*
- ISO 2375:1985, *Data processing – Procedure for registration of escape sequences.*
- ISO 8859-1:1987, *Information processing – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1.*
- ISO 10646-1:1993, *Information technology – Universal Multiple-Octet Coded Character Set (UCS) – Part 1: Architecture and Basic Multilingual Plane.*
- CCITT Recommendation T.61 (1988), *Character repertoire and coded character sets for the international Teletex service.*

2.6 Telematic Services

This Specification cites the following Telematic Service specifications:

- ITU-T Recommendation T.4 (1993), *Standardization of group 3 facsimile apparatus for document transmission.*

- ITU-T Recommendation T.30 (1993), *Procedures for document facsimile transmission in the general switched telephone network*.
- CCITT Recommendation T.100 (1988), *International information exchange for interactive videotex*.
- ITU-T Recommendation T.101 (1994), *International interworking for videotex services*.
- CCITT Recommendation T.330 (1988), *Telematic access to interpersonal messaging system*.

2.7 File Transfer

This Specification cites the following File Transfer specifications:

- ISO 8571-1:1988, *Information processing systems – Open Systems Interconnection – File Transfer, Access and Management – Part 1: General Introduction*.
- ISO 8571-2:1988, *Information processing systems – Open Systems Interconnection – File Transfer, Access and Management – Part 2: Virtual Filestore Definition*.
- ISO 8571-2:1988/Amd.1:1992, *Information processing systems – Open Systems Interconnection – File Transfer, Access and Management – Part 2: Virtual Filestore Definition – Amendment 1: Filestore Management*.
- ISO 8571-4:1988, *Information processing systems – Open Systems Interconnection – File Transfer, Access and Management – Part 4: File Protocol Specification*.
- ISO 8571-4:1988/Amd.1:1992, *Information processing systems – Open Systems Interconnection – File Transfer, Access and Management – Part 4: File Protocol Specification – Amendment 1: Filestore Management*.

2.8 Open Document Architecture

This Specification cites the following Open Document Architecture specifications:

- ITU-T Recommendation T.415 (1993), | ISO/IEC 8613-5:1994, *Information technology – Open document architecture (ODA) and Interchange Format: Open Document Interchange Format*.

2.9 Digital Encoding of Sound

This Specification cites the following specifications on the Digital Encoding of Sound:

- CCITT Recommendation G.711 (1988), *Pulse code modulation (PCM) of voice frequencies*.
- CCITT Recommendation G.726 (1990), *40, 32, 24, 16 kbit/s Adaptive Differential Pulse Code Modulation (ADPCM)*.
- CCITT Recommendation G.728 (1992), *Coding of Speech at 16 kbit/s Using Low-Delay Code Excited Linear Prediction*.
- IEC 908: 1987, *Compact Disc Digital Audio*.

2.10 Cryptography

This Specification cites the following Cryptographic specification:

- RSA Laboratories. PKCS#7: *Cryptographic Message Syntax Standard. Version 1.5, November 1993*.

3 Definitions

For the purposes of this Specification, the definitions given in ITU-T Rec. X.402 | ISO/IEC 10021-2 apply.

4 Abbreviations

For the purposes of this Specification, the abbreviations given in ITU-T Rec. X.402 | ISO/IEC 10021-2 apply.

5 Conventions

This Specification uses the descriptive conventions identified below.

5.1 ASN.1

This Specification uses for the indicated purposes the following ASN.1-based descriptive conventions:

- a) To define the information objects of Interpersonal Messaging, and other data types and values of all kinds, ASN.1 itself. ASN.1 is defined in ITU-T Rec. X.680 | ISO/IEC 8824-1, ITU-T Rec. X.681 | ISO/IEC 8824-2, ITU-T Rec. X.682 | ISO/IEC 8824-3 and ITU-T Rec. X.683 | ISO/IEC 8824-4.
- b) To define the functional objects of Interpersonal Messaging, the MHS-OBJECT information object class of ITU-T Rec. X.411 | ISO/IEC 10021-4.
- c) To define the abstract service of Interpersonal Messaging, the PORT and ABSTRACT-OPERATION and ABSTRACT-ERROR information object class 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 *IPMS extensions*, the IPMS-EXTENSION information object class of 7.2.17.
- e) To define *extended body part types*, the EXTENDED-BODY-PART-TYPE information object class of 7.3.1.
- f) To define IPMS-MS attributes, the ATTRIBUTE information object class of ITU-T Rec. X.413 | ISO/IEC 10021-5.

The abstract-syntax defined in this Specification may be mapped to that used in previous editions as follows. All ASN.1 definitions of object sets and Enumerated types which contain the ASN.1 extensions marker ("...") are treated as if any extension additions following the marker are absent. For ASN.1 definitions where the extension marker is not used, the ASN.1 comment "-- 1994 extension --" has a similar interpretation. See 5.7 of ITU-T Rec. X.413 | ISO/IEC 10021-5. The effect of this is that certain attribute-types, matching-rules, and auto-actions are not standardized for use in 1988 Application Contexts.

The various uses of the ASN.1 notation are summarized in Table 1. With the two exceptions evident from the table, whenever ASN.1 is employed, it appears both in the body of this Specification to aid the exposition, and again, largely redundantly, in an annex for reference.

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Table 1 – Uses of the ASN.1 Notation

Subject Matter	Exposition	Reference
Object Identifiers	section two	annex C
Abstract information objects	section two	annex D
Extended body part types	clauses 7.3, 7.4	annex E
Functional objects	clauses 10, 11, 16	annex F
Abstract service	clauses 12-13	annex G
Message store attributes	clause 19	annex I
Message store auto-actions	clause 19	annex J
Heading extensions	annex A	annex H
Security extensions	annex B	annex K
Upper bounds	-	annex L

If differences are found between the ASN.1 used in the exposition and that supplied for reference, a specification error is indicated.

Except for Annex J, ASN.1 tags are implicit throughout the ASN.1 module the annex defines; the module is definitive in that respect.

NOTE 1 – The use of ASN.1 to describe a class or piece of information does not in itself imply that 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.

NOTE 2 – The use of the ABSTRACT-OPERATION and -ERROR information object classes, derived from the correspondingly named information object classes of Remote Operations, does not imply that the abstract operations and errors are invoked and reported across the boundary between open systems. The fact that the abstract operations and errors, by virtue of their description using these information object classes and with minimal additional specification, actually could be invoked via ROS is immaterial in the present context.

5.2 Grade

This Specification uses the concept of grade as developed in ITU-T Rec. X.402 | ISO/IEC 10021-2.

5.3 Terms

Throughout this Specification, terms are rendered in **bold** when defined, in *italic* when referenced prior to their definitions, without emphasis upon all other occasions.

Terms that are proper nouns are capitalized, generic terms are not.

5.4 Conventions for attribute-types used in Table 5

This Specification uses the conventions listed below in its definition of the attribute-types for the IPMS-MS abstract-service.

For the column headed 'Single/Multi-valued' the following values can occur:

S	single-valued
M	multi-valued.

For the column headed 'Source' the following values can occur:

IPM	Originate-IPM, Receive-IPM abstract-operations;
Mod	Modify abstract-operation;
MS	IPMS Message Store;
NRN	Originate-NRN, Receive-NRN abstract-operations;
ON	Originate other-notifications, Receive other-notifications;
RN	Originate-RN, Receive-RN abstract-operations.

5.5 Interpretation of UTC Time values

Dates and times in the MHS protocols are represented using the ASN.1 *UTCTime* type which uses only two decimal digits to represent the year, leaving the century unspecified. Since MHS systems must deal with dates both in the past (e.g. submission times of old messages which may be held in local storage or forwarded) and in the future (expiry time, deferred delivery time), it is important to observe a standard convention to avoid inaccurate display or malfunction of the MHS when dates from different centuries are compared.

The two decimal digits give 100 different years that can be expressed; an implementation has to associate each of these values with a particular century. The chosen convention is that dates up to ten years prior to the current time and up to forty years ahead of the current time should be associated with the corresponding century, with the interpretation of the remaining 49 values being implementation dependent. For example, for a system operating in 1996 the values "86" to "99" are interpreted as 1986 to 1999 and the values "00" to "36" are interpreted as 2000 to 2036, and the values "37" to "85" are implementation dependent.

NOTE – This convention permits two possible implementation strategies. An implementation can choose a fixed interpretation of all the year values, such that the convention is satisfied throughout the expected life of the product, or it can interpret the dates dynamically, based on the current date, such that the implementation remains valid indefinitely. For example, an implementation could choose the fixed range 1970 to 2069 for the available values, meaning that the implementation would require revision if it is still in use by the year 2029.

SECTION 2 – ABSTRACT INFORMATION OBJECTS

6 Overview

This section abstractly describes the information objects that users exchange in Interpersonal Messaging. They are of two kinds, *interpersonal messages (IPMs)* and *interpersonal notifications (IPNs)*. One of the latter acknowledges a user's receipt of one of the former.

```
InformationObject ::= CHOICE {
    ipm [0] IPM,
    ipn [1] IPN}
```

This section covers the following topics:

- a) Interpersonal messages;
- b) Interpersonal notifications.