INTERNATIONAL TELECOMMUNICATION UNION

CCITT X.435

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

DATA COMMUNICATION NETWORKS
MESSAGE HANDLING SYSTEMS

MESSAGE HANDLING SYSTEMS: ELECTRONIC DATA INTERCHANGE MESSAGING SYSTEM

Recommendation X.435

Geneva, 1991

FOREWORD

The CCITT (the International Telegraph and Telephone Consultative Committee) is a permanent organ of the International Telecommunication Union (ITU). CCITT is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

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CCITT NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication Administration and a recognized private operating agency.

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Recommendation X.435

MESSAGE HANDLING SYSTEMS: EDI MESSAGING SYSTEM

(Geneva, 1990)

1 Scope

This Recommendation is one of a set of Recommendations for message handling (MOTIS). 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 Recommedation 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 is one of a seriess on message handling. Recommendation X.402 conctitutes 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. Recommendation X.402 identifies those documents as well.

2 References

Rec. X.208	Specification of abstract syntax notation one (ASN.1), 1988.
ISO 8824	Information processing systems – Open systems interconnection – Specification of abstract syntax notation one (ASN.1), 1987 and Addendum 1.
Rec. X.209	Specification of basic encoding rules for abstract syntax notation one (ASN.1), 1988.
ISO 8825	Information processing systems – Open systems interconnection – Specification of basic encoding rules for abstract syntax notation one (ASN.1), 1987 and Addendum 1.
Rec. X.400	Message handling system and service overview, 1988.
ISO/IEC 10021-1	Information processing systems – text communication – Message-oriented text interchange systems (Message-oriented text interchange systems): system and service overview, 1988.
Rec. X.402	Message handling systems: overall architecture, 1988.
ISO/IEC 10021-2	Message-oriented text interchange systems: Overall architecture, 1988.
Rec. X.407	Message handling systems: Abstract service definition conventions, 1988.

ISO/IEC 10021-3	Message-oriented text interchange systems: Message transfer system: Abstract service definition and procedure, 1988.
Rec. X.408	Message handling systems: encoded information type conversion rules, 1988.
Rec. X.411	Message handling systems: message transfer system: abstract service definition and procedures, 1988.
ISO/IEC 10021-4	Message-oriented text interchange systems: Message transfer system: Abstract service definition and procedures, 1988.
Rec. X.413	Message handling systems: message store: abstract-service definition, 1988.
ISO/IEC 10021-5	Message-oriented text interchange: Message store: Abstract service definition, 1988.
Rec. X.419	Message handling systems: protocol specifications, 1988.
ISO/IEC 10021-6	Message-oriented text interchange systems: Protocol specifications, 1988.
Rec. X.420	Message handling systems: interpersonal messaging system, 1988.
ISO/IEC 10021-7	Message-oriented text interchange systems: Inter personal messaging, 1988
Rec. X.500	The Directory – Overview of concepts, models, and services, 1988.
ISO/IEC 9594-1	Information processing systems – Open systems interconnection – The directory (Directory): Overview of concepts, models, and service, 1988.
Rec. X.501	The Directory – Models, 1988.
ISO/IEC 9594-2	The Directory: Models, 1988.
Rec. X.511	The Directory – Abstract service definition, 1988.
ISO/IEC 9594-3	Directory: Abstract service definition, 1988.
Rec. X.518	The Directory – Procedures for distributed operation, 1988.
ISO/IEC 9594-4	Directory: Procedures for distributed operation, 1988.
Rec. X.519	The Directory – Protocol specifications, 1988.
ISO/IEC 9594-5	Directory: Protocol specifications, 1988.
Rec. X.520	The Directory – Selected attribute types, 1988.
ISO/IEC 9594-6	Directory: Selected attribute types, 1988.
Rec. X.521	The Directory – Selected object classes, 1988.
ISO/IEC 9594-7	Directory – Selected object classes, 1988.
Rec. X.509	The Directory – Authentication framework, 1988.
ISO/IEC 9594-8	Directory: Authentication framework, 1988.

Rec. F.435	Message handling systems: Electronic data interchange messaging service.
ISO/IEC 10021-m	Message handling: Electronic data interchange messaging service.
ISO 9735	Electronic data interchange for administration, commerce and transport (EDIFACT) – Application level syntax rules, 1988.

3 Definitions

3.1 *Common definitions for MHS*

This Recommendation uses terms defined in Recommendations X.400, X.402 and X.413:

a) Access unit
b) Body
c) Content
d) Distribution list
e) Encoded information types
f) Envelope
g) Message handling system
h) Message-oriented text interchange system
i) Message store
j) Message transfer agent
k) Message transfer system
l) Physical delivery access unit
m) Recipient
n) Submission identifier
o) Submission time
p) Synopsis
q) Telematic agent
r) Telex access unit
s) User
t) User agent

3.2 *Common definitions for abstract syntax notation one*

This Recommendation uses the full extent of the abstract syntax notation one (ASN.1) as defined in Recommendation X.208.

3.3 *EDI service definitions*

This Recommendation uses terms defined in Recommendation F.435.

a) EDI forwarding
b) EDI message
c) EDI notification
d) EDI user
e) EDIM responsibility

3.4 *Other EDI definitions*

The terms listed below may assume different meanings in the standards referenced.

3.4.1 *EDI for administration, commerce and transport*

This Recommendation uses terms defined in ISO 9735 (EDIFACT).

- 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 header
- Interchange recipient
- Interchange sender
- Message header
- Processing priority code
- 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 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

3.4.3 *American National Standards Institute Committee X12 Definitions*

This Recommendation uses terms defined in the American National Standards Institute Committee X12 (ANSIX12) standard.

– 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 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

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
EDIMG user	EDI messaging user
EDIMS	EDI messaging system
EDIN	EDI notification
EIT	Encoded information types
FN	Forwarded notification
MD	Management domain
MHS	Message handling system
MOTIS	Message-oriented text interchange 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	EDI User agent
UNTDI	United Nations/trade data interchange

5 Conventions

5.1 *Terms*

Throughout the rest of this Recommendation, terms that refer to ASN.1 types are written with upper-case letters for all words in the ASN.1 type (for example, OR Name).

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, the definition in the annex shall be used. ASN.1 notation is defined in Recommendation X.208.

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

a) to define the information 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 OBJECT and REFINE macros of Recommendation X.407;

c) to define the abstract service of EDI Messaging, the PORT and ABSTRACT-operation and ERROR macros of Recommendation X.407;

d) to define the protocol extensions, the EDIM-EXTENSION macro of this Recommendation;

e) to define extended body part types, the EXTENDED-BODY-PART-TYPE macro of Recommendation X.420;

f) to define MS Auto-actions, the AUTO-ACTION macro of Recommendation X.413;

g) to define MS attributes, the ATTRIBUTE macro of Recommendation X.501.

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 1/X.435*

This Recommendation 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 PN”, “Presence in NN” and “Presence in FN”, 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.

– “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 2/X.435*

This Recommendation 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: MessageStore

– RD: ReportDelivery abstract-operation

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 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 Recommendation X.411.

The EDIM Identifier shares the same value set with the IPM Identifier defined in Recommendation X.420. Therefore an EDI user agent or EDI message store that is capable of handling both IPM and EDIM shall make sure that the Local Reference is unique both for IPMs and EDIMs.

An EDIM Identifier has the following components:

a) *User:* Identifies the user who originates the EDIM. One of the user's OR Names.

b) *User-relative-identifier:* Unambiguously identifies the EDIM, distinguishing it from all other EDIMs that the user who is identified by the User component originates. A Printable String of from zero to a prescribed number of characters (see Annex G). A length of zero is discouraged.

```
LocalReference ::= PrintableString (SIZE (0..ub-local-reference))
```

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7.2 *Extensions*

A mechanism is provided which allows for future extensions to this Recommendation.

```
ExtensionField ::= SEQUENCE {
    type                    [0] EDIM-EXTENSION,
    criticality             [1] Criticality DEFAULT FALSE,
    value                   [2] ANY DEFINED BY type DEFAULT NULL NULL }
```

An Extension field can be marked critical (Criticality set to TRUE) or non-critical (Criticality set to FALSE) for acceptance of Responsibility. An extension marked as non-critical for Responsibility may be ignored or discarded, while an extension marked as critical must be known and performed for acceptance of Responsibility of an EDIM.

Note – The term EDIM Responsibility; is defined in § 3.5 of Recommendation F.435. Throughout this document, the term "Responsibility" refers to the term defined in Recommendation F.435, and not to the everyday use of the word.

```
Criticality ::= BOOLEAN
```

As a notation support for future definitions of extensions, a MACRO is defined.

```
EDIM-EXTENSION MACRO ::=
    BEGIN

    TYPE NOTATION           ::= DataType Critical | empty
    VALUE NOTATION          ::= value(VALUE OBJECT IDENTIFIER)

    DataType                ::= type (X) Default
    Default                 ::= "DEFAULT" value (X) | empty
    Critical                ::= "CRITICAL" | empty

    END -- of extension
```

8 EDI Messages

An EDI message (EDIM) is a member of the primary class of information objects conveyed between users in EDI messaging.

Note 1 – The term message when used throughout the rest of this Recommendation is a synonym for EDI Message where the context admits.

```
EDIM ::= SEQUENCE {
    heading                 Heading,
    body                    Body }
```

An EDI Message consists of the following components:

a) *Heading:* A set of Heading Fields (or Fields), each an information item that gives a characteristic of the EDI Message.

b) *Body:* A sequence of one or more body parts.

```
Body ::= SEQUENCE {
    primary-body-part       PrimaryBodyPart,
    additional-body-parts   OtherBodyParts OPTIONAL }

PrimaryBodyPart ::= CHOICE {
    edi-body-part           [0] EDIBodyPart,
    forwarded-EDIM          [1] EDIMBodyPart }

OtherBodyParts ::= SEQUENCE OF EDIM-ExternallyDefinedBodyPart
```

Note 2 – EDIM-Externally Defined Body Part is defined in § 8.3.3. EDI Body Part is defined in § 8.3.1. EDIM Body Part is defined in § 8.3.2.

The Body has one Primary Body Part that contains an EDI information object. This body part is either an EDI interchange itself or a forwarded EDIM. Examples of types of EDI information objects are EDI Interchanges defined by ISO 9735, Electronic data interchange for administration, commerce and transport (EDIFACT), by United Nations trade data interchange (UNTDI) and by American National Standards Institute Committee X12 (ANSIX12).

Note 3 – The scope of an EDI information object type is rather large and includes for example Privately Defined types. For brevity, the term interchange is used throughout the rest of this Recommendation with the meaning of EDI Interchange.

The following rules comply with the requirements stated in § 7.4 of Recommendation F.435:

c) When an EDIM is first created, the Primary Body Part shall contain one EDI Body Part.

d) When an EDIM is forwarded, its structure shall comply with the rules given in § 17.3.3.2.

Other body parts may be present in a message related to the Primary Body Part but of a different type. Examples of related body parts might be textual information, voice annotation or graphics to be used in conjunction with the interchange.

The structure of an EDI Message is depicted in Figure 1/X.435.

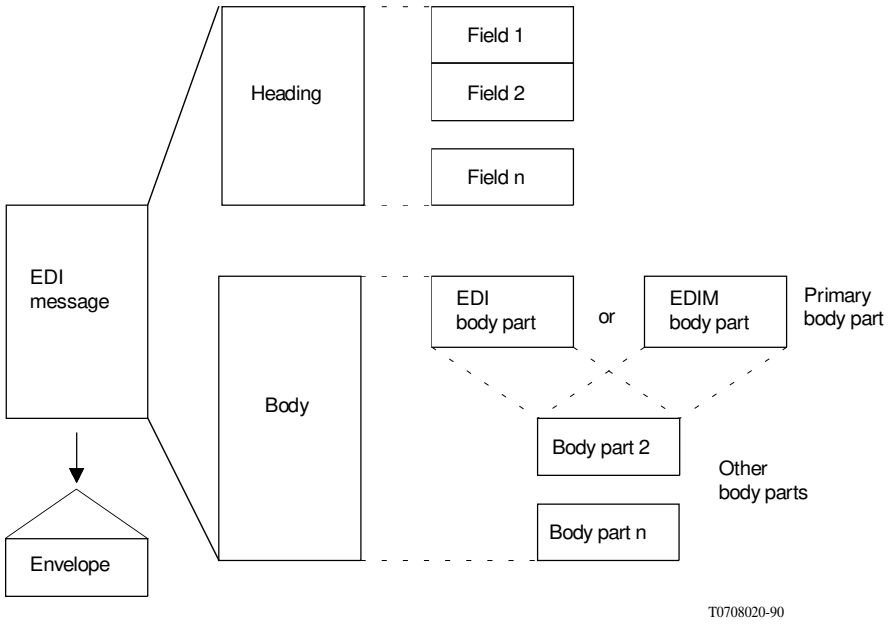

FIGURE 1/X.435

EDI message structure

8.1 *Heading Field Component Types*

Information items of several kinds appear throughout the Heading. These common items are defined below.

In the text that follows, reference is made to EDIFACT segments and data elements. Annex K explains this in relation to UNTDI and ANSIX12. Values copied from EDI data elements and represented as T.61 Strings are semantically equivalent to the characters used to form the EDI data elements in EDIFACT, UNTDI and ANSIX12.

8.1.1 *Interchange Recipient/Sender*

The Interchange Recipient and Interchange Sender fields have some data types in common. They are defined below.

8.1.1.1 *Identification Code*

The Identification Code identifies a sender/recipient of an interchange. This is semantically identical to the "Sender identification/recipient identification" component of the Interchange sender/recipient of the EDIFACT UNB segment.

```
IdentificationCode ::= TeletexString (SIZE (1..ub-identification-code))
```

8.1.1.2 *Identification Code Qualifier*

The Identification Code Qualifier, if present, is a qualifier to the Identification Code of a sender/recipient. This is semantically identical to the "Identification code qualifier" component of the Interchange sender/recipient of the EDIFACT UNB segment.

```
IdentificationCodeQualifier ::= TeletexString (SIZE (1..ub-identification-code-qualifier))
```

8.1.1.3 *Routing Address*

The Routing Address, if present, is an address for routing to the sender/recipient specified in the Identification Code. This is semantically identical to the "Address for reverse routing / Routing address" component of the Interchange sender/recipient of the EDIFACT UNB segment.

```
RoutingAddress ::= TeletexString (SIZE (1..ub-routing-address))
```

8.2 *Heading Fields*

The fields that may appear in the Heading of an EDIM are defined and described below.

```
Heading ::= SEQUENCE {
    this-EDIM                          [1] ThisEDIMField,
    originator                         [2] OriginatorField OPTIONAL,
    recipients                         [3] RecipientsField OPTIONAL,
    edin-receiver                [4] EDINReceiverField OPTIONAL,
    responsibility-forwarded           [5] ResponsibilityForwarded DEFAULT FALSE,
    edi-bodypart-type                  [6] EDIBodyPartType DEFAULT {id-bp-edifact-ISO646},
    incomplete-copy                    [7] IncompleteCopyField DEFAULT FALSE,
    expiry-time                        [8] ExpiryTimeField OPTIONAL,
    related-messages                   [9] RelatedMessagesField OPTIONAL,
    obsoleted-EDIMs                    [10] ObsoletedEDIMsField OPTIONAL,
    edi-application-security-elements  [11] EDIApplicationSecurityElementsField OPTIONAL,
    cross-referencing-information      [12] CrossReferencingInformationField OPTIONAL,

    -- Begin Fields from EDIFACT Interchange
    edi-message-type                   [13] EDIMessageTypeField OPTIONAL,
    service-string-advice              [14] ServiceStringAdviceField OPTIONAL,
    syntax-identifier                  [15] SyntaxIdentifierField OPTIONAL,
    interchange-sender                 [16] InterchangeSenderField OPTIONAL,
    date-and-time-of-preparation       [17]  DateAndTimeOfPreparationField OPTIONAL,
    application-reference              [18] ApplicationReferenceField OPTIONAL,
    -- End Fields from EDIFACT

    heading-extensions                 [19] HeadingExtensionsField OPTIONAL }
```

Note – The names of the Heading fields derived from EDI standards are taken directly from the relevant standards. See also Annex K.

8.2.1 *This EDIM*

The This EDIM field identifies the EDIM. It comprises an EDIM Identifier which provides a globally and forever unique identification for the EDIM.

```
ThisEDIMField ::= EDIMIdentifier
```

Note – EDIM Identifier is defined in § 7.1.

8.2.2 *Originator*

Identifies the EDIM's originator. It comprises an OR Name. If the Originator field is not present in the EDIM Heading on reception, then the Originating-name of the delivery envelope shall be used to determine the originator of the EDIM (see § 8.2.1.1.1.1 of Recommendation X.411).

```
OriginatorField ::= ORName
```

Note – OR Name is defined in § 8.5.5 of Recommendation X.411.

8.2.3 *Recipients*

The Recipients field identifies the user(s) and distribution lists(DL) who are the (preferred) recipient(s) of the EDIM. It comprises a set of Recipients subfields, one for each recipient. If the Recipients field is not present in the EDIM Heading on reception, then the This-recipient-name of the delivery envelope shall be used to determine the recipient of the EDIM (see § 8.3.1.1.1.3 of Recommendation X.411).

Note – The fact that a message can be redirected or forwarded is reflected in the word "preferred" above.

```
RecipientsField ::= SET OF RecipientsSubField
```

The Recipients subfield is an information item that identifies a recipient of an EDIM and that may make certain requests of him.

```
RecipientsSubField ::= SEQUENCE {
    recipient                       [1] RecipientField,
    action-request                  [2] ActionRequestField DEFAULT {id-for-action},
    edi-notification-requests-field [3]  EDINotificationRequestsField OPTIONAL,
    responsibility-passing-allowed  [4]  ResponsibilityPassingAllowedField DEFAULT FALSE,

    -- Begin Fields from EDIFACT UNB
    interchange-recipient           [5] InterchangeRecipientField OPTIONAL,
    recipient-reference             [6] RecipientReferenceField OPTIONAL,
    interchange-control-reference   [7]  InterchangeControlReferenceField OPTIONAL,
    processing-priority-code        [8] ProcessingPriorityCodeField OPTIONAL,
    acknowledgement-request         [9] AcknowledgementRequestField DEFAULT FALSE,
    communications-agreement-id     [10]  CommunicationsAgreementIdField OPTIONAL,
    test-indicator                  [11] TestIndicatorField DEFAULT FALSE,
    -- End Fields from EDIFACT UNB

    -- Begin Fields from ANSIX12 ISA
    authorization-information       [12]  AuthorizationInformationField OPTIONAL,
    -- End Fields from ANSIX12 ISA

    recipient-extensions            [13] RecipientExtensionsField OPTIONAL }
```

The Recipients subfield has the following components:

8.2.3.1 *Recipient*

A Recipient identifies the preferred recipient in question. It comprises an OR Name.

```
RecipientField ::= ORName
```

Note – OR Name is defined in § 8.5.5 of Recommendation X.411.

8.2.3.2 *Action Request*

An Action Request indicates what action the originator requests from the recipient. Its value is an object identifier.

```
ActionRequestField ::= OBJECT IDENTIFIER
```

The following standard values have object identifiers defined in this Recommendation:

– For Action,

– Copy.

The absence of this field shall be interpreted as having the default value set to For Action.

Note – Additional values for this field can be defined by any interested parties.

8.2.3.3 *EDI Notification Requests*

The EDI Notification Requests component (Default: no notifications, no notification security and no reception security) may make certain requests of the preferred recipient denoted by the Recipient field.

Note – The fact that a message can be redirected or forwarded is reflected in the word "preferred" above.

```
EDINotificationRequestsField ::= SEQUENCE {
    edi-notification-requests          [0] EDINotificationRequests DEFAULT {},
    edi-notification-security          [1] EDINotificationSecurity DEFAULT {},
    edi-reception-security             [2] EDIReceptionSecurity DEFAULT {}  }

EDINotificationRequests ::= BIT STRING {
    pn      (0),
    nn      (1),
    fn      (2) } (SIZE (0..ub-bit-options))

EDINotificationSecurity ::= BIT STRING {
    proof (0),
    non-repudiation (1) } (SIZE (0..ub-bit-options))

EDIReceptionSecurity ::= BIT STRING {
    proof (0),
    non-repudiation (1) } (SIZE (0..ub-bit-options))
```

The EDI Notification Requests field consists of a sequence of three optional bit strings of which the first selects the type of notification, the second selects what security function should be applied to that notification, and the third may make certain security requests for proof or non-repudiation of reception of this EDIM by the recipient. EDI Notification Security and EDI Reception Security shall not be requested if EDI Notifications are not requested.

The EDI Notification Requests bit string may assume any of the following values simultaneously.

a) *PN:* A notification of acceptance of Responsibility is requested in the circumstances prescribed in § 9.

b) *NN:* A notification of refusal of Responsibility of a message is requested in the circumstances prescribed in § 9.

c) *FN:* A forwarded notification is requested in the circumstances prescribed in § 9.

The absence of the EDI Notification Requests bit string implies that no EDI Notification requests are made.

The EDI Notification Security bit string may assume any of the following values simultaneously. Each of these values places requirements as indicated below on an EDI-UA submitting a subsequent EDIN in response to the EDI Notification Requests.

d) *Proof:* When submitting the EDIN to the MTS, content-integrity-check shall be requested in the Message-submission-argument as defined in § 8.2.1.1.1.28 in Recommendation X.411.

e) *Non-repudiation:* When submitting the EDIN to the MTS, content-integrity-check shall be requested in the Message-submission-argument as defined in § 8.2.1.1.1.28 in Recommendation X.411 with a non-repudiable certificate.

The absence of the EDI Notification Security bit string implies that no EDI Notification Security requests are made.

The EDI Reception Security bit string may assume any of the following values simultaneously. Each of these values places requirements as indicated below on an EDI-UA submitting a subsequent EDIN in response to the EDI Notification Requests.

f) *Proof:* When submitting the EDIN to the MTS, content-integrity-check (possibly in the message token), or the message-origin-authentication-check (depending on the security policy in force) shall be requested. A notification shall contain the security elements and shall be signed on submission to the MTS, using content-integrity-check (possibly in the message token) or message-origin-authentication-check (depending on the security policy in force) in the Message-submission-argument as defined in §§ 8.2.1.1.1.26, 8.2.1.1.1.28 and 8.2.1.1.1.29 of Recommendation X.411.

g) *Non-repudiation:* When submitting the EDIN to the MTS, a non-repudiable content-integrity-check (possibly in the message token) or a message-origin-authentication-check (depending on the security policy in force) shall be requested. A notification shall contain the security elements and shall be signed on submission to the MTS, using non-repudiable content-integrity-check (possibly in the message token) or message-origin-authentication-check (depending on the security policy in force) in the Message-submission-argument as defined in §§ 8.2.1.1.1.26, 8.2.1.1.1.28 and 8.2.1.1.1.29 of Recommendation X.411.

The absence of the EDI Reception Security field implies that no EDI Reception Security requests are made.

Note – Security services are available only if the MTS supports secure messaging.

8.2.3.4 *Responsibility Passing Allowed*

The Responsibility Passing Allowed field indicates that forwarding Responsibility is allowed if this field is set to TRUE. Absence of the field shall be interpreted as the value FALSE.

A recipient of a message with the Responsibility Passing Allowed field set to FALSE shall originate EDIN's as requested, and shall not forward Responsibility.

```
ResponsibilityPassingAllowedField ::= BOOLEAN -- Default FALSE
```

If allowed, Responsibility may be forwarded to at most one recipient.

8.2.3.5 *Interchange Recipient*

The Interchange Recipient identifies the EDI Interchange recipient. This is semantically identical to the "Interchange recipient" of the EDIFACT UNB segment.

```
InterchangeRecipientField ::= SEQUENCE {
    recipient-identification          [0] IdentificationCode,
    identification-code-qualifier     [1]  IdentificationCodeQualifier OPTIONAL,
    routing-address                   [2] RoutingAddress OPTIONAL }
```

Note – The above fields are defined in § 8.1.1.

8.2.3.6 *Recipient Reference*

The Recipient Reference identifies a reference meaningful to the recipient's EDI application. This is semantically identical to the "Recipient's Reference, Password" of the EDIFACT UNB segment. It consists of two strings.

```
RecipientReferenceField ::= SEQUENCE {
    recipient-reference              [0] RecipientReference,
    recipient-reference-qualifier    [1]  RecipientReferenceQualifier OPTIONAL }

RecipientReference ::= TeletexString (SIZE (1..ub-recipient-reference))

RecipientReferenceQualifier ::=  TeletexString (SIZE (1..ub-recipient-reference-qualifier))
```

8.2.3.7 *Interchange Control Reference*

Indicates the Interchange Control Reference as assigned by the Interchange sender. This is semantically identical to the "Interchange control reference" of the EDIFACT UNB segment.

```
InterchangeControlReferenceField ::= TeletexString (SIZE (1..ub-interchange-control-reference))
```

8.2.3.8 *Processing Priority Code*

Indicates the EDI application Processing Priority Code. This is semantically identical to the "Processing priority code" in the EDIFACT UNB segment. It consists of a string.

```
ProcessingPriorityCodeField ::= TeletexString (SIZE (1..ub-processing-priority-code))
```

8.2.3.9 *Acknowledgement Request*

The Acknowledgement Request indicates the request for EDI acknowledgement as indicated by the interchange sender. This is semantically identical to the "Acknowledgement request" in the EDIFACT UNB segment. Its value is a Boolean, where the value TRUE indicates a request for acknowledgement. Absence of this field shall be interpreted as the value FALSE.

```
AcknowledgementRequestField ::= BOOLEAN -- default FALSE
```

8.2.3.10 *Communications Agreement Id*

The Communications Agreement Id indicates the type of Communications Agreement controlling the interchange, e.g. Customs or other agreement. This is semantically identical to the "Communications agreement id" in the EDIFACT UNB segment.

```
CommunicationsAgreementIdField ::= TeletexString (SIZE (1..ub-communications-agreement-id))
```

8.2.3.11 *Test Indicator*

Indicates that the EDI Interchange is a test. This is semantically identical to the "Test indicator" in the EDIFACT UNB segment. It is a Boolean where the value TRUE indicates that the EDI Interchange is a test. Absence of this field shall be interpreted as the value FALSE.

```
TestIndicatorField ::= BOOLEAN  -- default FALSE
```

8.2.3.12 *Authorization Information*

The Authorization Information indicates who authorized the interchange. This is semantically identical to the "Authorization information" in the ANSIX12 Interchange.

```
AuthorizationInformationField ::= SEQUENCE {
    authorization-information            [0] AuthorizationInformation,
    authorization-information-qualifier  [1] AuthorizationInformationQualifier OPTIONAL }

AuthorizationInformation ::= TeletexString (SIZE (1..ub-authorization-information))

AuthorizationInformationQualifier ::= TeletexString (SIZE (1..ub-authorization-information-qualifier))
```

Note 1 – In the above text reference is made to ANSIX12 segments and data elements. Annex K explains this in relation to UNTDI and EDIFACT (ISO 9735), being the other two widely used syntaxes.

Note 2 – The character set used in the Application Cross Reference field is indicated by the value of the field EDI Body Part Type.

8.2.3.13 *Recipient Extensions*

The Recipient Extensions contains extensions to the Recipients subfield.

```
RecipientExtensionsField ::= SET OF RecipientExtensionsSubField

RecipientExtensionsSubField ::= ExtensionField
```

There are no extensions defined in this Recommendation.

8.2.4 *EDIN Receiver*

Identifies the recipient to whom EDINs are to be sent. This is created by the originator of the EDIM when the Recipient of a requested notification is different from the Originator of the message. It consists of a sequence of OR Name, EDIM Identifier and First Recipient.

This field shall not be present if EDI Notification Requests are not made.

This field shall be present in a forwarded message when the forwarding EDI user agent (EDI-UA) or EDI message store (EDI-MS) forwards Responsibility. This field may be present when the forwarding EDI-UA accepts Responsibility. Rules related to the construction of this field are given in § 17.3.3.4.

Note 1 – For brevity, the term user agent (UA) is used throughout the rest of this Recommendation with the meaning of EDI-UA, and the term message store (MS) is used throughout the rest of this Recommendation with the meaning of EDI-MS.

```
EDINReceiverField ::= SEQUENCE {
    edin-receiver-name          [0] ORName,
    original-edim-identifier    [1] EDIMIdentifier OPTIONAL,
    first-recipient             [2] FirstRecipientField OPTIONAL}
```

The "first-recipient" field shall not be present if more than one Recipents Subfield contains EDI Notification Requests.

The "original-edim-identifier" and the "first-recipient" fields shall not be present when the Primary Body Part is an EDI Body Part (that is, when the original originator first creates the EDIM).

Note 2 – The Original EDIM Identifier and First Recipient fields are included in order to allow the recipient to construct the EDIN for a forwarded EDIM. See §§ 9.1 (more specifically § 9.1.3) and 17.3.1.1 for rules related to the construction of an EDIN; see § 17.3.3.4 for rules related to the First Recipient field when constructing a forwarded EDIM. OR Name is defined in § 8.5.5 of Recommendation X 411. First Recipient Field is defined in § 9.1.3.

8.2.5 *Responsibility Forwarded*

The Responsibility Forwarded field is used to indicate whether Responsibility was forwarded. Absence of this field shall be interpreted as the value FALSE.

```
ResponsibilityForwarded ::= BOOLEAN -- Default FALSE
```

If this field has the value TRUE it indicates to a receiving UA that Responsibility was forwarded. If this field has the value FALSE (or is absent) it indicates to a receiving UA that the security elements of the inner envelope have been checked.

Subject to the security policy in force, the security elements may have been checked when the message was forwarded. However, when Responsibility is accepted, the security elements shall be checked.

Note – Rules regarding the use of this field are contained in §§ 17.3.3.1 and 17.3.3.2.

8.2.6 *EDI Body Part Type*

Indicates the EDI standard and EDI character sets used in the Primary Body Part. It is represented by a single object identifier.

EDIBodyPartType ::= OBJECT IDENTIFIER -- default EDIFACT-ISO646

The following standard values have object identifiers defined in this Recommendation:

– EDIFACT: ISO646|Recommendation T61|UNDEFINED OCTETS

– ANSIX12: ISO646|Recommendation T61|EBCDIC|UNDEFINED OCTETS

– UNTDI: ISO646|Recommendation T61|UNDEFINED OCTETS

– PRIVATE: UNDEFINED OCTETS

– UNDEFINED: UNDEFINED OCTETS

The absence of this field shall be interpreted as having the default value set to EDIFACT, ISO 646.

Note 1 – The character set referred to by the object identifier is that in which both the EDI Body Part, and those Heading fields that are OCTET STRINGS and are derived from the EDI Interchange are encoded, notwithstanding the fact that these types are defined as OCTET STRING.

The value of the EDI Body Part Type field shall be used in the Encoded Information Types (EIT) in the MTS abstract operations (in accordance with § 19.4). This enables a UA to signal to the MTS what type of EDI standard the EDIM's Primary Body Part complies with. The MTS makes use of this information, if the recipient UA has registered delivery restrictions on Encoded Information Types, to decide if it can deliver the EDIM.

Note 2 – The term Encoded Information Type is defined in § 8.1 of Recommendation X.402. See also § 8.2.1.1.1.23 of Recommendation X.411.

8.2.7 *Incomplete Copy*

The Incomplete Copy field indicates that the forwarded EDIM is an incomplete copy of an EDIM. Its value is a Boolean. This field shall have the value TRUE if body parts are removed when an EDIM is forwarded. The absence of this field shall be interpreted as having the value FALSE.

IncompleteCopyField ::= BOOLEAN -- Default FALSE

Note – The term "forwarded EDIM" is defined in § 17.3.3.

8.2.8 *Expiry Time*

Indicates when the originator considers this EDIM looses its validity. It comprises a date and time (UTC).

ExpiryTimeField ::= UTCTime

8.2.9 *Related Messages*

Identifies messages, EDIMs or other (for example IPMs), that the originator of this EDIM considers related to it. It comprises a sequence of one or more message references, one for each related message.

RelatedMessagesField ::= SEQUENCE OF RelatedMessageReference

```
RelatedMessageReference ::= CHOICE {
    edi-message-reference          [0] EDIMIdentifier,
    external-message-reference     [1] ExternalMessageReference }
```

ExternalMessageReference ::= EXTERNAL

Note 1 – If the related message identifies messages from other services the user component of the message identifier (EDIMIdentifier) must be present.

Note 2 – Message identifier values of the referenced message of other service types than EDIMG are carried in the EDIMIdentifier field.

8.2.10 *Obsoleted EDIMs*

The Obsoleted EDIMs Field identifies one or more EDIMs that the present EDIM obsoletes. It is a sequence of subfields, each an EDIM Identifier.

```
ObsoletedEDIMsField ::= SEQUENCE OF ObsoletedEDIMsSubfield

ObsoletedEDIMsSubfield ::= EDIMIdentifier
```

8.2.11 *EDI Application Security Elements*

The EDI Application Security Elements field allows an EDI application to exchange security elements having an end-to-end significance.

```
EDIApplicationSecurityElementsField ::= SEQUENCE {
    edi-application-security-element        [0] EDIApplicationSecurityElement OPTIONAL,
    edi-encrypted-primary-bodypart          [1] BOOLEAN OPTIONAL,
    edi-application-security-extensions     [2] EDIApplicationSecurityExtensions OPTIONAL }

EDIApplicationSecurityElement               ::= BIT STRING (SIZE (0..ub-edi-application-security
                                                elements))

EDIApplicationSecurityExtensions            ::= SET OF EDIApplicationSecurityExtension

EDIApplicationSecurityExtension             ::= ExtensionField
```

8.2.12 *Cross Referencing Information*

The Cross Referencing Information allows an EDI application to reference individual body parts within the same EDIM and within other EDIMs. It contains a set of cross reference data. Its usage is outside the scope of this Recommendation.

```
CrossReferencingInformationField            ::= SET OF CrossReferencingInformationSubField

CrossReferencingInformationSubField ::= SEQUENCE {
    application-cross-reference             [0] ApplicationCrossReference,
    message-reference                       [1] MessageReference OPTIONAL,
    body-part-reference                     [2] BodyPartReference }

ApplicationCrossReference                   ::= OCTET STRING

MessageReference                            ::= EDIMIdentifier
```

If the Message Reference is absent, the message referred to is the current one.

Note – Body Part Reference is defined in § 8.3.3.

8.2.13 *EDI Message Type*

Indicates the Message type(s) present in the EDI Interchange. It consists of a set of distinct strings.

Note – "Message" is to be understood as message types that are defined in EDI standards and shall not be confused with "message" used elsewhere in this Recommendation.

```
EDIMessageTypeField ::= SET OF EDIMessageTypeFieldSubField

EDIMessageTypeFieldSubField ::= TeletexString (SIZE (1..ub-edi-message-type))
```

The values for this field shall be:

– EDIFACT: Message Type from the UNH segment

– ANSIX12: Transaction Set ID from the ST segment

– UNTDI: Message Type from the MHD segment.

8.2.14 *Service String Advice*

Indicates the Service String Advice of the EDI Interchange. This is semantically identical to the "UNA, Service string advice" of the EDIFACT Interchange.

```
ServiceStringAdviceField ::= SEQUENCE {
    component-data-element-separator    [0] ComponentDataElementSeparator,
    data-element-separator              [1] DataElementSeparator,
    decimal-notation                    [2] DecimalNotation,
    release-indicator                   [3] ReleaseIndicator OPTIONAL,
    reserved                            [4] Reserved OPTIONAL,
    segment-terminator          [5] SegmentTerminator }

ComponentDataElementSeparator           ::= OCTET STRING (SIZE (1))

DataElementSeparator                    ::= OCTET STRING (SIZE (1))

DecimalNotation                         ::= OCTET STRING (SIZE (1))

ReleaseIndicator                        ::= OCTET STRING (SIZE (1))

Reserved                                ::= OCTET STRING (SIZE (1))

SegmentTerminator                       ::= OCTET STRING (SIZE (1))
```

8.2.15 *Syntax Identifier*

Indicates the syntax used. This is semantically identical to the "Syntax identifier" of the EDIFACT UNB segment.

It consists of a sequence of the Syntax Identifier and the Syntax Version.

```
SyntaxIdentifierField ::= SEQUENCE {
    syntax-identifier                   SyntaxIdentifier,
    syntax-version                      SyntaxVersion }

SyntaxIdentifier ::= TeletexString (SIZE (1..ub-syntax-identifier))

SyntaxVersion ::= PrintableString (SIZE (1..ub-syntax-version))
```

8.2.16 *Interchange Sender*

Indicates the sender of the EDI Interchange. This is semantically identical to the "Interchange sender" of the EDIFACT UNB segment.

```
InterchangeSenderField ::= SEQUENCE {
    sender-identification               [0] IdentificationCode,
    identification-code-qualifier       [1] IdentificationCodeQualifier OPTIONAL,
    address-for-reverse-routing         [2] RoutingAddress OPTIONAL } -- EDIFACT Routing
                                            Information
```

Note – The above fields are defined in § 8.1.1.

8.2.17 *Date and Time of Preparation*

Indicates the Date/Time of preparation of the EDIM. This is in UTC Time and is derived from the "Date and time of preparation" of the EDIFACT UNB segment. It comprises a UTC time.

```
DateAndTimeOfPreparationField ::= UTCTime
```

8.2.18 *Application Reference*

Provides a general reference to an application or function. This is semantically identical to the "Application reference" segment of the EDIFACT UNB segment. It consists of a string.

```
ApplicationReferenceField ::= TeletexString (SIZE (1..ub-application-reference))
```

8.2.19 *Heading Extensions*

The Heading Extensions allows for future extensions to the Heading.

```
HeadingExtensionsField ::= SET OF HeadingExtensionsSubField

HeadingExtensionsSubField ::= ExtensionField
```

There is no Extensions to the Heading defined in this Recommendation.

Note – The Heading Extensions may be used to implement the element of service "Services Indication" defined in Recommendation F.435.

8.3 *Body Part Types*

The types of body parts that may appear in the Body of an EDIM are defined and described below.

8.3.1 *EDI Body Part*

An EDI Body Part carries a single EDI Interchange.

```
EDIBodyPart ::= OCTET STRING
```

The reference definition of EDI Interchange used is that used by EDIFACT (ISO 9735). Annex K describes equivalent terms in other EDI standards.

8.3.2 *EDIM Body Part*

An EDIM Body Part contains an EDIM, and optionally, its delivery envelope. It is used for forwarding of EDIMs. When an EDIM is forwarded, its structure shall comply with the rules given in § 17.3.3.2.

```
EDIMBodyPart ::= SEQUENCE {
        parameters                      [0] MessageParameters OPTIONAL,
        data                            [1] MessageData }

MessageParameters ::= SET {
        delivery-time                   [0] MessageDeliveryTime OPTIONAL,
        delivery-envelope               [1] OtherMessageDeliveryFields OPTIONAL,
        other-parameters                [2] EDISupplementaryInformation OPTIONAL }
        -- MessageDeliveryTime and OtherMessageDeliveryFields shall both be present or both be absent.

MessageData ::= SEQUENCE {
        heading                         Heading,
        body                            BodyOrRemoved }

BodyOrRemoved ::= SEQUENCE {
        primary-or-removed              PrimaryOrRemoved,
        additional-body-parts           AdditionalBodyParts OPTIONAL }

PrimaryOrRemoved ::= CHOICE {
        removed-edi-body                [0] NULL,
        primary-body-part               [1] EXPLICIT PrimaryBodyPart }

AdditionalBodyParts ::= SEQUENCE OF CHOICE {
external-body-part                      [0] EDIM-ExternallyDefinedBodyPart,
place-holder                            [1] BodyPartPlaceHolder } -- This type is for Body Part
                                            Removal

BodyPartPlaceHolder ::= EDIM-ExternallyDefinedBodyPart -- Only the data
                                        -- portion of the Externally Defined Body shall be removed.
                                        -- See text in 8.3.2.

EDISupplementaryInformation ::= TeletexString (SIZE (1..ub-supplementary-info-length))
```

Note – Primary Body Part is defined in § 8. Body Part Reference is defined in § 8.3.3. Message Delivery Time and Other Message Delivery Fields are defined in § 8.3.1.1 of Recommendation X.411.

The Body Part Place Holder is only used for removal of body parts. It may consist of only the Body Part Reference, or a modified Externally Defined Body Part. In the latter case the Object Identifier and Body Part Reference of the removed body part are preserved; from the parameter (if present) and data portions of the removed body part, only the Object Identifier and the identifier octets of the "encoding" field of the EXTERNAL are preserved. That is, the EXTERNAL type shall have an encoding field of zero length and hence no content.

The delivery envelope shall be present if security services are invoked.

The structure of an EDIM Body Part is depicted in Figure 2/X.435.

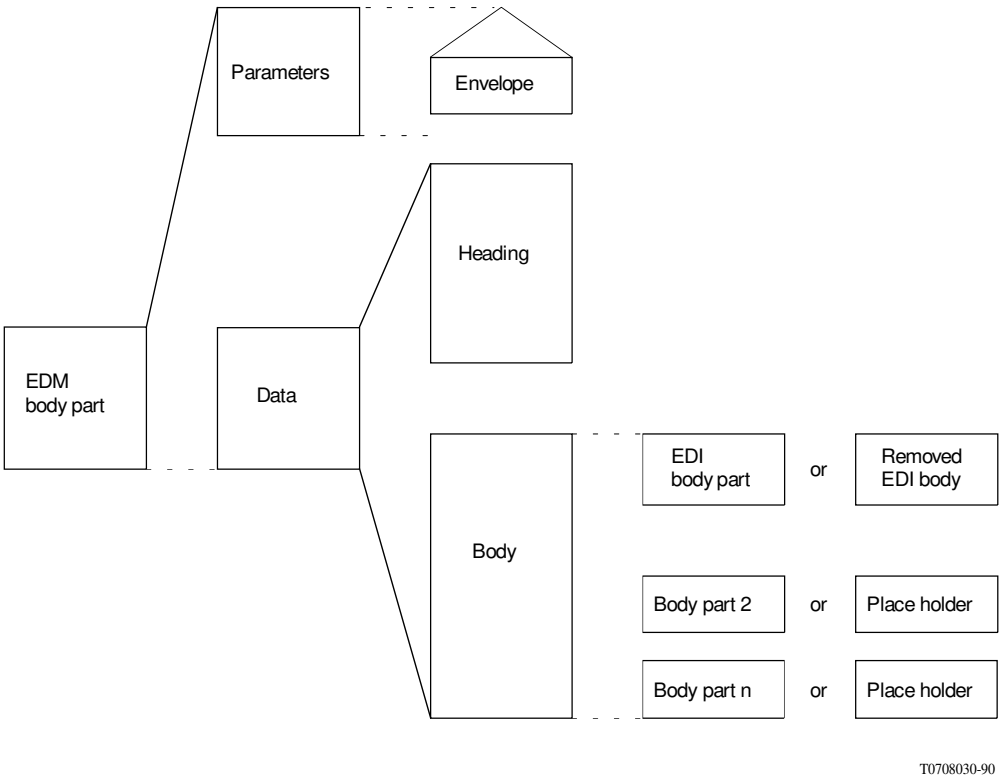

FIGURE 2/X.435

EDIM body part structure

8.3.3 *Externally Defined Body Parts*

Additional body parts, that relate to the Primary Body Part, may be carried together with an EDI Body Part. These body parts shall not be or include EDI Interchanges.

Additional body parts are externally defined and represent information objects whose semantics and abstract syntax are denoted by an object identifier which the body part carries. They have Parameters and Data components and optionally a Body Part Reference that may be used for cross-referencing to a body part.

```
EDIM-ExternallyDefinedBodyPart ::= SEQUENCE {
    body-part-reference                 [0] BodyPartReference OPTIONAL,
    external-body-part                  [1] ExternallyDefinedBodyPart -- from IPMS --}

    BodyPartReference ::= INTEGER -- shall be unique within a EDIM
```

Body Part Reference is assigned when the body part is created, and is not modified subsequently. It shall be present if the originator wishes to cross-reference the body part at creation or in the future.

Note – Some Externally Defined body part types are defined in § 7.3.12 of Recommendation X.420.

9 EDI Notifications

An EDI Notification (EDIN) is a member of a secondary class of information object conveyed between users in EDI Messaging.

Note – The term notification is used throughout the rest of this Recommendation as a synonym for EDI Notification.

```
EDIN ::= CHOICE {
    positive-notification          [0] PositiveNotificationFields,
    negative-notification          [1] NegativeNotificationFields,
    forwarded-notification         [2] ForwardedNotificationFields }
```

a) *Positive notification:* An EDIN that reports its originator's acceptance of Responsibility of an EDIM.

b) *Negative notification:* An EDIN that reports its originator's refusal to accept Responsibility of an EDIM.

c) *Forwarded notification:* An EDIN that reports that Responsibility of an EDIM has been forwarded together with the subject EDIM.

The EDIM to which an EDIN refers is called the subject EDIM (see also § 17.3.3).

The recipient of the EDIN is the Originator of the subject EDIM, or, if present, the OR Name indicated in the EDIN Receiver field. There shall be at most one recipient specified for an EDIN. There shall be at most one PN, NN or FN originated for each subject EDIM by each recipient of whom notifications are requested (except that an NN may be originated by the same UA subsequent to an FN, in accordance with c) of § 17.3.3.1). One FN is originated, if and only if requested, by each recipient that forwards an EDIM. In accordance with the provisions of § 17.3.3, the original originator shall receive at most one PN or NN for each recipient of whom notifications were requested, regardless of how many times the EDIM is forwarded, and may receive multiple FNs.

An EDIN consists of Positive, Negative or Forwarded Notification fields. Each of these contains the Common fields which are described below.

The structure of an EDIN is depicted in Figure 3/X.435.

9.1 *Common Fields*

The Common fields are defined and described below.

```
CommonFields ::= SEQUENCE {
    subject-edim                   [1] SubjectEDIMField,
    edin-originator                [2] EDINOriginatorField,
    first-recipient                [3] FirstRecipientField OPTIONAL,
    notification-time              [4] NotificationTimeField,
    notification-security-elements [5] SecurityElementsField OPTIONAL,
    edin-initiator                 [6] EDINInitiatorField,
    notifications-extensions       [7] NotificationExtensionsField OPTIONAL }
```

Note – The Common fields appear in the Positive Notification, Negative Notification and Forwarded Notification fields defined below.

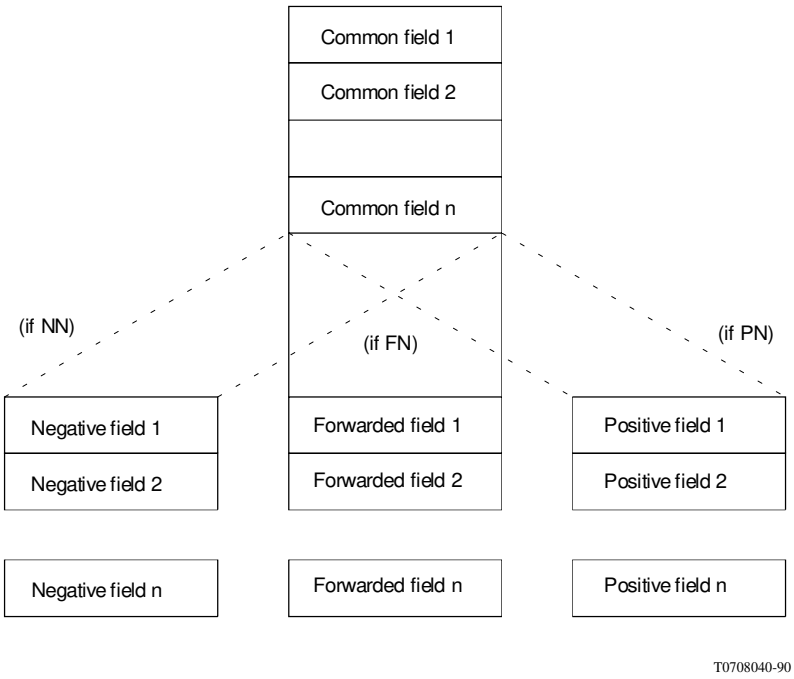

FIGURE 3/X.435

EDI notification structure

9.1.1 *Subject EDIM*

The Subject EDIM Identifier is the EDIM Identifier either passed in the EDIN Receiver field, if Responsibility has been forwarded, or the This EDIM field, if not.

SubjectEDIMField ::= EDIMIdentifier

Note – EDIM Identifier is defined in § 7.1. Subject EDIM is defined in § 9.

9.1.2 *EDI Notification Originator*

The EDI Notification Originator contains the OR Name of the UA constructing the notification.

EDINOriginatorField ::= ORName

Note – OR Name is defined in § 8.5.5 of Recommendation X.411.

9.1.3 *First Recipient*

The First Recipient field contains the OR Name of the first recipient in a forwarding chain. This field, together with other fields, is used by the recipient of the notification to correlate the notification and the original message.

FirstRecipientField ::= ORName

Note – OR Name is defined in § 8.5.5 of Recommendation X.411.

If the originator of the EDIN is not the recipient specified by the original originator, then the First Recipient Field shall be present in the EDIN (see § 17.3 and more specifically § 17.3.1.1).

9.1.4 *Notification Time*

Notification Time contains the date and time, in UTC format, at which the notification for the subject EDIM was generated.

```
NotificationTimeField ::= UTCTime
```

9.1.5 *Security Elements*

The Security Elements field is used to provide "proof/non repudiation of content received", "EDI application security" services.

```
SecurityElementsField ::= SEQUENCE {
    original-content                    [0] Content OPTIONAL,
    original-content-integrity-check    [1] ContentIntegrityCheck OPTIONAL,
    edi-application-security-elements   [2] EDIApplicationSecurityElementsField OPTIONAL,
    security-extensions                 [3] SecurityExtensionsField OPTIONAL }

SecurityExtensionsField ::= SET OF SecurityExtensionsSubField

SecurityExtensionsSubField ::= ExtensionField
```

Note – The EDI Application Security Elements Field is defined in § 8.2.11. Content and Content Integrity Check are defined in, respectively, §§ 8.2.1.1.1.37 and 8.2.1.1.1.28 of Recommendation X.411. Security services are available only if the MTS supports secure messaging.

Paragraph 17.1.3 specifies how these fields are filled in.

9.1.6 *EDIN Initiator*

The EDIN Initiator field can take one of the following values:

a) "internal-UA" means that the UA generated the EDIN either for local reasons or because the generation had been delegated to it by the user;

b) "internal-MS" means that the MS generated the EDIN either for local reasons or because the generation had been delegated to it by the user;

c) "external-UA" means that the generation of the EDIN was requested by the user via the abstract operation Originate EDIN (see § 17.1.3).

```
EDINInitiatorField ::= ENUMERATED {
    internal-ua (0),
    external-ua (1),
    internal-ms (2)}
```

Origination of a Positive Notification implies that Responsibility has been accepted, regardless of the value of this field.

The value of this field shall be consistent with the choice (UA/MS, user, PDAU) of the Reason Code field for NNs and FNs.

Note – Physical delivery access unit (PDAU) is defined in § 15.4.

9.1.7 *Notification Extensions*

The Notification Extensions allows for future extensions to the EDIN.

```
NotificationExtensionsField ::= SET OF NotificationExtensionsSubField

NotificationExtensionsSubField ::= ExtensionField
```

There are no extensions to the EDIN defined in this Recommendation.

Extensions shall not be critical in EDINs.

9.2 *Positive Notifications*

A Positive Notification (PN) is sent by the recipient UA, if and only if the originator has requested one, when Responsibility for the EDIM has been accepted by the UA.

The exact procedures which constitute acceptance of Responsibility are a local matter; for example, the UA may construct the PN as soon as it passes the message to the user or it may wait for an external stimulus from the user that the message has been accepted and therefore can send the PN.

Positive Notification fields are defined and described below.

```
PositiveNotificationFields ::= SEQUENCE {
    pn-common-fields                [0] CommonFields,
    pn-supplementary-information    [1] EDISupplementaryInformation OPTIONAL,
    pn-extensions                   [2] PNExtensionsField OPTIONAL }
```

9.2.1 *PN Supplementary Information*

The PN Supplementary Information field may be used to return further information to the EDIN recipient to clarify the Positive Notification.

Note – EDI Supplementary Information Field is defined in § 8.3.2.

9.2.2 *Positive Notification Extensions*

The Positive Notification Extensions allows for future extensions to the PN.

```
PNExtensionsField ::= SET OF PNExtensionsSubField

PNExtensionsSubField ::= ExtensionField
```

There are no extensions to the PN defined in this Recommendation.

Extensions shall not be critical in PNs.

9.3 *Negative Notifications*

A Negative Notification; (NN) is sent by a UA, if and only if the originator has requested one, when it determines that it can neither accept Responsibility, nor forward the EDIM and the EDI Notification Request contained in the EDIM to another UA.

Negative Notification fields are defined and described below.

```
NegativeNotificationFields ::= SEQUENCE {
    nn-common-fields                [0] CommonFields,
    nn-reason-code                  [1] NNReasonCodeField,
    nn-supplementary-information    [2] EDISupplementaryInformation OPTIONAL,
    nn-extensions                   [3] NNExtensionsField OPTIONAL }
```

9.3.1 *Negative Notification Reason*

The Negative Notification Reason indicates why the subject EDIM could not be passed to the user by the UA originating the EDIN. Additional information may be carried in any combination of a Diagnostic field or the NN Supplementary Info field. Depending on the security policy in force, the security error diagnostic code may or may not be present.

```
NNReasonCodeField ::= CHOICE {
    nn-ua-ms-reason-code            [0] NNUAMSReasonCodeField,
    nn-user-reason-code             [1] NNUserReasonCodeField,
    nn-pdau-reason-code             [2] NNPDAUReasonCodeField }

-- Negative Notification Reason Codes from an EDI-UA or EDI-MS

NNUAMSReasonCodeField ::= SEQUENCE {
    nn-ua-ms-basic-code             [0] NNUAMSBasicCodeField,
    nn-ua-ms-diagnostic             [1] NNUAMSDiagnosticField OPTIONAL }
```

```
-- Negative Notification Basic Reason Codes from an EDI-UA or EDI-MS. These codes are
-- those specified in Annex B of Recommendation F.435
-- for the element of service "EDI Notification Request".

    NNUAMSBasicCodeField ::= INTEGER {
            unspecified (0),
            cannot-deliver-to-user (1),
                -- the EDI Interchange can not be passed on to the user
            delivery-timeout (2),
                -- the EDI Interchange could not be passed on to the user within
                -- a specified time limit
            message-discarded (3),
                -- the UA/MS discarded the message before handoff to user
            subscription-terminated (4),
                -- recipient's subscription terminated after delivery but before
                -- handoff to user
            forwarding-error (5),
                -- EDI Forwarding was attempted, but failed
            security-error (6)
                -- security error

            -- physical delivery errors indicated by "cannot-deliver-to-user"
             } (0..ub-reason-code)

-- Negative Notification Diagnostic Codes from an EDI-UA or EDI-MS

    NNUAMSDiagnosticField ::= INTEGER {
            -- This field may be used to further specify the error signalled in nn-ua-ms basic-code
            -- Additional information may be indicated in nn-supplementary-information

            -- general diagnostic codes
            protocol-violation (1),
                -- used if the UA detects a protocol error
            edim-originator-unknown (2),
            edim-recipient-unknown (3),
            edim-recipient-ambiguous (4),
                -- used if the EDIM recipients or originator are not valid
            action-request-not-supported (5),
                -- used when the action requested by the recipient is not performed
            edim-expired (6),
                -- used when the expiry date of the received EDIM occurred before the subject EDIM
                -- was successfully passed to the user or forwarded by the EDI-UA
            edim-obsoleted (7),
                -- used when the EDIM Identifier of the received EDIM was contained in the Obsoleted EDIM
                   field
                -- of a previously received EDIM
            duplicate-edim (8),
                -- used when the same EDIM is received more than once from the same originator
            unsupported-extension (9),
                -- used if the EDIM contains an extension which is not supported by the UA
            incomplete-copy-rejected (10),
                -- used if the EDI-UA does not accept EDIMs with the Incomplete Copy Indication true
            edim-too-large-for-application (11),
                -- used if the EDIM cannot be delivered to the user due to length constraints
                -- forwarding error diagnostic codes
            forwarded-edim-not-delivered (12),
                -- used when an Non-Delivery Report is received for forwarded EDIM
```

```
        forwarded-edim-delivery-time-out (13),
                -- used when no Delivery Report is received within a given period
        forwarding-loop-detected (14),
                -- used if the UA receives an EDIM which contains a previously forwarded EDIM
        unable-to-accept-responsibility (15),
                -- used if the EDI-UA cannot accept or forward responsibility

        -- interchange header diagnostic codes
        interchange-sender-unknown (16),
                -- used when the UA does not recognize the interchange-sender of the EDI interchange
        interchange-recipient-unknown (17),
                -- used when the UA cannot find a valid interchange recipient in the Recipient Specifier
        invalid-heading-field (18),
        invalid-bodypart-type (19),
        invalid-message-type (20),
        invalid-syntax-id (21),

        -- security error diagnostic codes
        message-integrity-failure (22),
        forwarded-message-integrity-failure (23),
        unsupported-algorithm (24),
        decryption-failed (25),
        token-error (26),
        unable-to-sign-notification (27),
        unable-to-sign-message-receipt (28),
        authentication-failure (29),
        security-context-failure (30),
        message-sequence-failure (31),
        message-security-labelling-failure (32),
        repudiation-failure (33),
        proof-of-failure (34)
        } (1..ub-reason-code)
```

-- Negative Notification Reason Codes from a user

```
    NNUserReasonCodeField ::= SEQUENCE {
        nn-user-basic-code          [0]  NNUserBasicCodeField,
        nn-user-diagnostic                      [1]  NNUserDiagnosticField OPTIONAL }
```

-- Negative Notification Basic Reason Codes from a user

```
        NNUserBasicCodeField ::= INTEGER {
        unspecified (0),
        syntax-error (1),
                -- used when the user discovers a syntax error within the EDI interchange
        interchange-sender-unknown (2),
        interchange-recipient-unknown (3),
                -- used when the UA cannot find a valid interchange recipient in the Recipient Specifier
        invalid-heading-field (4),
        invalid-bodypart-type (5),
        invalid-message-type (6),
        functional-group-not-supported (7),
        subscription-terminated (8),
                -- unknown to EDIMS-User service
        no-bilateral-agreement (9),
        user-defined-reason (10)
        } (0..ub-reason-code)
```

```
-- Negative Notification Diagnostic Codes from a user

NNUserDiagnosticField ::= INTEGER (1..ub-reason-code)
        -- Contains reason passed by user when the value of nn-user-basic-code is user-defined-reason.
        -- Additional information may be indicated in nn-supplementary-information

-- Negative Notification Reason Codes from a PDAU

NNPDAUReasonCodeField ::= SEQUENCE {
        nn-pdau-basic-code          [0]  NNPDAUBasicCodeField,
        nn-pdau-diagnostic                      [1]  NNPDAUDiagnosticField OPTIONAL }

-- Negative Notification Basic Reason Codes from a PDAU

        NNPDAUBasicCodeField ::= INTEGER {
        unspecified (0),
        undeliverable-mail (1),
                -- used if the PDAU determines that it cannot perform physical delivery of the EDIM
        physical-rendition-not-performed (2)
                -- used if the PDAU cannot perform the physical rendition of the EDIM
         } (0..ub-reason-code)

-- Negative Notification Diagnostic Codes from a PDAU

NNPDAUDiagnosticField ::= INTEGER {
        -- This field may be used to further specify the error signalled in nn-pdau-basic-code
        -- Additional information may be indicated in the nn-supplementary-information
        undeliverable-mail-physical-delivery-address-incorrect (32),
        undeliverable-mail-physical-delivery-office-incorrect-or-invalid (33),
        undeliverable-mail-physical-delivery-address-incomplete (34),
        undeliverable-mail-recipient-unknown (35),
        undeliverable-mail-recipient-deceased (36),
        undeliverable-mail-organization-expired (37),
        undeliverable-mail-recipient-refused-to-accept (38),
        undeliverable-mail-recipient-did-not-claim (39),
        undeliverable-mail-recipient-changed-address-permanently (40),
        undeliverable-mail-recipient-changed-address-temporarily (41),
        undeliverable-mail-recipient-changed-temporary-address (42),
        undeliverable-mail-new-address-unknown (43),
        undeliverable-mail-recipient-did-not-want-forwarding (44),
        undeliverable-mail-originator-prohibited-forwarding (45),
        physical-rendition-attributes-not-supported (31)
         } (1..ub-reason-code)
```

9.3.2 *NN Supplementary Information*

The NN Supplementary Information field may be used to return further information to the EDIN recipient to clarify the Negative Notification.

Note – EDI Supplementary Information is defined in § 8.3.2.

9.3.3 *Negative Notification Extensions*

The Negative Notification Extensions allows for future extensions to the NN.

```
NNExtensionsField ::= SET ON NNExtensionsSubField

NNExtensionsSubField ::= ExtensionField
```

There are no extensions to the NN defined in this Recommendation.

Extensions shall not be critical in NNs.

9.4 *Forwarded Notifications*

A Forwarded Notification (FN) is sent by a UA, if and only if the originator has requested one, when it determines that it cannot accept Responsibility and decides to forward the EDIM, and the EDI Notification Requests contained in the EDIM, to another UA.

Forwarded Notification fields are defined and described below.

```
ForwardedNotificationFields ::= SEQUENCE {
    fn-common-fields                [0] CommonFields,
    forwarded-to                    [1] ForwardedTo,
    fn-reason-code                  [2] FNReasonCodeField,
    fn-supplementary-information    [3] EDISupplementaryInformation OPTIONAL,
    fn-extensions                   [4] FNExtensionsField OPTIONAL }
```

9.4.1 *Forwarded To*

The Forwarded To field indicates the new recipient of the (forwarded) subject EDIM. Its value is an OR Name.

```
ForwardedTo ::= ORName
```

Note – OR Name is defined in § 8.5.5 of Recommendation X.411.

9.4.2 *Forwarded Notification Reason*

The Forwarded Reason Code indicates the reason why the Responsibility of the subject EDIM was forwarded. Additional information may be carried in any combination of a Diagnostic field or the FN Supplementary Info field.

```
FNReasonCodeField ::= CHOICE {
    fn-ua-ms-reason-code        [0] FNUAMSReasonCodeField,
    fn-user-reason-code         [1] FNUserReasonCodeField,
    fn-pdau-reason-code         [2] FNPDAUReasonCodeField }
```

-- Forwarding Notification Reason Codes from an EDI-UA or EDI-MS

```
FNUAMSReasonCodeField ::= SEQUENCE {
    fn-ua-ms-basic-code         [0] FNUAMSBasicCodeField,
    fn-ua-ms-diagnostic         [1] FNUAMSDiagnosticField OPTIONAL,
    fn-security-check           [2] FNUAMSSecurityCheckField DEFAULT FALSE }
```

-- Forwarding Notification Basic Reason Codes from an EDI-UA or EDI-MS

```
FNUAMSBasicCodeField ::= INTEGER {
    unspecified (0),
    onward-routing (1),
        -- used whenever the UA decides to re-route the subject EDIM for local reasons
    recipient-unknown (2),
    originator-unknown (3),
    forwarded-by-edi-ms (4)
    } (0..ub-reason-code)
```

-- Forwarding Notification Diagnostic Reason Codes from an EDI-UA or EDI-MS

```
FNUAMSDiagnosticField ::= INTEGER {
    -- This field may be used to further specify the error signalled in fn-ua-ms-basic-code
    -- Additional information may be indicated in fn-supplementary-information
    recipient-name-changed (1),
    recipient-name-deleted (2)
    } (1..ub-reason-code)
```

```
-- Forwarding Notification Security Check Codes from an EDI-UA or EDI-MS

-- This field may be used, with a value of TRUE, to indicate that all security features present have been
-- validated, or a value of FALSE to indicate that the security features have not been validated.

    FNUAMSSecurityCheckField ::= BOOLEAN

-- Forwarding Notification Reason Codes from a user

    FNUserReasonCodeField ::= SEQUENCE {
        fn-user-basic-code              [0]  FNUserBasicCodeField,
        fn-user-diagnostic              [1]  FNUserDiagnosticField OPTIONAL }

-- Forwarding Notification Basic Reason Codes from a user

    FNUserBasicCodeField ::= INTEGER {
        unspecified (0),
        forwarded-for-archiving (1),
        forwarded-for-information (2),
        forwarded-for-additional-action (3),
        subscription-changed (4),
        heading-field-not-supported (5),
        bodypart-type-not-supported (6),
        message-type-not-supported (7),
        syntax-identifier-not-supported (8),
        interchange-sender-unknown (9),
        user-defined-reason (10)
        } (0..ub-reason-code)

-- Forwarding Notification Diagnostic Reason Codes from a user

    FNUserDiagnosticField ::= INTEGER (1..ub-reason-code)
        -- Contains reason passed by user when value of fn-user-basic-code is user-defined-reason
        -- Additional information may be indicated in fn-supplementary-information

-- Forwarding Notification Reason Codes from a PDAU

    FNPDAUReasonCodeField ::= SEQUENCE {
        fn-pdau-basic-code              [0] FNPDAUBasicCodeField,
        fn-pdau-diagnostic              [1] FNPDAUDiagnosticField OPTIONAL }

-- Forwarding Notification Basic Reason Codes from a PDAU

    FNPDAUBasicCodeField ::= INTEGER {
        unspecified (0),
        forwarded-for-physical-rendition-and-delivery (1)
        } (0..ub-reason-code)

-- Forwarding Notification Diagnostic Codes from a PDAU

    FNPDAUDiagnosticField ::= INTEGER (1..ub-reason-code)
```

A physical delivery access unit (PDAU) (see § 15.4) is only able to generate NNs and FNs. Any request for PN notification is ignored. If FN notification is requested, and passing of Responsibility is allowed by the originator, the PDAU shall generate an FN with appropriate Forwarded Reason Code ("forwarded-for-physical-rendition-and-delivery") when it has determined that it can render the EDIM for physical delivery. If FN notification is requested and passing of responsibility is not allowed by the originator, the PDAU shall not render the EDIM for physical delivery and shall generate an NN if so requested.

9.4.3 *FN Supplementary Information*

The FN Supplementary Information field may be used to return further information to the EDIN recipient to clarify the Forwarded Notification.

Note – The EDI Supplementary Information Field is defined in § 8.3.2.

9.4.4 *Forwarded Notification Extensions*

The Forwarded Notifications Extensions allows for future extensions to the FN.

FNExtensionsField ::= SET OF FNExtensionsSubField

FNExtensionsSubField ::= ExtensionField

There are no extensions to the FN defined in this Recommendation.

Extensions shall not be critical in FNs.

10 Primary Object Types

The environment in which EDI Messaging takes place can be modelled as an abstract object which is hereafter referred to as the EDI Messaging Environment (EDIME).

edime OBJECT ::= id-ot-edime

When refined (i.e., functionally decomposed), the EDIME can be seen to comprise lesser objects which interact by means of ports.

```
edime-refinement REFINE edime AS
    edims
        origination                 [S] PAIRED WITH edimg-user
        reception                   [S] PAIRED WITH edimg-user
    edimg-user RECURRING
    ::= id-ref-primary
```

The lesser objects are referred to as the primary objects of EDI Messaging. They include a single, central object, the EDI Messaging System, EDIMS, and numerous peripheral objects called EDI Messaging System users (users).

The structure of the EDIME is depicted in Figure 4/X.435.

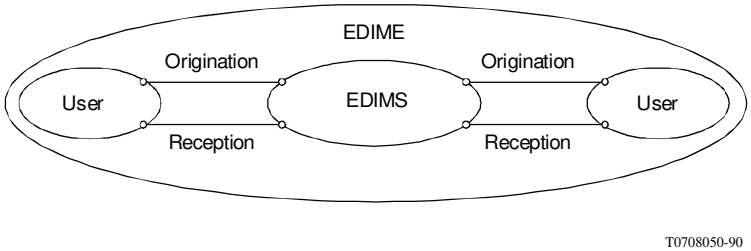

FIGURE 4/X.435

The EDI messaging environment

The primary object types are defined and described below. The types of ports by means of which they interact are discussed in § 11.

10.1 *EDI Messaging User*

An EDI Messaging user (EDIMG user) is typically a computer process or application that engages in EDI Messaging. Such processes or applications are referred to by the term "user" in this Recommendation. A user originates, receives, or both originates and receives Information Objects of the types defined in § 6.

```
edimg-user OBJECT
    PORTS {
        origination          [C],
        reception            [C] }
    ::= id-ot-edimg-user
```

The EDIME comprises any number of Users.

Note – EDI messaging is typically an activity between information processing systems. These are referred to as EDI applications. This does not preclude the possibility of human interaction with the information processing systems which are performing EDI, or more direct interaction of a human user with the EDIMS. The terms "user" and "EDIMG user" may be regarded as synonyms for EDI applications within this Recommendation. For brevity, the term "user" is used throughout the rest of this Recommendation with the meaning of "EDIMG user".

10.2 *EDI Messaging System*

The EDI Messaging System (EDIMS) is the object by means of which all users communicate with one another in EDI Messaging.

```
edims OBJECT
    PORTS {
        origination          [S],
        reception            [S] }
    ::= id-ot-edims
```

The EDIME comprises exactly one EDIMS.

11 Primary Port Types

The primary objects of EDI Messaging are joined to and interact with one another by means of ports. These ports, which the EDIMS supplies, are referred to as the primary ports of EDI Messaging. They are of the types defined below.

Specification of a management port may be the subject of future standardization.

Note – In § 15 to follow, the EDIMS is decomposed into still lesser objects, among which is the MTS. This fact is anticipated here by the inclusion of certain MTS capabilities in the EDIMS Abstract Service.

11.1 *Origination Port*

An Origination Port is the means by which a single user conveys to the EDIMS messages containing Information Objects of the types defined in § 6. Through such a port the user originates EDI Messages and EDI Notifications. In addition, the user may originate probes through such a port.

```
origination PORT
    CONSUMER INVOKES {
        OriginateProbe,
        OriginateEDIM,
        OriginateEDIN }
        ::= id-pt-origination
```

The EDIMS supplies one Origination Port to each user [with the exception of indirect users served by PDAUs (see § 15.4)].

11.2 *Reception Port*

A Reception Port is the means by which the EDIMS conveys to a single user messages containing Information Objects of the types defined in § 6. Through such a port the user receives EDI Messages and EDI Notifications. In addition, the user may receive reports through such a port.

```
reception PORT
    SUPPLIER INVOKES {
        ReceiveReport,
        ReceiveEDIM,
        ReceiveEDIN }
        ::= id-pt-reception
```

The EDIMS supplies one Reception Port to each user.

12 Abstract Operations

What follows defines the abstract service that characterizes EDI messaging, and describes the environment in which that service is supplied and consumed. It does both using the abstract service definition conventions of Recommendation X.407.

The EDIMS Abstract Service is the set of capabilities that the EDIMS provides to each user by means of one Origination Port and one Reception Port. Those capabilities are modelled as abstract operations, which may encounter abstract errors when invoked.

The purpose of the EDIMS Abstract Service Definition is not to prescribe the interface between the EDI user and the EDI-UA, but rather to clarify the meaning and intended use of the Information Objects of § 6. A user interface need not provide commands in one-to-one correspondence to the service's abstract operations, nor indeed even divide the labour between the user and the EDIMS as the service does.

The abstract operations available at the Origination Port and Reception Port are defined and described below. The abstract errors they may provoke are the subject of § 13.

The EDIMS Abstract Service involves neither abstract bind nor abstract unbind operations.

The EDIMS authenticates (i.e., establishes the identity of) the typical user before offering the EDIMS Abstract Service to him. By this means it can verify, e.g., that the user is an EDIMS subscriber. Authentication, where required, is implicit (rather than explicit) in the definition of the EDIMS Abstract Service.

Note – In § 15 to follow, the EDIMS is decomposed into objects among which is the MTS. The text here reflects this fact by its inclusion of various MTS-defined information items in the EDIMS Abstract Service.

12.1 *Origination Abstract Operations*

The abstract operations available at an origination port are invoked by the user and performed by the EDIMS.

12.1.1 *Originate Probe*

The Originate Probe abstract operation originates a probe concerning (a class of) messages whose contents are EDIMs.

```
OriginateProbe ::= ABSTRACT-OPERATION
    ARGUMENT SET {
        envelope                    [0] ProbeSubmissionEnvelope,
        content                     [1] EDIM }
    RESULT SET {
        submission-identifier       [0] ProbeSubmissionIdentifier,
        submission-time             [1] ProbeSubmissionTime }
    ERRORS { RecipientImproperlySpecified }
```

This abstract operation has the following arguments:

a) *Envelope:* A probe submission envelope, whose make-up the MTS Abstract Service defines. The UA supplies all but the following envelope components, which the user provides:

1) The desired per-message options (i.e., per-message indicators and extensions).

2) The OR Names of the preferred recipients and the per-recipient options (i.e., originator report request, explicit conversion, and extensions) desired for each.

b) *Content:* An instance of the class of EDIM whose deliverability is to be probed.

This abstract operation has the following results:

c) *Submission-identifier:* The probe submission identifier the MTS assigns to the probe.

d) *Submission-time:* The date and time the probe was directly submitted.

12.1.2 *Originate EDIM*

The Originate EDIM abstract operation originates a message whose content is an EDIM.

```
OriginateEDIM ::= ABSTRACT-OPERATION
    ARGUMENT SET {
        envelope                    [0] MessageSubmissionEnvelope,
        content                     [1] EDIM }
    RESULT SET {
        submission-identifier       [0] MessageSubmissionIdentifier,
        submission-time             [1] MessageSubmissionTime }
    ERRORS { RecipientImproperlySpecified }
```

This abstract operation has the following arguments:

a) *Envelope:* A message submission envelope, whose make-up the MTS Abstract Service defines. The UA supplies all but the following envelope components, which the user provides:

1) The desired per-message options (i.e., priority, per-message indicators, deferred delivery time, and extensions).

2) The OR Names of the preferred recipients and the per-recipient options (i.e., originator report request, explicit conversion, and extensions) desired for each.

b) *Content:* The EDIM being originated.

1) If application to application security services are required, the user shall supply the value for the EDI Application Security Elements field.

The EDIM shall be constructed as described in § 17.3.

This abstract operation has the following results:

c) *Submission-identifier:* The message submission identifier the MTS assigns to the submission.

d) *Submission-time:* The date and time the message was directly submitted.

12.1.3 *Originate EDIN*

The Originate EDIN abstract operation originates a message whose content is an EDIN.

```
OriginateEDIN ::= ABSTRACT-OPERATION
    ARGUMENT SET {
        envelope                    [0] MessageSubmissionEnvelope,
        content                     [1] EDIN }
    RESULT SET {
        submission-identifier       [0] MessageSubmissionIdentifier,
        submission-time             [1] MessageSubmissionTime }
    ERRORS { RecipientImproperlySpecified }
```

A user may, if notifications are requested, invoke an Originate EDIN abstract operation to indicate to the UA that it should accept, refuse or forward Responsibility for the subject EDIM. The exact type of EDIN to be generated (PN, NN or FN) is determined from the Content argument.

An EDIN shall be originated only by an actual recipient of the subject EDIM of whom an EDIN is requested by means of the EDI Notification Request field of the subject EDIM's Recipient field.

A user may delegate the task of generating EDINs to the UA. In this case, this abstract operation is not present at the abstract interface between the UA and the user, that is, the operation is not available at the Origination Port. In this case the UA behaves as described in § 17.3.

This abstract operation has the following arguments:

a) *Envelope:* A message submission envelope, whose make-up the MTS Abstract Service defines. The UA supplies all but the following envelope components, which the user provides:

   1) The desired per-message options (i.e., priority, per-message indicators, and extensions). Implicit conversion and deferred delivery shall be prohibited, priority shall be that of the subject EDIM.

   2) The OR Names of the preferred recipient and the per-recipient options (i.e., explicit conversion and extensions) desired. The preferred recipient of the EDIN is the originator of the subject EDIM or, if present, the OR Name indicated in the EDIN Receiver field.

b) *Content:* The EDIN being originated.

   1) If application to application security services are required, the user shall supply the value for the EDI Application Security Elements field.

The EDIN shall be constructed as described in § 17.3.

This abstract operation has the following results:

c) *Submission-identifier:* The message submission identifier the MTS assigns to the submission.

d) *Submission-time:* The date and time the message was directly submitted.

12.2 *Reception Abstract Operations*

The abstract operations available at a Reception Port are invoked by the EDIMS and performed by the user.

As abstractly defined, the EDIMS provides no storage for received messages because whether or not it does so for a particular user has no impact upon that user's ability to communicate with other users. Thus the provision of storage is a local matter.

12.2.1 *Receive Report*

The Receive Report abstract operation receives a report.

```
ReceiveReport ::= ABSTRACT-OPERATION
    ARGUMENT SET {
        envelope                [0] ReportDeliveryEnvelope,
        undelivered-object      [1] InformationObject OPTIONAL }
    RESULT
    ERRORS {}
```

The report received may concern any of the following previously originated by the report's recipient:

a) A message whose content was an EDIM that was originated with the Originate EDIM abstract operation or by forwarding.

b) A message whose content was an EDIN that was originated as a result of a previously received message. The EDIN could be any of PN, NN or FN.

c) A probe concerning a message whose content was an EDIM that was originated with the Originate Probe abstract operation.

This abstract operation has the following arguments:

d) *Envelope:* A report delivery envelope, whose make-up the MTS Abstract Service defines.

e) *Undelivered-object:* The content of the message whose status is being reported. An EDIM or EDIN.

If the report was provoked by a previous Originate Probe abstract operation invocation, this conditional argument shall be absent. If the report was provoked by a previous Originate EDIM abstract operation invocation, the argument shall be present if, and only if, content return was requested. Otherwise (for example, if the report was provoked by an EDIN), the argument shall be absent.

This abstract operation has no results.

12.2.2 *Receive EDIM*

The Receive EDIM abstract operation receives a message whose content is an EDIM.

```
ReceiveEDIM ::= ABSTRACT-OPERATION
    ARGUMENT SET {
        envelope        [0] MessageDeliveryEnvelope,
        content         [1] EDIM }
    RESULT
    ERRORS {}
```

This abstract operation has the following arguments:

a) *Envelope:* The message's delivery envelope.

b) *Content:* The EDIM that is the message's content.

This abstract operation has no results.

When the received EDIM contains an EDIM Body Part (that is, when the original EDIM has been forwarded), it may be necessary to scan several levels of nested Heading fields in order to determine the correct original value for optional Heading fields (see § 8.3.2 for the nested structure of a forwarded EDIM and § 17.3.3 for rules related to Heading fields).

12.2.3 *Receive EDIN*

The Receive EDIN abstract operation receives a message whose content is an EDIN. The EDIN is provoked by an EDIM originated with the Originate EDIM abstract operation.

```
ReceiveEDIN ::= ABSTRACT-OPERATION
    ARGUMENT SET {
        envelope                [0] MessageDeliveryEnvelope,
        content                 [1] EDIN }
    RESULT
    ERRORS {}
```

This abstract operation has the following arguments:

a) *Envelope:* The message's delivery envelope.

b) *Content:* The EDIN that is the message's content.

This abstract operation has no results.

13 Abstract Errors

The abstract errors that may be reported in response to the invocation of the abstract operations available at the Origination Port and Reception Port are defined and described below or as part of the MTS Abstract Service definition.

The set of abstract errors represented below is intended to be illustrative, rather than exhaustive.

13.1 *Recipient Improperly Specified*

The Recipient Improperly Specified abstract error reports that one or more of the OR Names supplied as arguments of the abstract operation whose performance is aborted, or as components of its arguments, are invalid.

This abstract error is defined by the MTS Abstract Service.

14 Other capabilities

In addition to the capabilities embodied in the EDIMS Abstract Service, defined above, the EDIMS shall transparently extend to each user the other MS (see Recommendation X.413) and MTS (see Recommendation X.411) capabilities identified below. (The enumeration of these capabilities necessarily anticipates the fact, stated in § 15, that MSs and the MTS are among the EDIMS' component parts.)

The following additional capabilities shall be provided:

a) *Submission:* Capabilities of the MS' or MTS' submission port not embodied in the EDIMS Abstract Service, e.g., the ability to cancel delivery of a previously originated message whose content is an EDIM (but not an EDIN), if deferred delivery was selected.

b) *Delivery:* Capabilities of the MTS' delivery port not embodied in the EDIMS Abstract Service, e.g., the ability to temporarily control the kinds of information objects the MTS conveys to the user's UA.

c) *Administration:* The capabilities of the MS' or MTS' administration port.

d) *Retrieval:* The capabilities of the MS' retrieval port.

In addition to the above and as a local matter, the EDIMS may provide to users additional capabilities neither defined nor limited by this Recommendation. Among such capabilities are those of the Directory.

Note – The required capabilities above are excluded from the formal definition of the EDIMS Abstract Service for purely pragmatic reasons, in particular, because their inclusion would largely and needlessly reproduce the definitions of the MS and MTS abstract operations upon which the capabilities are based.

15 Secondary Object Types

The EDIMS can be modelled as comprising lesser objects which interact with one another by means of (additional) ports.

```
edims-refinement REFINE edims AS
    mTS
        submission              [S] PAIRED WITH edi-ua, edi-ms
        delivery                [S] PAIRED WITH edi-ua, edi-ms
        administration          [S] PAIRED WITH edi-ua, edi-ms
    edi-ua RECURRING
        origination             [S] VISIBLE
        reception               [S] VISIBLE
    edi-ms RECURRING
        submission              [S] PAIRED WITH edi-ua
        retrieval               [S] PAIRED WITH edi-ua
        administration          [S] PAIRED WITH edi-ua
    pdau RECURRING
        reception               [S] VISIBLE

    ::= id-ref-secondary
```

These lesser objects are referred to as the secondary objects of EDI Messaging. They include a single, central object, the MTS, and numerous peripheral objects: EDI messaging system user agents (EDI-UA), EDI messaging system message stores (EDI-MS), telematic agents (TLMA), and physical delivery access units (PDAU). Specification of the protocol for the TLMA may be the subject for future standardization.

The structure of the EDIMS is depicted in Figure 5/X.435. As shown by the figure, EDI-UAs and PDAUs are the instruments by means of which the EDIMS provides the EDIMS Abstract Service to users.

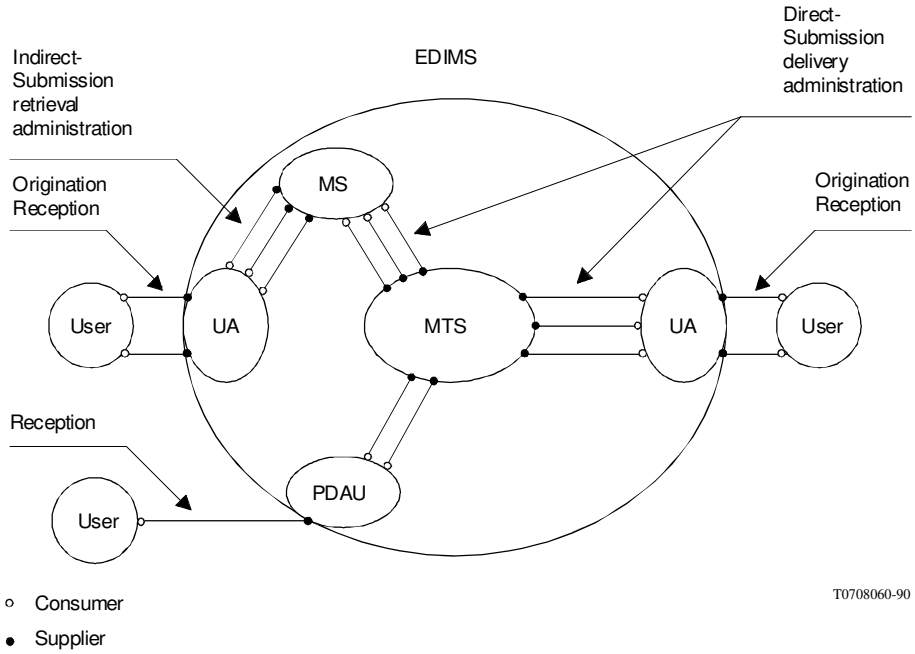

FIGURE 5/X.435

The EDI messaging system

The secondary object types are defined and described below. The types of ports by means of which they interact are discussed in § 16.

The refinement above encompasses all possible interconnections of all possible objects. It ignores the possible absence of objects of a particular type (e.g., PDAU), and specific logical configurations of the MS. The latter are identified in Recommendation X.402.

The MTS supplies import and export ports. However, since those ports are not formally defined (in Recommendation X 411), they are not included in the formal refinement above.

15.1 *EDI User Agent*

An EDI user agent (EDI-UA) is a UA tailored so as to better assist a single user to engage in EDI Messaging. It helps him originate, receive, or both originate and receive messages containing Information Objects of the types defined in § 6.

```
edi-ua OBJECT
    PORTS {
        origination             [S],
        reception               [S],
        submission              [C],
        delivery                [C],
        retrieval               [C],
        administration          [C] }
    ::= id-ot-edi-ua
```

The EDIMS comprises any number of EDIMS UAs.

Note – As noted above, the term .I.gl:user agent; (.I.ab:UA;) is used throughout this Recommendation with the meaning of EDI-UA.

15.2 *EDI Message Store*

An EDI message store (EDI-MS) is an MS tailored so as to better assist a single UA engaged in EDI Messaging. It helps it submit, take delivery of, or both submit and take delivery of messages containing Information Objects of the types defined in § 6.

```
edi-ms OBJECT
    PORTS {
        submission              [S],
        retrieval               [S],
        administration          [S],
        submission              [C],
        delivery                [C],
        administration          [C] }
    ::= id-ot-edi-ms
```

The EDIMS comprises any number of EDIMS MSs.

Note – As noted above, the term message store (MS) is used throughout this Recommendation with the meaning of EDI-MS.

15.3 *Telematic Agent*

A telematic agent (TLMA) is an AU that helps a single indirect user engage in EDI Messaging from a Telematic terminal, along with that terminal and the network that joins the two. A TLMA helps the user originate, receive, or both originate and receive messages containing Information Objects of the types defined in § 6.

Specification of the protocol for this AU may be the subject for future standardization.

15.4 *Physical Delivery Access Unit*

In the present context, a Physical Delivery Access Unit (PDAU) helps any number of indirect users engage in EDI Messaging by means of a Physical Delivery System (PDS). It helps them receive (but not originate) messages containing Information Objects of the types defined in § 6.

```
pdau OBJECT
    PORTS {
        reception               [S] }
    ::= id-ot-pdau
```

The EDIMS comprises any number of PDAUs.

A PDAU consumes import and export ports. However, since those ports are not formally defined (in Recommendation X.411), they are not included in the formal definition of PDAU above.

If notifications are requested, the PDAU shall generate one of the following:

– an FN with appropriate reason code if the PDAU determines that it can render and deliver the EDIM,

– a NN with appropriate reason code if the PDAU determines that it cannot render or deliver the EDIM.

The use of the PDAU shall be subject to the requirements of the security policy in force.

15.5 *Message Transfer System*

In the present context, the Message Transfer System (MTS) conveys Information Objects of the types defined in § 6 between UAs, MSs, and AUs.

The EDIMS comprises a single MTS.

The use of TLMA may be restriced by the security policy in force.

16 Secondary Port Types

The secondary objects of EDI Messaging are joined to and interact with one another by means of ports. These ports, which MSs and the MTS supply, are referred to as the secondary ports of EDI Messaging. They are of the types identified below.

The capabilities embodied in one Submission, one Retrieval, and one Administration port constitute the MS Abstract Service. They are defined in Recommendation X.413.

The capabilities embodied in one Submission, one Delivery, and one Administration Port constitute the MTS Abstract Service. They are defined in Recommendation X.411.

Note – By means of the abstract bind operation which guards its ports, an MS or the MTS typically authenticates another secondary object before offering its abstract service to that object.

16.1 *Submission Port*

In the present context, a Submission Port is the means by which a UA (directly or indirectly) or an MS (directly) submits probes concerning, and messages containing Information Objects of the types defined in § 6.

An MS supplies one Submission Port to its UA.

The MTS supplies one Submission Port to each UA configured without an MS and to each MS.

16.2 *Delivery Port*

In the present context, a Delivery Port is the means by which a UA or MS takes delivery of reports concerning and messages containing Information Objects of the types defined in § 6.

The MTS supplies one Delivery Port to each UA configured without an MS and to each MS.

16.3 *Retrieval Port*

In the present context, a Retrieval Port is the means by which a UA retrieves reports concerning and messages containing Information Objects of the types defined in § 6.

An MS supplies one Retrieval Port to its UA.

16.4 *Administration Port*

In the present context, an Administration Port is the means by which a UA changes information about itself or its user on file with its MS, or a UA or MS changes such information on file with the MTS.

An MS supplies one Administration Port to its UA.

The MTS supplies one Administration Port to each UA configured without an MS and to each MS.

16.5 *Import Port*

In the present context, an Import Port is the means by which the MTS imports reports and probes concerning, and messages containing Information Objects of the types defined in § 6.

The MTS supplies one Import Port to each AU.

16.6 *Export Port*

In the present context, an Export Port is the means by which the MTS exports reports and probes concerning, and messages containing Information Objects of the types defined in § 6.

The MTS supplies one Export Port to each AU.

17 User Agent Operation

A UA must employ the MTS in a particular way in order to (correctly) provide the EDIMS Abstract Service to its user. If the user is equipped with an MS, the latter contributes to the provision of the abstract service and, therefore, is subject to the same rules.

The rules that govern the operation of a UA (and MS) are the subject of what follows. The operation of a TLMA is beyond the scope of this Recommendation.

Note — The purpose of what follows is not to dictate or constrain the implementation of a real UA unnecessarily, but rather to specify the effect to be achieved.

17.1 *Performance of Origination Operations*

A UA shall perform the abstract operations it makes available at its Origination Port as prescribed below.

In the performance of these operations, the UA invokes the following abstract operations of the MTS Abstract Service (which, for what follows, are unqualified as to their source):

a) Probe Submission

b) Message Submission

In response to the invocation of these abstract operations, a UA reports abstract errors as appropriate. Specification of the precise circumstances under which each abstract error should be reported is beyond the scope of this Recommendation.

17.1.1 *Originate Probe*

A UA shall perform the Originate Probe abstract operation by invoking Probe Submission with the arguments indicated below, and by returning to its user the results indicated below.

The arguments of Probe Submission shall be as follows:

a) *Envelope:* The components of this argument that constitute per-probe fields shall be as follows; those not explicitly mentioned below shall be as specified by Originate Probe's Envelope argument:

   1) Originator-name: The OR Name of the UA's user.

   2) Content-type, Content-length, and Original-encoded-information-types: Determined from Originate Probe's Content argument as specified in §§ 19.2 to 19.4.

   3) Content-identifier and Content-correlator: Specified or omitted as a local matter.

   The components of this argument that constitute per-recipient fields shall be as specified by Originate Probe's Envelope argument.

The results of Originate Probe shall be as follows:

b) *Submission-identifier:* Probe Submission's Probe-submission-identifier result.

c) *Submission-time:* Probe Submission's Probe-submission-time result.

The UA shall ignore all properties of Originate Probe's Content argument other than those mentioned above.

How the UA employs Probe Submission's Content-identifier and Content-correlator are local matters.

17.1.2 *Originate EDIM*

A UA shall perform the Originate EDIM abstract operation by invoking Message Submission with the arguments indicated below, and by returning to its user the results indicated below.

The arguments of Message Submission shall be as follows:

a) *Envelope:* The components of this argument that constitute per-message fields shall be as follows; those not explicitly mentioned below shall be as specified by Originate EDIM's Envelope argument:

1) Originator-name: The OR Name of the UA's user.

2) Content-type and Original-encoded-information-types: Determined from Originate EDIM's Content argument as specified in § 19.2 and § 19.4, respectively.

3) Content-identifier and Content-correlator: Specified or omitted as a local matter.

4) The security arguments on message submission are subject to the security policy in force. When the security policy specifies the support of Content Integrity Security Service, and when Notification Security is requested, the UA shall generate and submit the content-integrity-check Security Argument as defined in § 8.2.1.1.1.28 of Recommendation X.411.

5) If "proof/non-repudiation of Content Originated" is requested, the UA shall submit the message using the "message-origin-authentication-check", or the "content-integrity-check" (possibly in the message token), according to the security policy in force.

The components of this argument that constitute per-recipient fields shall be as specified by abstract operation Originate EDIM's Envelope argument.

To prevent an unknown number of EDINs from being sent to the original originator of a message in case of forwarding, "DL-expansion-prohibited", if available, may be set to TRUE if any of PN, NN or FN are requested.

b) *Content:* Determined from Originate EDIM's Content argument (identified as an EDIM) as specified in § 19.1.

1) If "proof/non-repudiation of EDI Notification Request" notification is requested, the UA shall set the EDI Notification Security field accordingly for each recipient as required.

2) If "proof/non-repudiation of Content Received Request" notification is requested, the UA shall set the Reception Security field accordingly for each recipient as required.

3) If "Application Security Element" is requested, the end-to-end application security value shall be conveyed in the EDI Application Security Elements field.

Note — In case of the use of a notarizing function, the non-repudiation of content service is provided implicitly, and is not reflected in any protocol elements.

The results of Originate EDIM shall be as follows:

c) *Submission-identifier:* Message Submission's Message-submission-identifier result.

d) *Submission-time:* Message Submission's Message-submission-time result.

How the UA employs Message Submission's Content-identifier and Content-correlator are local matters.

The inclusion of Message Submission's Extensions result among Originate EDIM's results is proper and may be the subject for future standardization.

17.1.3 *Originate EDIN*

A UA shall perform the Originate EDIN abstract operation, if the UA makes it available to its user, by invoking Message Submission with the arguments indicated below, and by returning to its user the results indicated below.

A user may delegate the task of generating EDINs to the UA. In this case, this abstract operation is not present at the abstract interface between the UA and the user, that is, the operation is not available at the Origination port. In this case the UA behaves as if the abstract operation would have been invoked. The UA may accept Responsibility at will, but shall accept Responsibility when the EDIM is made available to the user, or when it forwards an EDIM with content changed (in this context, "content changed" means that the forwarding UA adds or removes body parts from the forwarding EDIM, in accordance with § 8.3.2. The term forwarding EDIM is defined in § 17.3.3).

The arguments of Message Submission shall be as follows:

a) *Envelope:* The components of this argument that constitute per-message fields shall be as follows; those not explicitly mentioned below shall be as specified by Originate EDIN's Envelope argument:

   1) Originator-name: The OR Name of the UA's user.

   2) Content-type and Original-encoded-information-types: Determined from the EDIN as specified in §§ 19.2 and 19.4, respectively.

   3) Content-identifier and Content-correlator: Specified or omitted as a local matter.

   4) Deferred-delivery-time: Omitted.

   5) Priority: Same as that of the subject EDIM.

      Note — Subject EDIM is defined in § 17.3.3.

b) *Content:* Determined from Originate EDIN's Content argument (identified as a PN, NN or FN) as specified in § 19.1.

   1) If, in the subject EDIM, Reception Security is set to "non-repudiation" and Notification Security is set to "non-repudiation" and the "content-integrity-check" security argument is present in the delivery envelope of the subject EDIM, then the "content-integrity-check" security argument is copied into the Content Integrity Check field of the EDIN. The UA shall submit the EDIN with a non-repudiable security element "content-integrity-check" (possibly in the message token) or a "message-origin-authentication-check" (depending on the security policy in force).

   2) If, in the subject EDIM, Reception Security is set to "proof" and Notification Security is set to "proof" and the "content-integrity-check" security argument is present in the delivery envelope of the subject EDIM, then the "content-integrity-check" security argument is copied into the Content Integrity Check field of the EDIN. The UA shall submit the EDIN with the security element "content-integrity-check" (possibly in the message token) or a "message-origin-autentication-check" (depending on the security policy in force).

   3) If, in the subject EDIM, Reception Security is set to "non-repudiation" and Notification Security is set to "non-repudiation" and the "content-integrity-check" security argument is not present in the delivery envelope of the subject EDIM, then the Content of the subject message shall be copied into the Original Content field of the EDIN. The UA shall submit the EDIN with a non-repudiable security element "content-integrity-check" (possibly in the message token) or a "message-origin-authentication-check" (depending on the security policy in force).

   4) If, in the subject EDIM, Reception Security is set to "proof" and Notification Security is set to "proof" and the "content-integrity-check" security argument is not present in the delivery envelope of the subject EDIM, then the Content of the subject message shall be copied into the Original Content field of the EDIN. The UA shall submit the EDIN with the security element "content-integrity-check" (possibly in the message token) or a "message-origin-authentication-check" (depending on the security policy in force).

5) If, in the Subject EDIM, Notification Security is set to "proof" the UA shall submit the EDIN with the security element "content-integrity-check" (possibly in the message token) or the "message-origin-authentication-check", according to the security policy in force.

6) If, in the Subject EDIM, EDI Notification Security is set to "non-repudiation" the UA shall submit the EDIN with a non-repudiable security argument "content-integrity-check" (possibly in the message token) or a "message-origin-authentication-check", according to the security policy in force.

7) If the MTS does not support secure messaging and if the EDI Reception/Notification security services are requested, the EDIN shall contain an appropriate Reason Code.

The content-integrity-check shall always be checked for validity by the recipient UA before generating the EDIN.

The results of Originate EDIN shall be as follows:

c) *Submission-identifier:* Message Submission's Message-submission-identifier result.

d) *Submission-time:* Message Submission's Message-submission-time result.

How the UA employs Message Submission's Content-identifier and Content-correlator are local matters.

17.2 *Invocation of Reception Operations*

A UA shall invoke the abstract operations available at its Reception Port as specified below.

The UA invokes these operations in response to the MTS' invocation of the following abstract operations of the MTS Abstract Service (which, for what follows, are unqualified as to their source):

a) Report Delivery

b) Message Delivery

The abstract operations of a Reception Port report no errors.

17.2.1 *Receive Report*

Whenever the MTS invokes Report Delivery at a UA's Delivery Port, the UA shall invoke the Receive Report abstract operation with the following arguments:

a) *Envelope*: Report Delivery's Envelope argument.

b) *Undelivered-object:* Determined from Report Delivery's Returned-content argument as specified in § 19.1.

How the UA employs the Content-identifier and Content-correlator components of Report Delivery's Envelope argument are local matters.

17.2.2 *Receive EDIM*

When the MTS invokes Message Delivery at a UA's Delivery Port, and its Content argument encodes an EDIM as specified in § 19.1, the UA may invoke the Receive EDIM abstract operation with the following arguments:

a) *Envelope:* Message Delivery's Envelope argument.

b) *Content:* Determined from Message Delivery's Content argument as specified in § 19.1 (but no longer marked as an EDIM).

Note — Under some circumstances, for example, when the delivered message is forwarded, the UA might not invoke the Receive EDIM abstract operation.

17.2.3 *Receive EDIN*

Whenever the MTS invokes Message Delivery at a UA's Delivery Port, and its Content argument encodes an EDIN as specified in § 19.1, the UA shall invoke the Receive EDIN abstract operation with the following arguments:

a) *Envelope:* Message Delivery's Envelope argument.

b) *Content:* Determined from Message Delivery's Content argument as specified in § 19.1.

17.3 *Internal procedures*

A UA shall perform as specified below the internal procedures that relate to acceptance of Responsibility, refusal of Responsibility and forwarding.

A user may instruct its UA to accept or refuse Responsibility of incoming messages based on certain criteria.

In addition, a user may instruct its UA to forward incoming messages based on certain criteria.

Because of forwarding, redirection or DL-expansion, it is possible for a UA to receive the same EDIM more than once. Mechanisms for detecting such duplicate receptions are not required, but may be a matter of local implementation by the UA. If they exist, and notifications are requested, the UA shall originate an NN. If they do not exist, and notifications are requested, the UA shall originate a PN or FN, as appropriate.

The procedures involve the following abstract operations of the MTS Abstract Service (which, for what follows, are unqualified as to their source):

a) Message Submission

b) Message Delivery

As implied by the above, in the course of the procedures, the UA has occasion to invoke Message Submission. What it does with the results of this abstract operation is a local matter.

The UA shall consider as a candidate for each procedure individually every message for which all of the following conditions hold:

c) The MTS has conveyed the message to the UA by invoking Message Delivery at the UA's Delivery Port.

d) The UA has not conveyed the message to the user by invoking Receive EDIM at the UA's Reception Port.

e) The message contains an EDIM (rather than an EDIN).

With reference to item d) above, the message might be detained in the UA, e.g., as might be typical, because of the user's unavailability.

17.3.1 *Acceptance of Responsibility*

A UA shall accept Responsibility when a message is successfully passed from the UA to the user. The UA shall follow the procedures below for each candidate message with respect to whose content the following condition holds:

a) The EDIM requests a PN by means of the EDI Notification Request field of the appropriate Recipients Sub Field in the EDIM's Recipients field.

The UA may forward a message for which it has accepted Responsibility. See also § 17.3.3 on forwarding.

17.3.1.1 *Construction of PN*

The UA shall construct a PN if, and only if, one is requested by means of the EDI Notification Requests field of the appropriate Recipients Sub Field in the EDIM's Recipients field and in accordance with § 17.3.1.

The PN shall also have the following common fields:

a) *Subject EDIM:* The EDIM's This EDIM field or, if present, the Original EDIM Identifier in the EDIN Receiver field.

b) *EDIN Originator:* The OR Name of the UA which submits the EDIN. If the UA is a preferred recipient of the subject EDIM, the OR Name shall be precisely that which is the value of the Recipient field in the subject EDIM.

c) *First Recipient:* The OR Name of the UA which the originator of the EDIM specified as recipient in the Heading, or, if present, the First Recipient field in the EDIN Receiver field. If the EDIN Receiver field is not present, the First Recipient OR Name is the OR Name of the UA creating the EDIN, unless the MTA has performed redirection or DL-expansion. In case of redirection, the correct First Recipient OR Name must be obtained from the Intended Recipient Name field of the delivery envelope (see § 8.3.1.1.1.4 of Recommendation X.411). In case of DL-expansion, the correct First Recipient OR Name must be obtained from the DL Expansion History field of the delivery envelope (see § 8.3.1.1.1.7 of Recommendation X.411).

d) *Notification Time:* The current date and time.

e) *Notification Security Elements:* Security elements in any type of notification shall follow the rules of § 17.1.3.

f) *EDIN Initiator:* Shall be set according to § 9.1.6.

17.3.1.2 *Submission of PN*

The UA shall submit the PN above by invoking Message Submission with the following arguments:

a) *Envelope:* The components of this argument shall be as prescribed for performance of the Originate EDIN abstract operation with the following exceptions:

1) Priority: As specified by Message Delivery's Envelope argument.

2) Per-message-indicators: A local matter, except that conversion-prohibited shall be among the values specified.

3) Per-recipient-fields: A single field whose Recipient-name component shall be the Originator-name component of Message Delivery's Envelope argument, or if the EDIN Receiver field is present, the EDIN Receiver as specified by the originator of the message.

Note — If the OR Name in the EDIN Receiver field is not valid, then the UA cannot submit the EDIN. Procedures to be followed in this case are a local matter.

b) *Content:* Determined from the PN as specified in § 19.1.

17.3.2 *Refusal of Responsibility*

A UA shall refuse to accept Responsibility when a message cannot be successfully passed from the UA to the user. A UA may refuse to accept Responsibility when forwarding was unsuccesful [see c) of § 17.3.3.1]. The UA shall follow the procedures below for each candidate message under the following conditions:

a) The EDIM requests an NN of the UA's user by means of the EDI Notification Requests field of the appropriate Recipients Sub Field in the EDIM's Recipients field.

b) The EDIM is not successfully forwarded onward, or not successfully passed to the user of this UA.

Note — See also § 17.3.3 on forwarding.

17.3.2.1 *Construction of NN*

The UA shall construct an NN if, and only if, one is requested by means of the EDI Notification Requests field of the subject EDIM's Recipients field and in accordance with § 17.3.2.

The NN shall have the common fields prescribed for Construction of PN (see § 17.3.1.1).

The NN shall also have the following fields:

a) *Negative Notification Reason Code:* The reason why Responsibility for the EDIM was refused.

b) Optionally, NN Supplementary Information that adds information to the reason given.

17.3.2.2 *Submission of NN*

The UA shall submit the NN (if any) above by invoking Message Submission. Its Envelope argument shall be as prescribed for Acceptance of Responsibility (see § 17.3.1), its Content argument determined from the NN as specified in § 19.1.

Note — If the OR Name in the EDIN Receiver field is not valid, then the UA cannot submit the EDIN. Procedures to be followed in this case are a local matter.

17.3.2.3 *Handling of received EDIM*

The received EDIM for which the UA refuses Responsibility shall not be made available to the user, nor shall it be forwarded.

17.3.3 *EDI Forwarding*

The procedures defined in this paragraph describe EDI Forwarding.

Note — For brevity, the term "forwarding" is used in this Recommendation as a synonym for "EDI Forwarding".

A user may instruct its UA to forward received messages based on local criteria. A user may also instruct its UA to automatically forward requests for notifications together with the forwarded message. A message shall not be forwarded when Responsibility for that message has been refused.

In order to forward an EDIM, the UA creates a new EDIM with a new Heading and in the Primary Body Part encapsulates the received EDIM (Heading and Body) and optionally the envelope of the received message using the body part type EDIM Body Part (see § 8.3.2).

Figure 6/X.435 illustrates forwarding with an example.

The term subject EDIM refers to the received EDIM that is being forwarded. The term forwarding EDIM refers to the new EDIM that is being created, and that will include all or part of the subject EDIM, in accordance with § 8.3.2. The term forwarded EDIM refers to the outermost EDIM Body Part of the forwarding EDIM, constituting all or part of the subject EDIM.

Unless overridden by specific rules below, or by the requirements of the security policy in force, the following general rules apply to the creation of the Heading fields of the forwarding EDIM:

— All mandatory Heading fields and any optional fields whose values are changed with respect to the values present in the subject EDIM shall be present.

— Heading fields whose values are unchanged shall be copied from the subject EDIM Heading to the forwarding EDIM Heading if the field is present in the subject EDIM Heading and the value in the field is other that the value specified as DEFAULT in § 8.2.

— Other Heading fields need not be copied.

EDI Forwarding is done by the MS if the UA has an MS, otherwise by the UA.

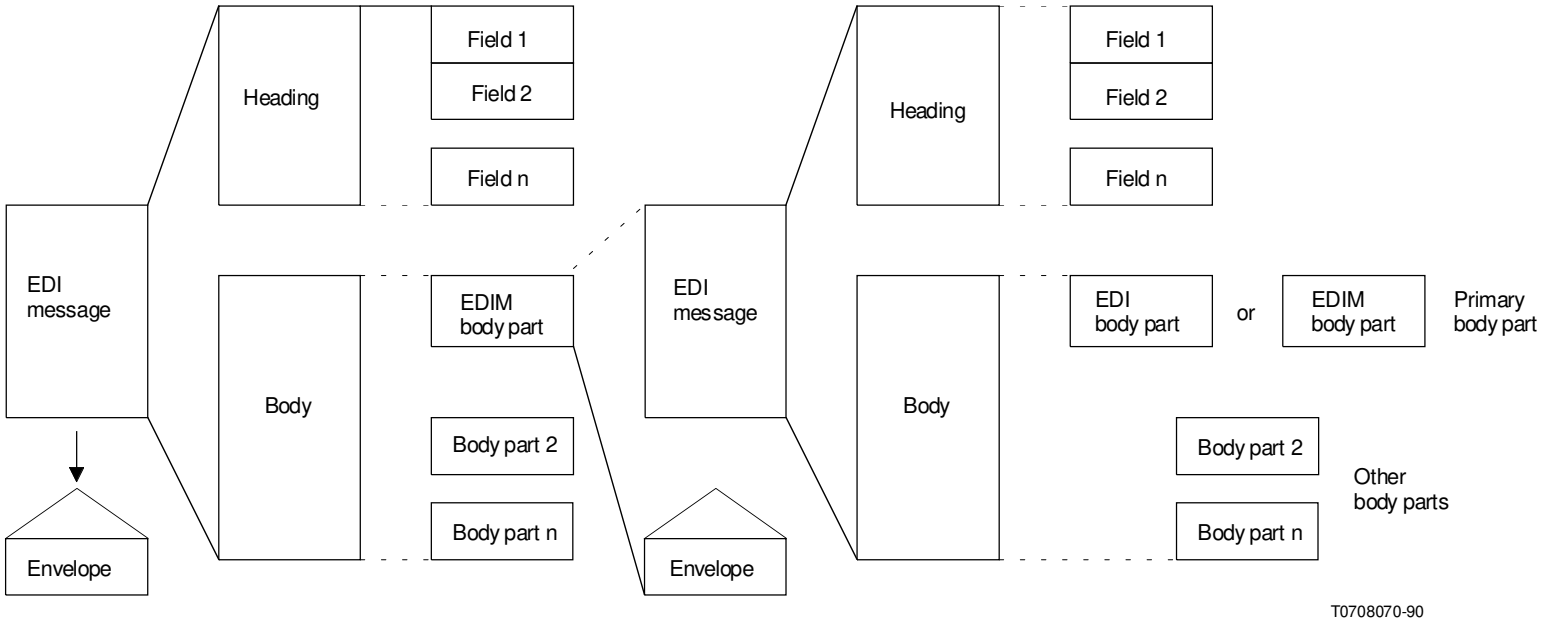

FIGURE 6/X.435

Forwarding

EDI Forwarding may take two forms:

a) Forwarding of message and Responsibility forwarded.

b) Forwarding of message and Responsibility accepted.

EDI Forwarding may take place even if no notifications have been requested. This is equivalent to form b) above.

The UA shall, subject to the instructions given by the user, forward messages as follows.

17.3.3.1 *Forwarding of message and Responsibility forwarded*

Forwarding a message without accepting Responsibility of the message implies the following:

a) The Primary Body Part of the new message is the content of the subject message unchanged. The delivery envelope of the received EDIM shall be included if security notifications are requested.

b) If passing of Responsibility is allowed by the originator, the EDI Notification Request field is forwarded unchanged with the new message to one, and only one, of the recipients of the new message. The value of the Responsibility Forwarded field shall be set to TRUE.

c) If the forwarding fails (for example, a Non delivery report on the forwarded message is returned) within a given period of time (either specified by the originator in Expiry Time or as a local decision in the MS or UA, with priority given to the Expiry Time), the UA may refuse Responsibility (see § 17.3.2).

d) If the EDI Notification Requests field of the subject EDIM's Recipients field requests FN, an FN EDIN shall be sent back to the specified EDIN Receiver, or to the originator of the EDIM, if no EDIN Receiver is specified.

The delivery envelope of the received message shall be included in the new EDIM if the received EDIM's Primary Body Part is not a Forwarded EDIM.

It is possible to forward a message more than once, and a message may be forwarded to multiple recipients, in accordance with the rules above.

The originator of a message may prohibit passing of Responsibility by setting the Responsibility Passing Allowed field to the value FALSE. In this case, if the UA cannot accept Responsibility and NN Notification is requested, the UA shall submit an NN EDIN with appropriate reason code. If the UA cannot accept Responsibility and NN Notification is not requested, then no EDIN shall be submitted.

17.3.3.2 *Forwarding of message and Responsibility accepted*

Forwarding a message and accepting Responsibility of the message implies the following:

a) The Primary Body Part of the new message is the content of the subject message changed or unchanged. This type of forwarding is less restricted and may include removal or addition of body parts. The Heading of the subject EDIM shall remain unchanged.

Note 1 — If the delivery envelope of the received message is included in the forwarded message, and if that envelope contained security fields, and if body parts are added or removed, then the security fields may no longer be valid.

The following rules apply with respect to removal of body parts:

1) A forwarded EDIM Body Part shall not be removed;

2) "removed-edi-body" shall be inserted where an EDI Body Part has been removed (see § 8.3.2);

3) Body Part Place Holders shall be inserted where other body parts have been removed (see § 8.3.2);

4) the Incomplete Copy Indicator field of the forwarding EDIM shall be set to "TRUE" if Body Parts are removed.

b) Responsibility Forwarded shall not be requested (that is, the field shall not be present).

c) If the EDI Notification Requests field of the subject EDIM's Recipients field requests Positive Notification, a PN EDIN shall be sent back to the specified EDIN Receiver, or to the originator of the EDIM, if no EDIN Receiver is specified.

d) A Forwarded Notification, FN, shall not be sent back to the originator of the message.

Note 2 — By scanning the successive nested Headings of an EDIM that contains a forwarded EDIM, the final recipient UA can determine from the setting of the Responsibility Forwarded field at which point in the forwarding chain Responsibility was accepted.

17.3.3.3 *Prevention of loops*

The UA shall suppress forwarding if the EDIM to be forwarded itself contains a forwarding EDIM that the UA previously created. That is to say, forwarding shall be suppressed whenever the forwarding EDIM appears (directly) in a body part of the EDIM to be forwarded, or (nested) in a body part of the EDIM that appears in such a body part.

The UA shall consider itself to have created the forwarding EDIM above if, and only if, the OR Name component of a This EDIM Field in a forwarded EDIM matches the OR Name of the UA's user.

Note — Forwarding an EDIM of the kind described above would constitute an EDI Forwarding "loop".

17.3.3.4 *Construction of forwarding EDIM*

The UA shall construct a forwarding EDIM whose Primary Body Part comprises a body part of type EDIM Body Part.

The Heading shall have the following components:

a) *This EDIM:* New value generated.

b) *Originator:* OR Name of the forwarding user.

c) *Recipients:* The recipients to which the EDIM is being forwarded.

If Responsibility is not accepted, the following rules relating to the components of the EDIM Heading apply:

d) *EDIN Receiver Field:* shall be present and shall contain all optional fields. If the subject EDIM contains an EDIN Receiver Field, the fields of the EDIN Receiver Field of the forwarding EDIM shall have the values of the fields of the EDIN Receiver Field of the subject EDIM. If optional fields are missing from the EDIN Receiver Field of the subject EDIM, or if the subject EDIM does not contain an EDIN Receiver Field, then the missing fields of the EDIN Receiver Field of the forwarding EDIM shall have the following values:

   1) Edin-receiver: Originator of subject EDIM.

   2) Original-edim-identifier: This EDIM field of subject EDIM.

   3) First-recipient: OR Name of the UA to which the subject EDIM was first sent by the original originator. This is the OR Name of the forwarding UA (which is performing the first forwarding operation), unless the MTA has performed redirection. In case of redirection, the correct First Recipient OR Name must be obtained from the Intended Recipient Name field of the delivery envelope (see § 8.3.1.1.1.4 of Recommendation X.411).

e) *EDI Notification Request (sub-field of Recipients):* The UA may forward the EDIM to several recipients by simply adding recipients to the Recipients field. The UA shall set identical EDI Notification Requests for one, and only one, of the recipients. One, and only one, of the UAs to whom the subject EDIM is forwarded will receive the EDI Notification Requests contained in the subject EDIM.

f) *Expiry Time:* may be set to a value different to the value indicated in the subject EDIM.

g) All other Heading fields shall follow the general rules in § 17.3.3.

If Responsibility is accepted, the EDIM Heading shall comply with a), b) and c) above and with the following rules:

h) *EDIN Receiver Field:* may be absent or present. If present, it shall contain only the following value:

1) Edin-receiver: OR Name of the desired EDIN Receiver.

i) Other fields may be added (including EDI Notification Requests).

In both cases other fields apart from those especially mentioned above may, but need not, be copied from the Heading of the subject EDIM to the Heading of the forwarding EDIM (except that the Original EDIM Identifier and First Recipient sub-fields of the EDIN Receiver Field shall not be present).

The Primary Body Part shall be of type EDIM Body Part and shall have the following components:

j) *Parameters:* Specified or omitted as a local matter.

k) *Data:* The EDIM to be forwarded.

17.3.3.5 *Submission of forwarded EDIM*

The UA shall submit the forwarded EDIM it constructed above by invoking Message Submission with the following arguments:

a) *Envelope:* The components of this argument shall be as follows:

1) Originator-name: The OR Name of the UA's user.

2) Content-type and Original-encoded-information-types: Determined from the EDIM as specified in §§ 19.2 and 19.4.

3) Content-identifier: Specified or omitted as a local matter.

4) Priority: As specified by Message Delivery's Envelope argument.

5) Per-message-indicators and Extensions: A local matter.

6) Deferred-delivery-time: Omitted.

7) Per-recipient-fields: Their Recipient-name components shall be the OR Names that the message shall be forwarded to. Their other components are a local matter.

b) *Content:* Determined from the EDIM as specified in § 19.1.

17.3.3.6 *Construction of FN*

The UA shall construct an FN if, and only if, one is requested by means of the EDI Notification Requests field of the subject EDIM's Recipients field and the user is not willing to accept Responsibility for the message and forwards the request for notification.

The FN shall have the common fields as prescribed for construction of PN (See § 17.3.1.1).

The FN shall have the following forwarding fields:

a) *Forwarded To:* the OR Name of the recipient to whom the request for notification was forwarded.

b) *Forwarded Reason Code:* The reason why the subject message was forwarded.

c) Optionally, FN Supplementary Information that adds information to the reason given.

17.3.3.7 *Submission of FN*

The UA shall submit the FN (if any) above by invoking Message Submission. Message Submission's Envelope argument shall be as prescribed for acceptance of Responsibility (See § 17.3.1), its Content argument determined from the FN as specified in § 19.1.

Note — If the OR Name in the EDIN Receiver field is not valid, then the UA cannot submit the EDIN. Procedures to be followed in this case are a local matter.

18 Message Store operation

Recommendation X.413 defines the abstract service for a general content independent Message Store (MS). The MS is an optional system component in an MHS. The MS is asssociated with a user's UA. The user can submit messages through it and retrieve messages that have been delivered to the MS. In addition, the MS can perform certain predefined. auto actions on the UA's behalf.

Note — Because the MS is an optional system component in an MHS, use of the word "shall" with respect to MS specifications shall not be construed as mandating the provision of an MS or the services it provides. Use of the word "shall" with respect to MS specifications shall be construed as mandating the specifications of an MS, if one is provided.

All the abstract operations, general attribute types and general auto actions types defined in Recommendation X.413 are also available for use by EDI messages.

An MS may optionally offer additional support for the EDI messaging specific attribute types and auto actions, which would qualify it as an EDI messaging specific MS (EDI-MS). These additional definitions are given in what follows.

18.1 *Binding to the MS*

Binding to the MS is described in § 7.1 of Recommendation X.413. Attention should be given to the following points when using the MS for EDI messaging.

18.1.1 *Abstract-bind argument*

The following parameters from § 7.1.1 of Recommendation X.413 have special meaning in this Recommendation:

a) *Fetch-restriction:* The name of the object identifier for the EDI content type is "id-mct-pedi", the value is defined in Annex A.

b) *Allowed-EITs:* The names of the object identifiers so far standardized in this Recommendation are defined in Annex A. See also § 19.4.

18.2 *Abstract-bind result*

The following parameter from § 7.1.2 of Recommendation X.413 has special meaning for this Recommendation:

— Available-auto-actions.

Note — The use of the general auto action "auto-forward" is not defined for use with EDIMs. Instead the EDI messaging specific auto actions should be used, covering "edi-forward-with-responsibility-accepted" and "edi-forward-with-responsibility-not-accepted".

18.3 *Creation of Information Objects*

An MS shall satisfy the following requirements related to the information objects it maintains:

a) The MS shall maintain a separate information object for each message containing an EDIM or EDIN that is delivered to it.

b) The MS shall maintain as a separate information object not only each message containing a forwarding EDIM [pursuant to Item a)] but also each message containing a forwarded EDIM (recursively).

c) The MS shall assign sequence numbers to the messages in the hierarchy formed by a forwarding EDIM and its forwarded EDIMs. The lowest number shall be assigned to the outermost level of the hierarchy.

The general (content independent) attributes that may occur in a stored-messages information-base are documented in Recommendation X.413. All content-independent MS attributes can be used for the content defined in this Recommendation. The EDI specific attributes for stored-messages are defined in § 18.7. All general attribute types classified as "mandatory" in Table 1/X.413 shall be supported.

18.3.1 *Mapping of an MHS message in MS*

Note —In what follows, reference is made to an "MHS message". This is not be confused with the term "message", which refers to an EDIM.

When an EDIM or EDIN gets delivered into the MS, a corresponding MS entry is generated in the stored-messages information-base. The MS generates some attributes for administration purposes such as Sequence Number, a Creation Time for the entry, the Interchange Length etc. It then generates attributes based on protocol elements in the MHS Envelope, in the Heading and one attribute containing the whole EDI Interchange. The attribute EDI Body Part Type signals which EDI Standard has been used. Similarly, other Body Parts will be mapped into one or several additional attributes.

Figure 7/X.435 describes how an MHS message with an EDIM is mapped into a corresponding MS entry.

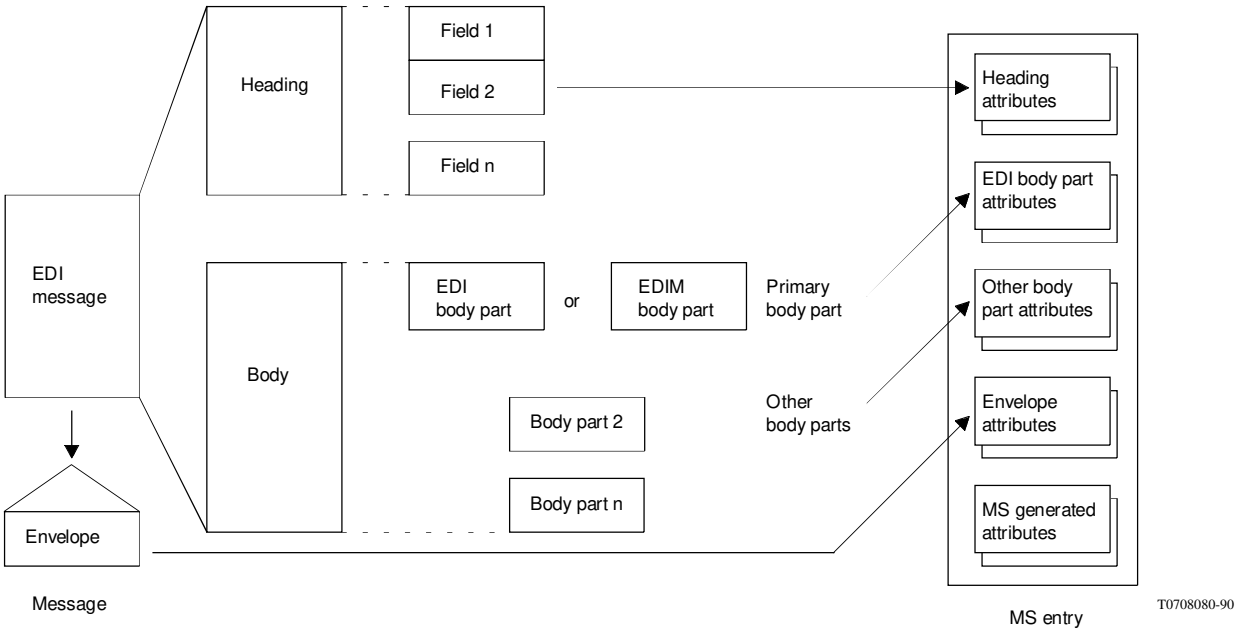

FIGURE 7/X.435

MHS message with EDIM – Mapping in MS

18.3.2 *Mapping of forwarding messages in MS*

A forwarding EDIM is mapped into the Message Store as one main entry and one or more linked child entries. The final child entry will contain the original EDIM (with its interchange and any additional body parts).

The MS Structure of a forwarding message such as the message in Figure 6/X.435 is depicted in Figure 8/X.435.

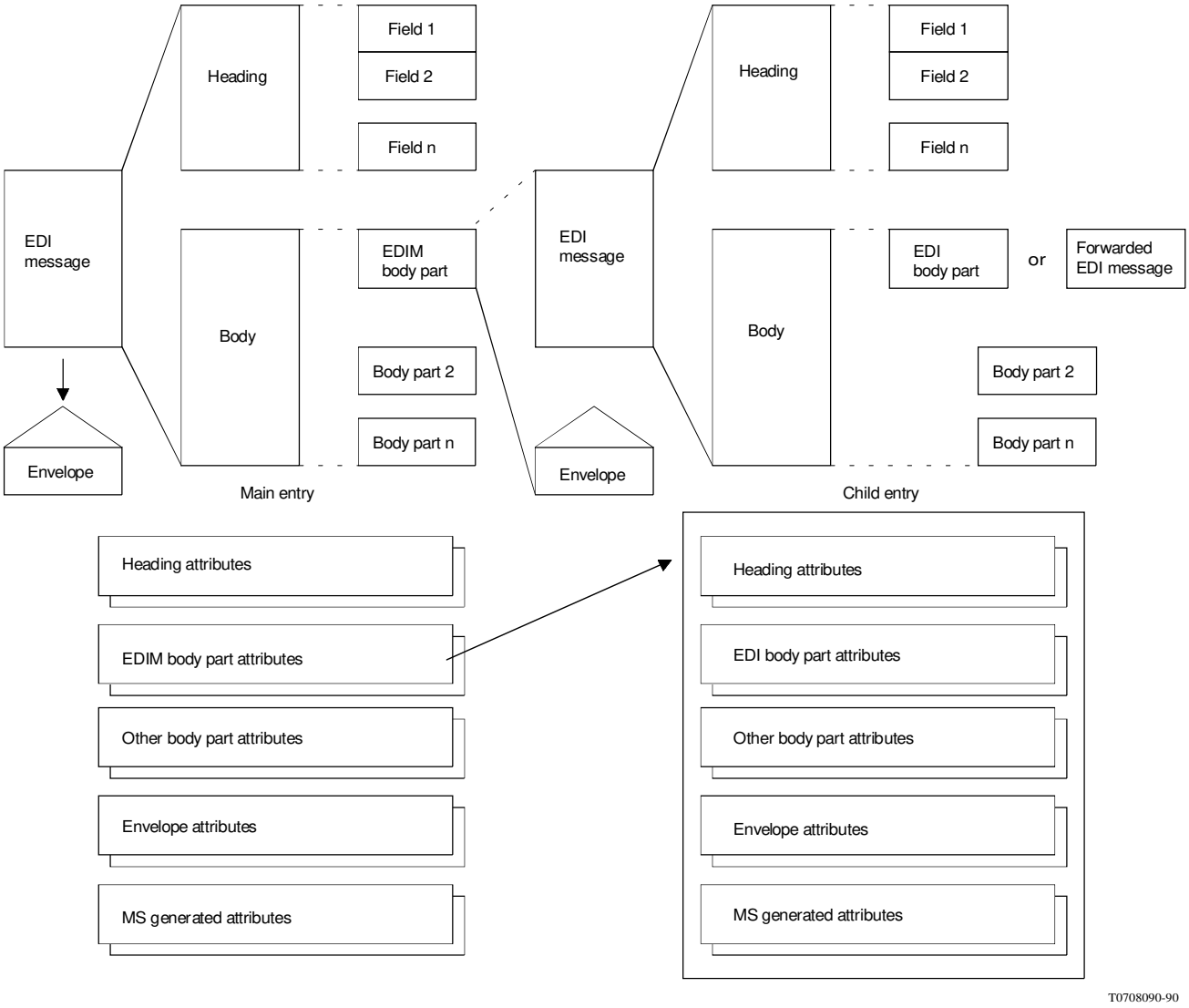

FIGURE 8/X.435

Forwarding message in MS

18.4 *Maintenance of Attributes*

An MS shall satisfy the following requirements related to MS attributes:

a) For each EDIM or EDIN it holds, the MS shall support the attributes of § 18.7 as specified therein.

b) For each EDIM it holds, the MS shall give the following meanings to the defined values of the MS-status attribute:

   1) new: No attribute values have been conveyed to the UA.

   2) listed: At least one attribute value has been conveyed to the UA, and at least one body part value has not been conveyed to the UA.

   3) processed: All body parts have been conveyed to the UA or the MS has performed an auto-action on it and the definition of that auto-action causes a change of entry-status.

c) For each EDIN it holds, the MS shall give the following meanings to the defined values of the MS-status attribute:

   1) new: No attribute values have been conveyed to the UA.

   2) listed: At least one attribute value has been conveyed to the UA, and at least one attribute value has not been conveyed to the UA.

   3) processed: All attributes have been conveyed to the UA or the MS has performed an auto-action on it and the definition of that auto-action causes a change of entry-status.

d) The MS-status attribute shall reflect the state of affairs prior to an abstract operation invocation that alters its value.

e) The Content Type attribute of each message containing an EDIM or EDIN that is delivered to the MS shall have as value the Object Identifier id-mct-pedi (see Annex A).

18.5 *Negative Notification*

When it discards an EDIM while performing the Delete abstract operation of the MS Abstract Service, the MS shall submit an NN if one is requested and the EDIM's MS-status attribute has the value listed.

18.6 *Auto Action Types*

The concept of auto actions is described in §§ 6.5 and 12 of Recommendation X.413. This introduces two general auto action types, which can potentially be used for all content-types. However, the "auto-forward" auto action is not defined for the EDIM content-type. Instead, a specific auto action for EDI Forwarding is defined below.

The auto-alert auto action defined in § 12.2 of Recommendation X.413 can be used for EDI messaging without any restrictions.

Auto actions are registered and deregistered using the Register-MS abstract operation as described in § 8.6 of Recommendation X.413.

The EDI-auto-forward auto action is described in the following. The operation of this auto action may be affected by the implementation of a security policy.

The EDI-auto-forward auto action is defined below together with its abstract syntax using the AUTO-ACTION macro as defined in § 6.5 of Recommendation X.413.

The EDI-auto-forward allows EDIMs to be forwarded as follows:

— forwarding-with-responsibility-not-accepted, which means that the EDI responsibility is forwarded. See a) of § 17.3.3;

— forwarding-with-responsibility-accepted, which means that the EDI responsibility is accepted. See b) of § 17.3.3.

As specified in § 17.3.3, if no notifications are requested EDI-auto-forwarding may take place, and is equivalent to forwarding-with-responsibility-accepted.

If EDI Security Requests are present, then the EDI-auto-forward actions defined above may be prohibited, subject to the security policy in force. If EDI Security Requests are present then the EDI-auto-forward action "forwarding-with-responsibility-accepted" shall not be performed.

The EDI-auto-forward allows one or more sets of EDI-auto-forward-registration-parameters to be registered with the MS, each identified by its registration-identifier. Each EDI-auto-forward-registration-parameter specifies criteria to determine whether it applies to a delivered EDIM, and if so, a copy of the message is EDI-auto-forwarded using the Message-submission abstract operation. The delivered EDIM may be automatically deleted afterwards. If a delivered EDIM matches more than one set of criteria, see § 18.8.1 for a description of the interactions.

Below is the ASN.1 definition of the edi-auto-forward AUTO ACTION:

```
edi-auto-forward     AUTO-ACTION
    REGISTRATION PARAMETER IS EDIAutoForwardRegistrationParameter
    ::= id-act-edi-auto-forward

EDIAutoForwardRegistrationParameter ::= SEQUENCE {
    filter                              [0] Filter OPTIONAL,
    edi-supplementary-info              [1] EDISupplementaryInfo OPTIONAL,
    delete-after-forwarding             [2] BOOLEAN DEFAULT FALSE,
    edi-forwarding-mode                 CHOICE {
        forwarding-with-responsibility-not-accepted    [3] ForwardWithRespNotAccepted,
        forwarding-with-responsibility-accepted        [4] ForwardWithRespAccepted }
```

Note — The data types Filter, Per Message Auto Forward Fields and Per Recipient Auto Forward Fields are defined in § 12.1 of Recommendation X.413.

The common parameters of the EDI Forward Registration Parameter have the following meanings:

a) *Filter:* This is a set of criteria which a new entry representing a delivered EDIM shall satisfy for the MS abstract service provider to auto forward it using this set of parameters.

   The absence of this parameter indicates that all new entries are to be examined for potential auto forwarding.

   Note — Substrings in filters cannot be defined for composite attributes (attributes with further ASN.1 structure in the attribute value) in the present version of Recommendation X.413.

b) *Edi-supplementary-info:* This parameter can contain text to be included in the EDIN supplementary field of an EDIN and in the other-parameters field of a forwarded EDIM.

c) *Delete-after-forwarding:* This parameter indicates whether an MS entry should be deleted or not, once the auto-forward submission has succeeded. If not specified, no deletion takes place.

d) *Edi-forwarding-type:* This is a choice between:

   1) forwarding-with-responsibility-not-accepted,

   2) forwarding-with-responsibility-accepted,

The remaining parameters are described separately for the two cases below.

18.6.1 *Forwarding With Responsibility Not Accepted*

The forwarding-with-responsibility-not-accepted case enables the MS abstract service provider to automatically forward, with EDI Responsibility forwarded, any EDIM (with notification requests) that has been delivered into the stored-messages information base. The use of this auto action shall be subject to the requirements of the security policy in force. The MS shall follow the rules in § 17.3.3.1. Appropriate values are added in the EDI Notification Indicator attribute.

The following limitations apply to forwarding-with-responsibility-not-accepted, when compared to the general rules for forwarding contained in § 17.3.3:

a) The forwarding-with-responsibility-not-accepted auto action type shall only be performed once for a particular EDIM by the same MS.

b) Only one recipient shall be specified for the forwarding auto action.

```
ForwardWithRespNotAccepted ::= SET {
        COMPONENTS OF PerMessageAutoForwardFields, -- from envelope PerMessageFields
        per-recipient-field                        [3] PerRecipientAutoForwardFields,
        notification-argument                      [4] NotificationArguments OPTIONAL }

NotificationArguments ::= SET {
        COMPONENTS OF PerMessageAutoForwardFields, -- from envelope PerMessageFields
        per-recipients-field                       [3] SEQUENCE SIZE (1..ub-recipients) OF
                                                   PerRecipientAutoForwardFields }
```

The following ASN.1 data type defines the parameters specific to this case:

c) *PerMessageAutoForwardFields:* This is a set of arguments registered to be used for each message submission abstract operation (see § 8.2.1.1.1 of Recommendation X.411). Any argument which is not registered, not mandatory, and not specifically mentioned below, will be absent from each message submission.

If the following arguments are either not registered, or registered with their default values, the values used for each message submission abstract operation are those of the corresponding message delivery arguments: priority, implicit-conversion-prohibited, and conversion-with-loss-prohibited.

If the following argument is either not registered, or registered with their default values, their presence as message submission arguments depends upon the presence of the corresponding message delivery arguments, their values being transformed where appropriate: message-security-label.

The following arguments have fixed values:

1) DL-expansion-prohibited: value DL-expansion-prohibited;

2) implicit-conversion-prohibited: value implicit-conversion-prohibited;

3) conversion-with-loss-prohibited: value conversion-with-loss-prohibited.

Certain message submission arguments may be registered. These are: proof-of-submission-request, original-encoded-information-types and content-type.

d) *PerRecipientAutoForwardFields:* This is a set of arguments registered to be used for each message submission abstract operation (see § 8.2.1.1.1 of Recommendation X.411). Any argument which is not registered, not mandatory, and not specifically mentioned below, will be absent from each message submission.

The following argument has a fixed value:

1) originator-report-request: this shall have either the value non-delivery-report or the value report.

Only one recipient is allowed for this case.

e) *Notification-argument:* This contains the same parameters as in c) and d) above, but the actual values can differ from the values in the forwarded EDIM.

18.6.2 *Forwarding with responsibility accepted*

The forwarding-with-responsibility-accepted case enables the MS abstract service provider to automatically forward, with Responsibility accepted, any EDIM that has been delivered into the stored-messages information base. The use of this auto action shall be subject to the requirements of the security policy in force. The MS shall follow the rules in § 17.3.3.2. Appropriate values are added in the EDI Notification Indication attribute.

The following limitations apply to forwarding-with-responsibility-accepted, when compared to the general rules for forwarding contained in § 17.3.3:

a) The MS shall construct and forward an EDIM whose primary body part comprises a body part of type EDIM body part as described in § 17.3.3.4, however no body parts shall be removed or added, the original delivery envelope shall be included and the components of the original Heading shall be copied to the Heading of the forwarding EDIM according to the rules in § 17.3.3 with the following exceptions:

   1) The "recipient" parameter value is set to the next "recipient".

   2) Any registered values for Heading fields shall replace the old values in the new Heading.

```
ForwardWithRespAccepted ::= SET {
    COMPONENTS OF PerMessageAutoForwardFields, -- from envelope PerMessageFields
    per-recipients-field                [3] SEQUENCE SIZE (1..ub-recipients) OF
                                        PerRecipientAutoForwardFields,
    notification-argument               [4] NotificationArguments OPTIONAL,
    new-edin-receiver-name              [5] RecipientField OPTIONAL,
    per-recipient-heading-fields        [6] SEQUENCE SIZE (1..ub-recipients) OF
                                        NextRecipientFields OPTIONAL }

NextRecipientFields::= SEQUENCE {
    next-recipient                      [0] RecipientField,
    next-recipient-action-request       [1] ActionRequestField DEFAULT {id-for-action},
    next-recipient-edi-notification-requests-field      [2] EDINotificationRequestsField OPTIONAL,
    next-responsibility-passing-allowed [3] ResponsibilityPassingAllowedField DEFAULT FALSE }
```

The following ASN.1 data type defines the parameters specific to this case:

b) *PerMessageAutoForwardFields:* The description is the same as in c) of § 18.6.1.

c) *PerRecipientAutoForwardFields:* The description is the same as in d) of § 18.6.1.

   Multiple recipients are allowed for this case.

d) *Notification-argument:* The description is the same as in e) of § 18.6.1.

e) "new-edin-receiver-name" to replace "edin-receiver-name" in EDIN Receiver Field.

f) *HeadingFields:* New values may be defined for:

   1) "next-recipient" to replace "recipient" in Recipients Sub Field. This field is mandatory;

   2) "next-recipient-action-request" to replace "recipient-action-request" in Recipients Sub Field;

   3) "next-recipient-edi-notification-requests-field" to replace "recipient-edi-notification-requests-field" in Recipients Sub Field;

   4) "next-responsibility-passing-allowed" to replace "responsibility-passing-allowed" in Recipients Sub Field.

18.7 *Message Store Attributes*

As described in Recommendation X.413, an MS maintains and provides access to certain attributes of each information object it holds. An attribute comprises a type and, depending upon the type, one or more values. Attributes that may assume several values simultaneously (all pertaining to one object) are termed multi-valued, those that may assume just one value, single-valued. Some attributes pertain to information objects of all kinds, others only to those of e.g. EDI messaging kind.

The following defines the MS attributes specific to EDI messaging. EDI specific attributes are defined below.

All of the attributes defined in this Recommendation, except those corresponding to extended body part types (which cannot be enumerated), are listed alphabetically, for reference, in the first column of Table 1/X.435. This table records their presence in a delivered message entry. None of them appears in a delivered report entry. Additional, unnamed attributes are described in § 18.7.4.5. Table 2/X.435 describes how the EDI attributes are generated.

All attributes supported are available to the fetch abstract operation subject to support by the implementation and subscription.

Note — See §§ 5.3 and 5.4 for an elaboration of the legend of the tables.

18.7.1 *Summary Attributes*

Some attributes summarize an EDI Messaging information object. These attributes are defined and described below.

18.7.1.1 *EDIMS Entry Type*

The EDIMS Entry Type attribute identifies an information object's type.

```
edims-entry-type ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIMSEntryType
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-sat-edims-entry-type

EDIMSEntryType ::= ENUMERATED {
        edim (0),
        pn (1),
        nn (2),
        fn (3) }
```

This attribute may assume any one of the following values:

a) *edim:* The information object is an EDIM.

b) *pn:* The information object is a PN.

c) *nn:* The information object is an NN.

d) *fn:* The information object is an FN.

An MS that supports this attribute shall maintain it for an information object that it holds if, and only if, that object is a message whose content is an EDIM or EDIN.

TABLE 1/X.435

Summary of EDI specific MS Attribute Types

Attribute	Single/ Multi valued	Support level by MS and UA	Presence in delivered EDIM	Presence in delivered PN	Presence in delivered NN	Presence in delivered FN	Available for list, alert	Available for summarize
acknowledgement-request-for-this-recipient	S	O	P	—	—	—	Y	N
action-request-for-this-recipient	S	O	P	—	—	—	Y	N
application-reference	S	O	C	—	—	—	Y	N
authorization-information-for-this-recipient	S	O	C	—	—	—	Y	N
body	S	M	P	—	—	—	N	N
communications-agreement id-for-this-recipient	S	O	C	—	—	—	Y	N
cross-referencing-information	M	O	C	—	—	—	Y	N
date-and-time-of-preparation	S	M	C	—	—	—	Y	N
edi-application-security-elements	S	O	C	—	—	—	Y	N
edi-application-security-extentions	M	O	C	—	—	—	Y	N
edi-body-part	S	M	P	—	—	—	N	N
edi-bodypart-type	S	M	P	—	—	—	Y	Y
edi-message-type	M	M	C	—	—	—	Y	N
edi-notification-indicator	M	O	—	—	—	—	Y	N
edi-notification-requests-for-this-recipient	S	O	C	—	—	—	Y	N
edi-notification-security-for-this-recipient	S	O	C	—	—	—	Y	N
edi-reception-security-for-this-recipient	S	O	C	—	—	—	Y	N
edim-body-part	S	O	C	—	—	—	N	N
edim-synopsis	S	O	P	—	—	—	N	N
edims-entry-type	S	M	P	P	P	P	Y	Y
edin-initiator	S	O	—	P	P	P	Y	N
edin-originator	S	O	—	P	P	P	Y	N
edin-receiver	S	O	C	—	—	—	Y	N
expiry-time	S	O	C	—	—	—	Y	N
externally-defined-body-part-types	M	O	C	—	—	—	Y	N
first-recipient	S	O	C	C	C	C	Y	N
fn-extensions	M	O	—	—	—	C	Y	N
fn-reason-code	S	O	—	—	—	P	Y	N
fn-supplementary-information	S	O	—	—	—	C	Y	N
forwarded-to	S	O	—	—	—	P	Y	N

TABLE 1/X.435 *(cont.)*

Attribute	Single/ Multi valued	Support level by MS and UA	Presence in delivered EDIM	Presence in delivered PN	Presence in delivered NN	Presence in delivered FN	Available for list, alert	Available for summarize
heading	S	M	P	—	—	—	N	N
heading-extensions	M	O	C	—	—	—	Y	N
incomplete-copy	S	O	P	—	—	—	Y	N
interchange-control-reference-for-this-recipient	S	M	C	—	—	—	Y	N
interchange-length	S	O	P	—	—	—	Y	N
interchange-recipient-for-this-recipient	S	M	C	—	—	—	Y	N
interchange-sender	S	M	C	—	—	—	Y	N
message-data	S	O	C	—	—	—	N	N
message-parameters	S	O	C	—	—	—	N	N
nn-extensions	M	O	—	—	C	—	Y	N
nn-reason-code	S	O	—	—	P	—	Y	N
nn-supplementary-information	S	O	—	—	C	—	Y	N
notification-security-elements	S	O	—	C	C	C	Y	N
notification-time	S	O	—	P	P	P	Y	N
notifications-extensions	M	O	—	C	C	C	Y	N
obsoleted-edims	M	O	C	—	—	—	Y	N
originator	S	O	C	—	—	—	Y	N
pn-extensions	M	O	—	C	—	—	Y	N
pn-supplementary-information	S	O	—	C	—	—	Y	N
processing-priority-code-for-this-recipient	S	O	C	—	—	—	Y	Y
recipient-extensions-for-this-recipient	M	O	C	—	—	—	Y	N
recipient-reference-for-this-recipient	S	O	C	—	—	—	Y	N
related-messages	M	O	C	—	—	—	Y	N
responsibility-forwarded	S	O	P	—	—	—	Y	Y
responsibility-passing-allowed for-this-recipient	S	O	P	—	—	—	Y	N
service-string-advice	S	O	C	—	—	—	Y	N
subject-edim	S	M	—	P	P	P	Y	N
syntax-identifier	S	M	C	—	—	—	Y	Y
test-indicator-for-this-recipient	S	O	P	—	—	—	Y	Y
this-edim	S	M	P	—	—	—	Y	N
this-recipient	S	O	C	—	—	—	Y	N

TABLE 2/X.435

Generation of the EDI specific MS Attribute Types

Attribute-type-name	Source parameters	Source generated by	Generation rules
acknowledgement-request-for-this-recipient	acknowledgement-request	MD	The attribute-value is the value of the parameter in the recipient-sub-field for this recipient. If the source parameter is missing, an attribute with the default value shall be generated.
action-request-for-this-recipient	action-request	MD	The attribute-value is the value of the parameter in the recipient-sub-field for this recipient. If the source parameter is missing, an attribute with the default value shall be generated.
application-reference	application-reference	MD	The value of the parameter is the attribute value.
authorization-information-for-this-recipient	authorization-information	MD	The attribute-values is the value of the parameter in the recipient-sub-field for this recipient.
body	body	MD	The value of the parameter is the attribute value.
communications-agreement-id-for-this-recipient	communications-agreement-id	MD	The attribute-values is the value of the parameter in the recipient-sub-field for this recipient.
cross-referencing-information	cross-referencing-information	MD	A value is generated from each value of the SET.
date-and-time-of-preparation	date-and-time-of-preparation	MD	The value of the parameter is the attribute value.
edi-application-security-elements	edi-application-security-elements	MD	The value of the parameter is the attribute value.
edi-application-security-extensions	edi-application-security-extensions	MD	A value is generated from each value of the SET.
edi-body-part	edi-body-part	MD	The value of the parameter is the attribute value.
edi-bodypart-type	edi-bodypart-type	MD	The value of the parameter is the attribute value. If the source parameter is missing, an attribute with the default value shall be generated.
edi-message-type	edi-message-type	MD	A value is generated from each value of the SET.
edi-notification-indicator	NONE	MD	A value is added when an EDIN is submitted from the MS.
edi-notification-requests-for-this-recipient	edi-notification-request	MD	The attribute-value is the value of the parameter in the recipient-sub-field for this recipient.
edi-notification-security-for-this-recipient	edi-notification-security	MD	The value of the parameter is the attribute value.
edi-reception-security-for-this-recipient	edi-reception-security	MD	The value of the parameter is the attribute value.
edim-body-part	NONE	MS	The value is the sequence-number of the entry created for the forwarded EDIM.
edim-synopsis	see § 18.7.1.2	MS	see § 18.7.1.2

TABLE 2/X.435 *(cont.)*

Attribute-type-name	Source parameters	Source generated by	Generation rules
edims-entry-type	InformationObject and edin	MS	If the information object is an EDIM, the value is set to "edim". If the information object is an EDIN, the value is set according to the type of the EDIN.
edin-initiator	edin-initiator	MD	The value of the parameter is the attribute value.
edin-originator	edin-originator	MD	The value of the parameter is the attribute value.
edin-receiver	edin-receiver	MD	The value of the parameter is the attribute value.
expiry-time	expiry-time	MD	The value of the parameter is the attribute value.
externally-defined-body-part-types	additional-body-parts	MD	From each component of the SEQUENCE, one value is generated from the value of the ExternallyDefinedData components direct-reference and one is generated from the value of the ExternallyDefinedParameters components direct-reference, if present.
first-recipient	first-recipient	MD	The value of the parameter is the attribute value.
fn-extensions	fn-extensions	MD	A value is generated from each value of the SET.
fn-reason-code	fn-reason-code	MD	The value of the parameter is the attribute value.
fn-supplementary-information	fn-supplementary-information	MD	The value of the parameter is the attribute value.
forwarded-to	forwarded-to	MD	The value of the parameter is the attribute value.
heading	heading	MD	The value of the parameter is the attribute value.
heading-extensions	heading-extensions	MD	A value is generated from each value of the SET.
incomplete-copy	incomplete-copy	MD	The value of the parameter is the attribute value. If the source parameter is missing, an attribute with the default value shall be generated.
interchange-control-reference-for-this-recipient	interchange-control-reference	MD	The attribute-values is the value of the parameter in the recipient-sub-field for this recipient.
interchange-length	NONE	MS	The value is the number of octets occupied by the source parameter.
interchange-recipient-for-this-recipient	interchange-recipient	MD	The attribute-value is the value of the parameter in the recipient-sub-field for this recipient.
interchange-sender	interchange-sender	MD	The value of the parameter is the attribute value.
message-data	data	MD	The value of the parameter is the attribute value.
message-parameters	message-parameters	MD	The value of the parameter is the attribute value.
nn-extensions	nn-extensions	MD	A value is generated from each value of the SET.
nn-reason-code	nn-reason-code	MD	The value of the parameter is the attribute value.

TABLE 2/X.435 *(cont.)*

Attribute-type-name	Source parameters	Source generated by	Generation rules
nn-supplementary-information	nn-supplementary -information	MD	The value of the parameter is the attribute value.
notification-security-elements	notification-security-elements	MD	The value of the parameter is the attribute value.
notification-time	notification-time	MD	The value of the parameter is the attribute value.
notifications-extensions	notifications-extensions	MD	A value is generated from each value of the SET.
obsoleted-edims	obsoleted-EDIMs	MD	A value is generated from each value of the SEQUENCE.
originator	originator	MD	The value of the parameter is the attribute value.
pn-extensions	pn-extensions	MD	A value is generated from each value of the SET.
pn-supplementary-information	pn-supplementary-information	MD	The value of the parameter is the attribute value.
processing-priority-code-for-this-recipient	processing-priority-code	MD	The attribute-value is the value of the parameter in the recipient-sub-field for this recipient.
recipient-extensions-for-this-recipient	recipient-extensions	MD	A value is generated from each value of the SET in the recipient-sub-field for this recpient.
recipient-reference-for-this-recipient	recipient-reference	MD	The attribute-value is the value of the parameter in the recipient-sub-field for this recipient.
related-messages	related-messages	MD	A value is generated from each value of the SEQUENCE.
responsibility-forwarded	responsibility-forwarded	MD	The value of the parameter is the attribute value. If the source parameter is missing, an attribute with the default value shall be generated.
responsibility-passing-allowed-for-this-recipient	responsibility-passing-allowed	MD	The attribute-value is the value of the parameter in the recipient-sub-field for this recipient. If the source parameter is missing, an attribute with the default value shall be generated.
service-string-advice	service-string-advice	MD	The value of the parameter is the attribute value.
subject-edim	subject-edim	MD	The value of the parameter is the attribute value.
syntax-identifier	syntax-identifier	MD	The value of the parameter is the attribute value.
test-indicator-for-this-recipient	test-indicator	MD	The attribute-value is the value of the parameter in the recipient-sub-field for this recipient. If the source parameter is missing, an attribute with the default value shall be generated.
this-edim	this-EDIM	MD	The value of the parameter is the attribute value.
this-recipient	recipient	MD	The attribute-value is the value of the parameter in the recipient-sub-field for this recipient.

18.7.1.2 *EDIM Synopsis*

The EDIM Synopsis attribute gives the structure, characteristics, size, and processing status of an EDIM at the granularity of individual body parts. This attribute is created when an EDIM is delivered to the MS.

```
edim-synopsis ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX EDIMSynopsis
    SINGLE VALUE
    ::= id-sat-edim-synopsis
```

The synopsis of an EDIM comprises a synopsis of each of its body parts. The synopsis appear in the order in which the body parts appear.

```
EDIMSynopsis ::= SEQUENCE OF BodyPartSynopsis
```

The synopsis of a body part takes either of two forms depending upon whether the body part is of type Message or Non-message (i.e. body-parts other than a forwarded EDIM). This enables the synopsis of a forwarding EDIM to encompass the body parts of each forwarded EDIM (recursively), as well as those of the forwarding EDIM itself.

```
BodyPartSynopsis ::= CHOICE {
    message                         [0] MessageBodyPartSynopsis,
    non-message                     [1] NonMessageBodyPartSynopsis }

MessageBodyPartSynopsis ::= SEQUENCE {
    number                          [0] SequenceNumber,
    synopsis                        [1] EDIMSynopsis }

NonMessageBodyPartSynopsis ::= SEQUENCE {
    type                            [0] OBJECT IDENTIFIER,
    parameters                      [1] ExternallyDefinedParameters OPTIONAL,
    size                            [2] INTEGER,
    processed                       [3] BOOLEAN DEFAULT FALSE }
```

The synopsis of a Message body part has the following components:

a) *Number:* The sequence number that the MS assigns to the entry that the Message body part represents. This component is generated when a child-entry is created.

b) *Synopsis:* The synopsis of the EDIM that forms the content of the message that the body part represents. This component is generated when a child-entry is created.

The synopsis of a body part of type other than Message has the following components. For purposes of this synopsis, the body part is considered to be of type Externally Defined, whether or not it was so conveyed to the MS:

c) *Type:* This value is generated when the entry is created. If the Non-message Body Part is an edi-body-part, the value is the object identifier value contained in the edi-bodypart-type attribute contained in this entry. If it is a removed-edi-body, the value is set to "id-syn-removed" (See Annex C). If it is a place-holder, the value is set to "id-syn-place-holder" (again, see Annex C). If it is an external-body-part, the value is set to the Direct-reference component of the body part's Data component.

d) *Parameters:* This value is generated if the Non-message Body Part is an external-body-part. It contains that body part's Parameter component, which may describe the body part's format and control parameters.

e) *Size:* This value is created when the entry is created. The value is set to the size in octets of the encoding of the Encoding component of the body part's Data component when the Basic Encoding Rules of Recommendation X.209 are followed. If those rules permit several (e.g., both primitive and constructed) encodings of the component, the size may reflect any one of them.

f) *Processed (default false):* An indication of whether or not the body part has been conveyed to the UA by means of the MS Fetch abstract operation, or has been processed by an auto-action and the definition of that auto-action causes a change of entry-status. This value is set to the default value when the EDIM is delivered to the MS and is updated as described in § 18.4.

An MS that supports this attribute shall maintain it for an information object that it holds if, and only if, that object is a message whose content is an EDIM.

As a consequence of its variability, the value of the Size component should be considered only an estimate of the body part's size.

18.7.2 *EDI Notification Indicator*

The EDI Notification Indicator attribute contains information about whether any EDI Notifications have been sent in response to an EDIM, and if so which type of EDI Notifications were sent. The MS creates this attribute for each new EDIM and maintains the attribute values, depending on the auto actions performed.

```
edi-notification-indicator ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDINotificationIndicator DEFAULT (0)
        MATCHES FOR EQUALITY
        MULTI VALUE ::=
        id-sat-edi-notification-indicator

EDINotificationIndicator ::= ENUMERATED {
        no-notification-sent            (0),
        pn-sent                         (1),
        nn-sent                         (2),
        fn-sent                         (3) }
```

Each value of this attribute may assume one of the following values:

a) *no-notification-sent:* This is the initial value set by the MS when a new MS entry is created for the EDIM.

b) *pn-sent:* This value means that the MS has generated and sent a Positive Notification (PN) in response to a request for a PN.

c) *nn-sent:* This value means that the MS has generated and sent a Negative Notification (NN) in response to a request for an NN.

d) *fn-sent:* This value means that the MS has generated and sent a Forwarded Notification (FN) in response to a request for an FN.

18.7.3 *Heading Attributes*

Some attributes are derived from the Heading of an EDIM. These attributes are defined and described below.

18.7.3.1 *Heading*

The Heading attribute is the (entire) Heading of an EDIM.

```
heading ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX Heading
        SINGLE VALUE
        ::= id-hat-heading
```

An MS that supports this attribute shall maintain it for an information object that it holds if, and only if, that object is a message whose content is an EDIM.

18.7.3.2 *Heading fields*

Some attributes bear the names of Heading fields and have those fields as their values. Some attributes bear the names of Heading fields and have sub-fields of those fields as their values. See § 8.2 for semantics.

```
this-edim ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ThisEDIMField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-this-edim
```

```
originator ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX OriginatorField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-originator

edin-receiver ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDINReceiverField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-edin-receiver

responsibility-forwarded ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ResponsibilityForwarded
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-responsibility-forwarded

edi-bodypart-type ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIBodyPartType
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-edi-bodypart-type

incomplete-copy ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX IncompleteCopyField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-incomplete-copy

expiry-time ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ExpiryTimeField
        MATCHES FOR EQUALITY ORDERING
        SINGLE VALUE
        ::= id-hat-expiry-time

related-messages ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX RelatedMessagesReference
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-hat-related-messages

obsoleted-edims ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ObsoletedEDIMsSubfield
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-hat-obsoleted-edims

edi-application-security-element ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIApplicationSecurityElement
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-edi-application-security-element

edi-application-security-extensions ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIApplicationSecurityExtension
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-hat-edi-application-security-extensions

cross-referencing-information ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX CrossReferencingInformationSubField
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-hat-cross-referencing-information
```

Fields from EDIFACT Interchange:

```
edi-message-type ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIMessageTypeFieldSubField
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-hat-edi-message-type

service-string-advice ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ServiceStringAdviceField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-service-string-advice

syntax-identifier ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX SyntaxIdentifierField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-syntax-identifier

interchange-sender ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX InterchangeSenderField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-interchange-sender

date-and-time-of-preparation ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX DateAndTimeOfPreparationField
        MATCHES FOR EQUALITY ORDERING
        SINGLE VALUE
        ::= id-hat-date-and-time-of-preparation

application-reference ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ApplicationReferenceField
        MATCHES FOR EQUALITY SUBSTRINGS
        SINGLE VALUE
        ::= id-hat-application-reference
```

Heading extensions:

```
heading-extensions ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX HeadingExtensionsSubField
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-hat-heading-extensions
```

An MS that supports one of these attributes shall maintain it for an information object that it holds if, and only if, that object is a message whose content is an EDIM whose Heading contains the field or sub-field whose name the attribute bears.

18.7.3.3 *Recipient sub-field*

Some attributes bear the names of Recipient fields and have sub-fields of those fields as their values. See § 8.2.3 for semantics.

```
this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX RecipientField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-this-recipient

action-request-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ActionRequestField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-action-request-for-this-recipient
```

```
    edi-notification-requests-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDINotificationRequests
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-edi-notification-requests-for-this-recipient

    edi-notification-security-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDINotificationSecurity
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-edi-notification-security-for-this-recipient

    edi-reception-security-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIReceptionSecurity
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-edi-reception-security-for-this-recipient

    responsibility-passing-allowed-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ResponsibilityPassingAllowedField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-responsibility-passing-allowed-for-this-recipient

-- Fields from EDIFACT interchange

    interchange-recipient-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX InterchangeRecipientField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-interchange-recipient-for-this-recipient

    recipient-reference-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX RecipientReferenceField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-recipient-reference-for-this-recipient

    interchange-control-reference-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX InterchangeControlReferenceField
        MATCHES FOR EQUALITY SUBSTRINGS
        SINGLE VALUE
        ::= id-rat-interchange-control-reference-for-this-recipient

    processing-priority-code-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ProcessingPriorityCodeField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-processing-priority-code-for-this-recipient

    acknowledgement-request-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX AcknowledgementRequestField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-acknowledgement-request-for-this-recipient

    communications-agreement-id-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX CommunicationsAgreementIdField
        MATCHES FOR EQUALITY SUBSTRINGS
        SINGLE VALUE
        ::= id-rat-communications-agreement-id-for-this-recipient

    test-indicator-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX TestIndicatorField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-test-indication-for-this-recipient

-- END Fields from EDIFACT
```

-- *Fields from ANSIX12 ISA*

authorization-information-for-this-recipient ATTRIBUTE
WITH ATTRIBUTE-SYNTAX AuthorizationInformationField
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-rat-authorization-information-for-this-recipient

-- *END Fields from ANSIX12 ISA*

Extensions:

recipient-extensions-for-this-recipient ATTRIBUTE
WITH ATTRIBUTE-SYNTAX RecipientExtensionsSubField
MATCHES FOR EQUALITY
MULTI VALUE
::= id-rat-recipient-extensions-for-this-recipient

An MS that supports one of these attributes shall maintain it for an information object that it holds if, and only if, that object is a message whose content is an EDIM whose Heading Recipients field contains the field whose name the attribute bears. It shall maintain one attribute value for each sub-field.

18.7.4 *Body Attributes*

Some attributes are derived from the Body of an EDIM. These attributes are defined and described below.

18.7.4.1 *Body*

The Body attribute is the (entire) Body of an EDIM.

body ATTRIBUTE
WITH ATTRIBUTE-SYNTAX Body
SINGLE VALUE
::= id-bat-body

An MS that supports this attribute shall maintain it for an information object that it holds if, and only if, that object is a message whose content is an EDIM.

18.7.4.2 *Body Analyses*

Some attributes have as their values information about the body parts contained in the body of the message.

The interchange length attribute is created by the Message Store when it receives an EDIM. Its value indicates the length of the EDI Interchange carried in the Primary Body Part of the message.

interchange-length ATTRIBUTE
WITH ATTRIBUTE-SYNTAX InterchangeLength
MATCHES FOR ORDERING
SINGLE VALUE
::= id-bat-interchange-length

InterchangeLength ::= INTEGER

The Interchange Length gives the number of octets occupied by the EDI Interchange.

18.7.4.3 *Primary Body Parts*

Some attributes bear the names of the Primary Body Part types and have such body parts as their values. See § 8.3.1 for semantics.

edi-body-part ATTRIBUTE
WITH ATTRIBUTE-SYNTAX EDIBodyPart
SINGLE VALUE
::= id-bat-edi-body-part

An MS holds each forwarded EDIM (i.e., each Message body part) as an information object in its own right, separate from the forwarding EDIM. (stored as a separate child entry in the stored-messages information base). That information object, of course, is a message whose content is an EDIM. The EDIM Body Parts attribute below, therefore, has as its values the sequence numbers the MS assigns to those messages. See § 8.3.2 for semantics.

edim-body-part ATTRIBUTE

WITH ATTRIBUTE-SYNTAX SequenceNumber -- sequence number of the forwarded EDIM entry.

SINGLE VALUE

::= id-bat-edim-body-part

An MS that supports one of these attributes shall maintain it for an information object that it holds if, and only if, that object is a message whose content is an EDIM. It shall maintain one attribute value for such a body part.

Some attributes bear the names of the Parameters and Data components of an EDIM Body Part and have the Parameters and Data components as their values.

message-parameters ATTRIBUTE

WITH ATTRIBUTE-SYNTAX MessageParameters

SINGLE VALUE

::= id-bat-message-parameters

message-data ATTRIBUTE

WITH ATTRIBUTE-SYNTAX MessageData

SINGLE VALUE

::= id-bat-message-data

An MS that supports these attributes shall maintain it for an information object that it holds if, and only if, that object is a message whose content is an EDIM whose Body contains an EDIM Body Part.

18.7.4.4 *Externally Defined Body Part Types*

The Externally Defined Body Part Types attribute identifies the externally defined body part types represented in an EDIM.

externally-defined-body-part-types ATTRIBUTE

WITH ATTRIBUTE-SYNTAX OBJECT IDENTIFIER

MATCHES FOR EQUALITY

MULTI VALUE

::= id-bat-externally-defined-body-part-types

An MS that supports this attribute shall maintain it for an information object that it holds if, and only if, that object is a message whose content is an EDIM whose Body contains one or more Additional body parts. It shall maintain one attribute value for every such type present. The value shall denote type as specified in § 7.3.12 of Recommendation X.420.

Note — Some Externally Defined body part types are defined in Recommendation X.420. Values are as specified in § 7.3.12 of Recommendation X.420.

18.7.4.5 *Externally Defined Body Parts*

Some attributes, unnamed, have as their values the Encoding components (see § 8.3.3) of the ASN.1 Externals that constitute the Data components of Externally Defined Body Parts.

To each externally defined body part type there correspond two attributes. The first attribute is denoted by the object identifier that is the Direct-reference component (again, see § 8.3.3) of the External that constitutes the Data component of a body part of that type. The content of this first attribute contains the Body Part Reference and the Externally Defined Body Part encoded as an EDIM-ExternallyDefinedBodyPart (See § 8.3.3).

The second attribute is denoted by the object identifier that is the Direct-reference component of the External that constitutes the Parameters component of a body part of that type. The content of this second attribute contains the Body Part Reference and the Parameters component encoded as follows:

```
EDIExternallyDefinedBodyPartParameterAttribute        ::= SEQUENCE {
    body-part-reference                    [0] BodyPartReference OPTIONAL,
    parameter                              [1] ExternallyDefinedParameters }
```

An MS that supports one of these body parts shall maintain both attributes for an information object that it holds if, and only if, that object is a message whose content is an EDIM whose Body contains one or more body parts of the type that corresponds to that attribute. It shall maintain one value of each attribute for each such body part.

Note — The externally defined body part attributes cannot be enumerated in practice because the externally defined body part types cannot be so enumerated.

The Externally Defined Body Part Types attribute determines the Externally Defined Body Part Types for a particular EDIM.

18.7.5 *Notification Attributes*

Some attributes are derived from an EDIN. These attributes are defined and described below.

18.7.5.1 *Common fields*

Some attributes bear the names of Common fields and have those fields as their values. See § 6.1 for semantics.

```
subject-edim ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX SubjectEDIMField
    MATCHES FOR EQUALITY
    SINGLE VALUE
    ::= id-nat-subject-edim

edin-originator ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX EDINOriginatorField
    MATCHES FOR EQUALITY
    SINGLE VALUE
    ::= id-nat-edin-originator

first-recipient ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX FirstRecipientField
    MATCHES FOR EQUALITY
    SINGLE VALUE
    ::= id-nat-first-recipient

notification-time ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX NotificationTimeField
    MATCHES FOR EQUALITY ORDERING
    SINGLE VALUE
    ::= id-nat-notification-time

notification-security-elements ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX SecurityElementsField
    MATCHES FOR EQUALITY
    SINGLE VALUE
    ::= id-nat-notification-security-elements

edin-initiator ATTRIBUTE
    WITH ATTRIBUTE-SYNTAX EDINInitiatorField
    MATCHES FOR EQUALITY
    SINGLE VALUE
    ::= id-nat-edin-initiator
```

Some attributes bear the names of notification fields and have sub-fields of the Common fields of a notification as their values.

notification-extensions; ATTRIBUTE
WITH ATTRIBUTE-SYNTAX NotificationExtensionsSubField
MATCHES FOR EQUALITY
MULTI VALUE
::= id-nat-notification-extensions

An MS that supports one of these attributes shall maintain it for an information object that it holds if, and only if, that object is a message whose content is an EDIN that contains the field or sub-field whose name the attribute bears.

18.7.5.2 *Positive Notification fields*

Some attributes bear the names of PN EDIN fields and have those fields as their values. Some attributes bear the names of notification fields and have sub-fields of the PN fields of a notification as their values. See § 9.2 for semantics.

pn-supplementary-information ATTRIBUTE
WITH ATTRIBUTE-SYNTAX EDISupplementaryInformation
MATCHES FOR EQUALITY SUBSTRINGS
SINGLE VALUE
::= id-nat-pn-supplementary-info

pn-extensions ATTRIBUTE
WITH ATTRIBUTE-SYNTAX PNExtensionsSubField
MATCHES FOR EQUALITY
MULTI VALUE
::= id-nat-pn-extensions

An MS that supports one of these attributes shall maintain it for an information object that it holds if, and only if, that object is a message whose content is a PN contains the field whose name the attribute bears. It shall maintain one attribute value for each sub-field.

18.7.5.3 *Negative Notification fields*

Some attributes bear the names of NN EDIN fields and have those fields as their values. Some attributes bear the names of notification fields and have sub- fields of the NN fields of a notification as their values. See § 9.3 for semantics.

nn-reason ATTRIBUTE
WITH ATTRIBUTE-SYNTAX NNReasonCodeField
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-nat-nn-reason-code

nn-supplementary-information ATTRIBUTE
WITH ATTRIBUTE-SYNTAX EDISupplementaryInformation
MATCHES FOR EQUALITY SUBSTRINGS
SINGLE VALUE
::= id-nat-nn-supplementary-info

nn-extensions ATTRIBUTE
WITH ATTRIBUTE-SYNTAX NNExtensionsSubField
MATCHES FOR EQUALITY
MULTI VALUE
::= id-nat-nn-extensions

An MS that supports one of these attributes shall maintain it for an information object that it holds if, and only if, that object is a message whose content is an NN that contains the field whose name the attribute bears. It shall maintain one attribute value for each field or sub-field.

18.7.5.4 *Forwarded Notification fields*

Some attributes bear the names of FN EDIN fields and have those fields as their values. Some attributes bear the names of notification fields and have sub-fields of the FN fields of a notification as their values. See § 9.4 for semantics.

forwarded-to ATTRIBUTE
WITH ATTRIBUTE-SYNTAX ForwardedTo
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-nat-forwarded-to

fn-reason-code ATTRIBUTE
WITH ATTRIBUTE-SYNTAX FNReasonCodeField
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-nat-fn-reason-code

fn-supplementary-information ATTRIBUTE
WITH ATTRIBUTE-SYNTAX EDISupplementaryInformation
MATCHES FOR EQUALITY SUBSTRINGS
SINGLE VALUE
::= id-nat-fn-supplementary-info

fn-extensions ATTRIBUTE
WITH ATTRIBUTE-SYNTAX FNExtensionsSubField
MATCHES FOR EQUALITY
MULTI VALUE
::= id-nat-fn-extensions

An MS that supports one of these attributes shall maintain it for an information object that it holds if, and only if, that object is a message whose content is an FN that contains the field whose name the attribute bears. It shall maintain one attribute value for each field or sub-field.

18.8 *Procedures for EDI MS*

The procedures for a general MS are specified in §§ 14 and 15 of Recommendation X.413. This reference gives complementary information for MS systems that also explicitly support EDI messaging.

18.8.1 *Additional procedures for message delivery*

How the MS consumes the MTS abstract service is described in 14 of Recommendation X.413. The following text describes additional information about the procedures needed for EDI messaging.

If EDI Security Requests are present, then the EDI-auto-forward actions defined above may be prohibited, subject to the security policy in force. If EDI Security Requests are present then the EDI-auto-forward action (forwarding-with-responsibility-accepted) shall not be performed.

Addition to § 14.1.1, 2) a) of Recommendation X.413:

— If EDI auto forwarding criteria are registered by the Register-MS abstract operation, the new entry shall be matched against the criteria registered. The matching shall always proceed starting with the registration having the lowest registration identifier and perform the following auto actions:

  — registrations against the "forward-with-responsibility-accepted" auto action.

    If this results in forwarding being performed, it is possible that one or several forwardings may be performed for this EDIM.

  — registrations against "forward-with-responsibilty-not-accepted" auto-action.

    If this results in a forwarding being performed, no further EDI forwarding actions shall be performed for this EDIM by the same EDI-MS.

If an auto action registration stipulates that the EDIM is to be deleted after forwarding, no further forwarding auto-action can take place.

The appropriate notification shall be returned for the first auto- forwarding that is performed for the EDIM.

When an EDIN is submitted, a value reflecting the type of the EDIN shall be added to the "edi-notification-indicator" attribute.

If an EDI auto-forwarding does not succeed, eg. through a non-delivery, an NN EDIN may be returned to the originator if an FN was previously sent.

The entry-status shall be set to "processed" when the MS has performed an EDI-auto-forward auto-action on a delivered message, and the EDIM has not been deleted.

19 Message Contents

As has already been seen, various secondary objects (e.g., UAs) have occasion to convey the Information Objects of § 6 as the contents of messages, as well as to convey probes concerning such messages. What follows specifies precisely how they shall do this.

The rules governing the transmittal of such messages and probes, and the semantics and abstract and transfer syntaxes of their contents, constitute the EDI Messaging protocol (Pedi).

19.1 *Content*

A secondary object that submits a message containing an EDIM or EDIN shall supply, as the octets of the Octet String that constitutes the content of the message, the result of encoding the Information Object of § 6 in accordance with the Basic Encoding Rules of Recommendation X.209.

19.2 *Content type*

A secondary object that submits a message containing an EDIM or EDIN shall assign the integer value 35 to the Content Type.

19.3 *Content Length*

A secondary object that submits a probe concerning a message containing an EDIM or EDIN shall specify as the length of the message's content the size in octets of the encodings of the instance in question of the Information Object of § 6 (a choice of an EDIM or an EDIN) when the Basic Encoding Rules of Recommendation X.209 are followed. If those rules permit several (e.g., both primitive and constructed) encoding of that Information Object, the content length may reflect any one of them.

19.4 *Encoded Information Types*

A secondary object that submits a message containing an EDIM or EDIN shall specify the Encoded Information Types (EIT) of the message as follows.

In the case of an EDIN, the basic EITs shall be unspecified.

In the case of an EDIM, the EITs shall be the logical union of the EITs of the EDIM's body parts specified in accordance with the following rules:

a) *EDI Body Part:* The EIT of the EDI Body Part shall have the same values as the Heading field EDI Body Part Type, or its default value if absent.

b) *EDIM Body Part (Forwarded Message):* The EITs (if any) of a EDIM Body Part shall be those of the forwarded message.

c) *Additional body parts:* The EIT of additional body parts (if any) shall be the logical union of the individual body parts EITs.

An Externally Defined body part whose extended type corresponds to a basic type shall be indicated using the built-in EIT.

The EDI Body Part Type shall be indicated in the external EITs.

A secondary object that submits a message containing an EDIM to an MTA that conforms to Recommendation X.411 in its 1988 version shall use the union of the object identifiers from EDI Body Part Type (see § 8.2.6 and Annex A) for all "original-encoded-information-types".

A secondary object that submits a message containing an EDIM to an MTA that conforms to Recommendation X.411 in its 1984 version shall use the "undefined" bit of the "built-in-encoded-information-types" (called "basic-encoded-information-type" in Recommendation X.411 in its 1984 version), as no other indication is possible for the EITs defined in § 8.2.6 in an MTA that conforms to Recommendation X.411 in its 1984 version. The "external-encoded-information-type" field shall not be present.

Note — The following reduced functionality has to be considered when a secondary object submits a message containing an EDIM to an MTA that conforms to Recommendation X.411 in its 1984 version or when such messages are relayed through such an MTA. The delivering MTA cannot make a comparison of which EITs, and hence primary EDI body part types, the UA is prepared to accept for delivery (otherwise it would not perform the delivery at all). In addition, the security features of an MTA that conforms to Recommendation X.411 in its 1988 version cannot be used.

20 Port realization

How an MS or the MTS concretely realizes the secondary ports it supplies is specified in Recommendation X.419.

How a UA, TLMA, or AU concretely realizes the primary ports it supplies is beyond the scope of this Recommendation.

21 Conformance

The requirements a secondary object (excluding the MTS) and its implementor shall meet when the latter claims the former's conformance to this Recommendation are identified below. A number of the conformance requirements distinguish between support upon origination and support upon reception.

21.1 *Origination versus Reception*

A UA or AU shall be said to support upon origination a particular Heading field, Heading extension, EDIM Body Part type or Externally Defined Body Part type if, and only if, it accepts, preserves, and emits, in full accord with this Recommendation, that particular Heading field or extension, or EDIM Body Part type or Externally Defined Body Part type, whenever a user calls upon it to convey an EDIM containing them to the MTS or the user's MS (the latter only in the case of a UA).

A UA or AU shall be said to support upon reception a particular Heading field, Heading extension, EDIM Body Part type or Externally Defined Body Part type if, and only if, it accepts, preserves, and emits, in full accord with this Recommendation, that particular Heading field or extension, or EDIM Body Part type or Externally Defined Body Part type, whenever the MTS or a user's MS (the latter only in the case of a UA) calls upon it to convey to the user an EDIM containing them.

A PDAU supports nothing upon origination because it is not a supplier of the origination port.

21.2 *Statement requirements*

The implementor of a UA, MS or AU shall state the following. For each item below he shall make separate statements concerning conformance upon origination and conformance upon reception:

a) The Heading fields for which he claims conformance.

b) The body part types for which he claims conformance.

c) In the case of a UA with MS or MS, the EDI Messaging-specific MS attributes for which it claims conformance.

d) In the case of a UA with MS or MS, whether it supports the EDI messaging-specific auto action.

e) In the case of an AU, whether it supports import or export or both.

21.3 *Static requirements*

A UA, MS or AU shall satisfy the following static requirements:

a) A UA, MS or AU shall implement the Heading fields and the body part types for which conformance is claimed.

b) A UA with MS or MS shall support the EDI messaging-specific MS attributes for which conformance is claimed, but including as a minimum those designated mandatory in § 18.7. In addition, it shall support the mandatory attributes identified in Table 1/X.413.

c) A UA, MS or AU shall concretely realize its abstract ports as specified in § 20.

d) A UA or MS shall be able to both submit and receive messages of the content type of § 19.2.

e) An AU shall be able to import and export such messages as appropriate.

21.4 *Dynamic requirements*

A UA, MS or AU shall satisfy the following dynamic requirements:

a) A UA or MS shall follow the rules of operation specified in §§ 17 or 18, respectively.

b) A UA, MS or AU shall submit and receive messages whose contents are as specified in § 19.

c) A UA, MS or AU shall register with the MTS its ability to accept delivery of messages of the content type of § 19.2 and EITs as specified in § 19.4.

ANNEX A

(to Recommendation X.435)

Reference definition of Object Identifiers

(This annex forms an integral part of this Recommendation)

The annex defines for reference purposes various Object Identifiers cited in the ASN.1 modules of subsequent annexes. It uses ASN.1.

All Object Identifiers this Recommendation assigns are assigned in this annex. The annex is definitive for all but those for ASN.1 modules, the object EDIMS application (EDIME) itself and the EDI use of Directories. The definitive assignments for the former occur in the modules themselves; other references to them appear in IMPORT statements. For the EDI use of Directories object identifiers, this annex only defines a base object identifier.

```
EDIMSObjectIdentifiers {joint-iso-ccitt
        mhs-motis(6) edims(7) modules(0) object-identifiers(0) }
    DEFINITIONS IMPLICIT TAGS ::=
    BEGIN

-- Prologue

-- Exports everything

    IMPORTS  --  nothing --;

    ID ::= OBJECT IDENTIFIER

-- EDI Messaging (definitive)

    id-edims ID ::= { joint-iso-ccitt mhs-motis(6) edims(7) } -- This is definitive

-- Categories

    id-mod                          ID ::= {id-edims  0} -- modules
    id-edi                          ID ::= {id-edims  1} -- reserved
    id-ot                           ID ::= {id-edims  2} -- object types
    id-pt                           ID ::= {id-edims  3} -- port types
    id-ref                          ID ::= {id-edims  4} -- refinements
    id-sat                          ID ::= {id-edims  5} -- summary attributes
    id-hat                          ID ::= {id-edims  6} -- heading attributes
    id-rat                          ID ::= {id-edims  7} -- recipient attributes
    id-bat                          ID ::= {id-edims  8} -- body attributes
    id-nat                          ID ::= {id-edims  9} -- notification attributes
    id-mct                          ID ::= {id-edims 10} -- message content types
    id-bp                           ID ::= {id-edims 11} -- edi body part types
    id-nt                           ID ::= {id-edims 12} -- edi notification types
    id-for                          ID ::= {id-edims 13} -- edi action indicator types
    id-act                          ID ::= {id-edims 14} -- edi auto-action indentifier types
    id-dir                          ID ::= {id-edims 15} -- edi use of directory
    id-syn                          ID ::= {id-edims 16} -- edi synopsis type

-- Modules

    id-mod-object-identifiers       ID ::= {id-mod  0}
    id-mod-functional-objects       ID ::= {id-mod  1}
    id-mod-information-objects      ID ::= {id-mod  2}
    id-mod-abstract-service         ID ::= {id-mod  3}
    id-mod-message-store-attributes ID ::= {id-mod  4}
    id-mod-upper-bounds             ID ::= {id-mod  5}
    id-mod-edi-directory-cl-att     ID ::= {id-mod  6}
    id-mod-message-store-auto-actions ID ::= {id-mod  7}
```

-- *Object types*

```
id-ot-edime                     ID ::= {id-ot 0}
id-ot-edimg-user                ID ::= {id-ot 1}
id-ot-edims                     ID ::= {id-ot 2}
id-ot-edi-ua                    ID ::= {id-ot 3}
id-ot-edi-ms                    ID ::= {id-ot 4}
id-ot-pdau                      ID ::= {id-ot 5}
```

-- *Port types*

```
id-pt-origination               ID ::= {id-pt 0}
id-pt-reception                 ID ::= {id-pt 1}
```

-- *Refinements*

```
id-ref-primary                  ID ::= {id-ref 0}
id-ref-secondary                ID ::= {id-ref 1}
```

-- *EDI-Notification Types (for use in P1 notification extension field)*

```
id-nt-edi-pn                    ID ::= {id-nt 0}
id-nt-edi-nn                    ID ::= {id-nt 1}
id-nt-edi-fn                    ID ::= {id-nt 2}
```

-- *Message content type (for use by MS only)*

```
id-mct-pedi                     ID ::= {id-mct 0} -- Pedi
```

-- *EDI Body Part type (and P1 EIT)*

```
id-bp-edifact-ISO646            ID ::= {id-bp 0} -- ISO646 is equivalent to
                                                    Recommendation T.50
id-bp-edifact-T61               ID ::= {id-bp 1}
id-bp-edifact-octet             ID ::= {id-bp 2}
id-bp-ansiX12-ISO646            ID ::= {id-bp 3}
id-bp-ansiX12-T61               ID ::= {id-bp 4}
id-bp-ansiX12-octet             ID ::= {id-bp 5}
id-bp-ansiX12-ebcdic            ID ::= {id-bp 6}
id-bp-untdi-ISO646              ID ::= {id-bp 7}
id-bp-untdi-T61                 ID ::= {id-bp 8}
id-bp-untdi-octet               ID ::= {id-bp 9}
id-bp-private-octet             ID ::= {id-bp 10}
id-bp-undefined-octet           ID ::= {id-bp 11}
```

-- *EDI Action Request*

```
id-for-action                   ID ::= {id-for 0} -- For action
id-for-copy                     ID ::= {id-for 1} -- copy, not original
```

-- *EDIMG Specific Register Auto Actions*

```
id-act-edi-auto-forward         ID ::= {id-act 0}
```

-- *EDIM Synopsis (MS)*

```
id-syn-removed                  ID ::= {id-syn 0}
id-syn-place-holder             ID ::= {id-syn 1}
```

-- *MESSAGE STORE ATTRIBUTES*

-- *Summary attributes*

```
id-sat-edims-entry-type         ID ::= {id-sat 0}
id-sat-edim-synopsis            ID ::= {id-sat 1}
id-sat-edi-notification-indicator ID ::= {id-sat 2}
```

-- *Heading attributes*

```
id-hat-heading                          ID ::= {id-hat 0}
id-hat-this-edim                        ID ::= {id-hat 1}
id-hat-originator                       ID ::= {id-hat 2}
id-hat-recipients                       ID ::= {id-hat 3}
id-hat-edin-receiver                    ID ::= {id-hat 4}
id-hat-responsibility-forwarded         ID ::= {id-hat 5}
id-hat-edi-bodypart-type                ID ::= {id-hat 6}
id-hat-incomplete-copy                  ID ::= {id-hat 7}
id-hat-expiry-time                      ID ::= {id-hat 8}
id-hat-related-messages                 ID ::= {id-hat 9}
id-hat-obsoleted-edims                  ID ::= {id-hat 10}
id-hat-edi-application-security-element ID ::= {id-hat 11}
id-hat-edi-application-security-extensions ID ::= {id-hat 12}
id-hat-cross-referencing-information    ID ::= {id-hat 13}
id-hat-edi-message-type                 ID ::= {id-hat 14}
id-hat-service-string-advice            ID ::= {id-hat 15}
id-hat-syntax-identifier                ID ::= {id-hat 16}
id-hat-interchange-sender               ID ::= {id-hat 17}
id-hat-date-and-time-of-preparation     ID ::= {id-hat 18}
id-hat-application-reference            ID ::= {id-hat 19}
id-hat-heading-extensions               ID ::= {id-hat 20}
```

-- *Per Recipient attributes*

```
id-rat-this-recipient                                ID ::= {id-rat 0}
id-rat-action-request-for-this-recipient             ID ::= {id-rat 1}
id-rat-edi-notification-requests-for-this-recipient  ID ::= {id-rat 2}
id-rat-responsibility-passing-allowed-for-this-recipient ID ::= {id-rat 3}
-- UNB EDIFACT Field Object Ids --
id-rat-interchange-recipient-for-this-recipient      ID ::= {id-rat 4}
id-rat-recipient-reference-for-this-recipient        ID ::= {id-rat 5}
id-rat-interchange-control-reference-for-this-recipient ID ::= {id-rat 6}
id-rat-processing-priority-code-for-this-recipient   ID ::= {id-rat 7}
id-rat-acknowledgement-request-for-this-recipient    ID ::= {id-rat 8}
id-rat-communications-agreement-id-for-this-recipient ID ::= {id-rat 9}
id-rat-test-indicator-for-this-recipient             ID ::= {id-rat 10}
id-rat-notification-security-for-this-recipient      ID ::= {id-rat 11}
id-rat-edi-reception-security-for-this-recipient     ID ::= {id-rat 12}
id-rat-recipient-extensions-for-this-recipient       ID ::= {id-rat 13}
-- ANSIX12 ISA Field Object Ids --
id-rat-authorization-information-for-this-recipient  ID ::= {id-rat 14}
```

-- *Body attributes*

```
id-bat-body                             ID ::= {id-bat 0}
id-bat-interchange-length               ID ::= {id-bat 1}
id-bat-edi-body-part                    ID ::= {id-bat 2}
id-bat-edim-body-part                   ID ::= {id-bat 3}
id-bat-message-parameters               ID ::= {id-bat 4}
id-bat-message-data                     ID ::= {id-bat 5}
id-bat-externally-defined-body-part-types ID ::= {id-bat 6}
```

-- *Notification attributes*

```
id-nat-subject-edim                     ID ::= {id-nat 0}
id-nat-edin-originator                  ID ::= {id-nat 1}
id-nat-first-recipient                  ID ::= {id-nat 2}
id-nat-notification-time                ID ::= {id-nat 3}
id-nat-notification-security-elements   ID ::= {id-nat 4}
id-nat-notification-extensions          ID ::= {id-nat 5}
id-nat-edin-initiator                   ID ::= {id-nat 6}
```

```
    -- PN attributes
    id-nat-pn-supplementary-info            ID ::= {id-nat 7}
    id-nat-pn-extensions                    ID ::= {id-nat 8}
    -- NN attributes
    id-nat-nn-reason-code                   ID ::= {id-nat 9}
    id-nat-nn-supplementary-info            ID ::= {id-nat 10}
    id-nat-nn-extensions                    ID ::= {id-nat 11}
    -- FN attributes
    id-nat-forwarded-to                     ID ::= {id-nat 12}
    id-nat-fn-reason-code                   ID ::= {id-nat 13}
    id-nat-fn-supplementary-info            ID ::= {id-nat 14}
    id-nat-fn-extensions                    ID ::= {id-nat 15}
```

-- *MESSAGE STORE ATTRIBUTES - END*

```
END -- of EDIMSObjectIdentifiers
```

ANNEX B

(to Recommendation X.435)

Reference definition of Abstract Information Objects

(This annex forms an integral part of this Recommendation)

This annex defines for reference purposes the abstract information objects of EDI Messaging. It defines a Body Part for EDIM that includes a body part reference number while importing the IPMS externally defined MACRO for specifying non-EDI body parts. It also defines an EDIM-EXTENSION MACRO that differs from IPMS.

```
EDIMSInformationObjects {joint-iso-ccitt
        mhs-motis(6) edims(7) modules(0) information-objects(2)  }

    DEFINITIONS IMPLICIT TAGS ::=
    BEGIN
```

-- *Prologue*

-- *Exports everything*

```
    IMPORTS
```

-- *EDIMS Upper bounds*

```
    ub-application-reference, ub-authorization-information,
        ub-authorization-information-qualifier, ub-communications-agreement-id,
        ub-edi-application-security-elements, ub-edi-message-type,
        ub-identification-code, ub-identification-code-qualifier, ub-interchange-control-reference,
        ub-local-reference, ub-processing-priority-code, ub-reason-code, ub-recipient-reference,
        ub-recipient-reference-qualifier, ub-routing-address, ub-syntax-identifier,
        ub-syntax-version
        ----
        FROM EDIMSUpperBounds {joint-iso-ccitt mhs-motis(6) edims(7)  modules(0) upper-bounds(5) }
```

-- *EDIMS Object Identifiers*

```
    id-bp-edifact-ISO646, id-for-action
        -----
        FROM EDIMSObjectIdentifiers {joint-iso-ccitt mhs-motis(6) edims(7) modules(0) object-identifiers(0) }
```

-- *MTS Upper Bounds*

```
    ub-bit-options, ub-integer-options, ub-supplementary-info-length
        ----
        FROM MTSUpperBounds {joint-iso-ccitt mhs-motis(6) mts(3) modules(0) upper-bounds(3) }
```

```
-- MTS Abstract Service

    MessageDeliveryTime,  ORName, OtherMessageDeliveryFields, ContentIntegrityCheck, Content
        ----
        FROM MTSAbstractService {joint-iso-ccitt mhs-motis(6) mts(3)  modules(0) mts-abstract-service(1) }

-- IPM Information Objects

    ExternallyDefinedBodyPart
        ----
        FROM IPMSInformationObjects {joint-iso-ccitt mhs-motis(6) ipms(1) modules(0) information-
        objects(2) }

-- END  Imports

-- ABSTRACT INFORMATION OBJECTS

-- Overview

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

-- Common data types

-- EDIM Identifier

    EDIMIdentifier ::= SET {

        user                    [0] ORName,

        user-relative-identifier    [1] LocalReference }

    LocalReference ::= PrintableString (SIZE (0..ub-local-reference))

-- Extensions

    ExtensionField ::= SEQUENCE {
        type                                [0] EDIM-EXTENSION,
        criticality                         [1] Criticality DEFAULT FALSE,
        value                               [2] ANY DEFINED BY type DEFAULT NULL NULL }

    Criticality ::= BOOLEAN

-- EDIM Extension MACRO

    EDIM-EXTENSION MACRO ::=
        BEGIN

        TYPE NOTATION                       ::= DataType Critical | empty
        VALUE NOTATION                      ::= value(VALUE OBJECT IDENTIFIER)

        DataType                            ::= type (X) Default
        Default                             ::= "DEFAULT" value (X) | empty
        Critical                            ::= "CRITICAL" | empty

        END -- of extension

-- EDI Messages

        EDIM ::= SEQUENCE {
        heading                             Heading,
        body                                Body }

-- Heading Field Component Types

-- Interchange Recipient / Sender

-- Identification Code

    IdentificationCode ::= TeletexString (SIZE (1..ub-identification-code))

-- Identification Code Qualifier
```

```
IdentificationCodeQualifier ::= TeletexString (SIZE (1..ub-identification-code-qualifier))

-- Routing Address

RoutingAddress ::= TeletexString (SIZE (1..ub-routing-address))

-- Heading Fields

Heading ::= SEQUENCE {
    this-EDIM                          [1] ThisEDIMField,
    originator                         [2] OriginatorField OPTIONAL,
    recipients                         [3] RecipientsField OPTIONAL,
    edin-receiver                  [4] EDINReceiverField OPTIONAL,
    responsibility-forwarded           [5] ResponsibilityForwarded DEFAULT FALSE,
    edi-bodypart-type                  [6] EDIBodyPartType DEFAULT {id-bp-edifact-ISO646},
    incomplete-copy                    [7] IncompleteCopyField DEFAULT FALSE,
    expiry-time                        [8] ExpiryTimeField OPTIONAL,
    related-messages                   [9] RelatedMessagesField OPTIONAL,
    obsoleted-EDIMs                    [10] ObsoletedEDIMsField OPTIONAL,
    edi-application-security-elements  [11] EDIApplicationSecurityElementsField OPTIONAL,
    cross-referencing-information      [12] CrossReferencingInformationField OPTIONAL,

    -- Begin Fields from EDIFACT Interchange
    edi-message-type                   [13] EDIMessageTypeField OPTIONAL,
    service-string-advice              [14] ServiceStringAdviceField OPTIONAL,
    syntax-identifier                  [15] SyntaxIdentifierField OPTIONAL,
    interchange-sender                 [16] InterchangeSenderField OPTIONAL,
    date-and-time-of-preparation       [17] DateAndTimeOfPreparationField OPTIONAL,
    application-reference              [18] ApplicationReferenceField OPTIONAL,
    -- End Fields from EDIFACT

    heading-extensions                 [19] HeadingExtensionsField OPTIONAL }

-- This EDIM

ThisEDIMField ::= EDIMIdentifier

-- Originator

OriginatorField ::= ORName

-- Recipients

RecipientsField ::= SET OF RecipientsSubField

RecipientsSubField ::= SEQUENCE {
    recipient                          [1] RecipientField,
    action-request                     [2] ActionRequestField DEFAULT {id-for-action},
    edi-notification-requests-field    [3] EDINotificationRequestsField OPTIONAL,
    responsibility-passing-allowed     [4] ResponsibilityPassingAllowedField DEFAULT FALSE,

    -- Begin Fields from EDIFACT UNB
    interchange-recipient              [5] InterchangeRecipientField OPTIONAL,
    recipient-reference                [6] RecipientReferenceField OPTIONAL,
    interchange-control-reference      [7] InterchangeControlReferenceField OPTIONAL,
    processing-priority-code           [8] ProcessingPriorityCodeField OPTIONAL,
    acknowledgement-request            [9] AcknowledgementRequestField DEFAULT FALSE,
    communications-agreement-id        [10] CommunicationsAgreementIdField OPTIONAL,
    test-indicator                     [11] TestIndicatorField DEFAULT FALSE,
    -- End Fields from EDIFACT UNB

    -- Begin Fields from ANSIX12 ISA
    authorization-information          [12] AuthorizationInformationField OPTIONAL,
    -- End Fields from ANSIX12 ISA

    recipient-extensions               [13] RecipientExtensionsField OPTIONAL }
```

```
-- Recipient

   RecipientField ::= ORName

-- Action Request

   ActionRequestField ::= OBJECT IDENTIFIER

-- EDI Notification Requests

   EDINotificationRequestsField ::= SEQUENCE {
        edi-notification-requests          [0] EDINotificationRequests DEFAULT {},
        edi-notification-security          [1] EDINotificationSecurity DEFAULT {},
        edi-reception-security             [2] EDIReceptionSecurity DEFAULT {}  }

   EDINotificationRequests ::= BIT STRING {
        pn (0),
        nn (1),
        fn  (2) }(SIZE (0..ub-bit-options))

   EDINotificationSecurity ::= BIT STRING {
        proof (0),
        non-repudiation (1) } (SIZE (0..ub-bit-options))

   EDIReceptionSecurity ::= BIT STRING {
        proof (0),
        non-repudiation (1) }(SIZE (0..ub-bit-options))

-- Interchange recipient

   InterchangeRecipientField ::= SEQUENCE {
        recipient-identification           [0] IdentificationCode,
        identification-code-qualifier      [1] IdentificationCodeQualifier OPTIONAL,
        routing-address                    [2] RoutingAddress OPTIONAL }

-- Recipient reference

   RecipientReferenceField ::= SEQUENCE {
        recipient-reference                [0] RecipientReference,
        recipient-reference-qualifier      [1] RecipientReferenceQualifier OPTIONAL }

   RecipientReference ::= TeletexString (SIZE (1..ub-recipient-reference))

   RecipientReferenceQualifier ::=  TeletexString (SIZE (1..ub-recipient-reference-qualifier))

-- Recipient Extensions

   RecipientExtensionsField ::= SET OF RecipientExtensionsSubField

   RecipientExtensionsSubField ::= ExtensionField

-- EDIN receiver

   EDINReceiverField ::= SEQUENCE {

        edin-receiver-name                 [0] ORName,

        original-edim-identifier           [1] EDIMIdentifier OPTIONAL,

        first-recipient                    [2] FirstRecipientField OPTIONAL}

-- Responsibility Forwarded indication

   ResponsibilityForwarded ::= BOOLEAN -- Default False

-- EDI Body Part Types - identifies EDI Standard, Character set and encoding

   DIBodyPartType := OBJECT IDENTIFIER -- default EDIFACT-ISO646

-- EDI message type

   DIMessageTypeField ::= SET OF EDIMessageTypeFieldSubField

   DIMessageTypeFieldSubField ::= TeletexString (SIZE (1..ub-edi-message-type))
```

```
-- Responsibility Passing Allowed

   ResponsibilityPassingAllowedField ::= BOOLEAN -- Default FALSE

-- Incomplete Copy

   IncompleteCopyField ::= BOOLEAN  -- Default False

-- Expiry time

   ExpiryTimeField ::= UTCTime

-- Related Messages

   RelatedMessagesField ::= SEQUENCE OF RelatedMessageReference

   RelatedMessageReference ::= CHOICE {
         edi-message-reference              [0] EDIMIdentifier,
         external-message-reference         [1] ExternalMessageReference }

   ExternalMessageReference ::= EXTERNAL

-- Obsoleted EDIMs

   ObsoletedEDIMsField ::= SEQUENCE OF ObsoletedEDIMsSubfield

   ObsoletedEDIMsSubfield ::= EDIMIdentifier

-- EDI Application Security Elements

   EDIApplicationSecurityElementsField ::= SEQUENCE {
         edi-application-security-element      [0] EDIApplicationSecurityElement OPTIONAL,
         edi-encrypted-primary-bodypart        [1] BOOLEAN OPTIONAL,
         edi-application-security-extensions   [2] EDIApplicationSecurityExtensions OPTIONAL }

   EDIApplicationSecurityElement             ::= BIT STRING (SIZE (0..ub-edi-application-security-
                                                 elements))

   EDIApplicationSecurityExtensions          ::= SET OF EDIApplicationSecurityExtension

   EDIApplicationSecurityExtension           ::= ExtensionField

-- Cross Referencing Information

   CrossReferencingInformationField          ::= SET OF CrossReferencingInformationSubField

   CrossReferencingInformationSubField ::= SEQUENCE {
         application-cross-reference         [0] ApplicationCrossReference,
         message-reference                   [1] MessageReference OPTIONAL,
         body-part-reference          [2] BodyPartReference }

   ApplicationCrossReference                 ::= OCTET STRING

   MessageReference                          ::= EDIMIdentifier

-- Service String Advice

   ServiceStringAdviceField ::= SEQUENCE {
   component-data-element-separator          [0] ComponentDataElementSeparator,
   data-element-separator                    [1] DataElementSeparator,
   decimal-notation                          [2] DecimalNotation,
   release-indicator                         [3] ReleaseIndicator OPTIONAL,
   reserved                                  [4] Reserved OPTIONAL,
   segment-terminator                        [5] SegmentTerminator }

   ComponentDataElementSeparator             ::= OCTET STRING (SIZE (1))

   DataElementSeparator                      ::= OCTET STRING (SIZE (1))

   DecimalNotation                           ::= OCTET STRING (SIZE (1))

   ReleaseIndicator                          ::= OCTET STRING (SIZE (1))

   Reserved                                  ::= OCTET STRING (SIZE (1))

   SegmentTerminator                         ::= OCTET STRING (SIZE (1))
```

```
-- Syntax Identifier

   SyntaxIdentifierField ::= SEQUENCE {
         syntax-identifier                SyntaxIdentifier,
         syntax-version                   SyntaxVersion }

   SyntaxIdentifier ::= TeletexString (SIZE (1..ub-syntax-identifier))

   SyntaxVersion ::= PrintableString (SIZE (1..ub-syntax-version))

-- Interchange sender

   InterchangeSenderField ::= SEQUENCE {
         sender-identification            [0] IdentificationCode,
         identification-code-qualifier    [1] IdentificationCodeQualifier OPTIONAL,
         address-for-reverse-routing      [2] RoutingAddress OPTIONAL } -- EDIFACT Routing
                                              Information

-- Date and Time of preparation

   DateAndTimeOfPreparationField ::= UTCTime

-- Interchange control reference

   InterchangeControlReferenceField ::= TeletexString (SIZE (1..ub-interchange-control-reference))

-- Application reference

   ApplicationReferenceField ::= TeletexString (SIZE (1..ub-application-reference))

-- Processing Priority Code

   ProcessingPriorityCodeField ::= TeletexString (SIZE (1..ub-processing-priority-code))

-- Acknowledgement Request

   AcknowledgementRequestField ::= BOOLEAN -- default FALSE

-- Communications Agreement Id

   CommunicationsAgreementIdField ::= TeletexString (SIZE (1..ub-communications-agreement-id))

-- Test indicator

   TestIndicatorField ::= BOOLEAN  -- default FALSE

-- Authorization Information

   AuthorizationInformationField ::= SEQUENCE {
         authorization-information        [0] AuthorizationInformation,
         authorization-information-qualifier  [1] AuthorizationInformationQualifier OPTIONAL }

   AuthorizationInformation ::= TeletexString (SIZE (1..ub-authorization-information))

   AuthorizationInformationQualifier ::= TeletexString (SIZE (1..ub-authorization-information-qualifier))

-- Heading Extensions

   HeadingExtensionsField ::= SET OF HeadingExtensionsSubField

   HeadingExtensionsSubField ::= ExtensionField

-- EDIM body

   Body ::= SEQUENCE {
         primary-body-part                PrimaryBodyPart,
         additional-body-parts            OtherBodyParts OPTIONAL }

   PrimaryBodyPart ::= CHOICE {
         edi-body-part                    [0] EDIBodyPart,
         forwarded-EDIM                   [1] EDIMBodyPart }

   OtherBodyParts ::= SEQUENCE OF EDIM-ExternallyDefinedBodyPart
```

```
-- EDI body part

   EDIBodyPart ::= OCTET STRING

-- Forwarded EDIM body part

   EDIMBodyPart ::= SEQUENCE {
   parameters                          [0] MessageParameters OPTIONAL,
   data                                [1] MessageData }

MessageParameters ::= SET {
        delivery-time                  [0] MessageDeliveryTime OPTIONAL,
        delivery-envelope              [1] OtherMessageDeliveryFields OPTIONAL,
        other-parameters               [2] EDISupplementaryInformation OPTIONAL }
        -- MessageDeliveryTime and OtherMessageDeliveryFields shall both be present or both be absent.

   MessageData ::= SEQUENCE {
        heading                        Heading,
        body                           BodyOrRemoved }

   BodyOrRemoved ::= SEQUENCE {
        primary-or-removed             PrimaryOrRemoved,
        additional-body-parts          AdditionalBodyParts OPTIONAL }

   PrimaryOrRemoved ::= CHOICE {
        removed-edi-body               [0] NULL,
        primary-body-part              [1] EXPLICIT PrimaryBodyPart }

   AdditionalBodyParts ::= SEQUENCE OF CHOICE {
        external-body-part             [0] EDIM-ExternallyDefinedBodyPart,
        place-holder                   [1] BodyPartPlaceHolder } -- This type is for Body Part
                                           Removal

   BodyPartPlaceHolder ::= EDIM-ExternallyDefinedBodyPart -- Only the data
                                       -- portion of the Externally Defined Body shall be removed.
                                       -- See text in 8.3.2.

-- EDIM Externally Defined Body Parts

   EDIM-ExternallyDefinedBodyPart ::= SEQUENCE {
        body-part-reference            [0] BodyPartReference OPTIONAL,
        external-body-part             [1] ExternallyDefinedBodyPart -- from IPMS --}

   BodyPartReference ::= INTEGER -- shall be unique within a EDIM

-- Supplementary Info

   EDISupplementaryInformation ::= TeletexString (SIZE (1..ub-supplementary-info-length))

-- EDI Notifications (EDINs)

   EDIN ::= CHOICE {
        positive-notification          [0] PositiveNotificationFields,
        negative-notification          [1] NegativeNotificationFields,
        forwarded-notification         [2] ForwardedNotificationFields }

-- Common fields

   CommonFields ::= SEQUENCE {
        subject-edim                   [1] SubjectEDIMField,
        edin-originator                [2] EDINOriginatorField,
        first-recipient                [3] FirstRecipientField OPTIONAL,
        notification-time              [4] NotificationTimeField,
        notification-security-elements [5] SecurityElementsField OPTIONAL,
        edin-initiator                 [6] EDINInitiatorField,
        notifications-extensions       [7] NotificationExtensionsField OPTIONAL }
```

```
-- Subject EDIM Identifier

   SubjectEDIMField ::= EDIMIdentifier

-- EDI Notification Originator

   EDINOriginatorField ::= ORName

-- First Recipient

   FirstRecipientField ::= ORName

-- Notification Time

   NotificationTimeField ::= UTCTime

-- Security Elements

   SecurityElementsField ::= SEQUENCE {
        original-content                    [0] Content OPTIONAL,
        original-content-integrity-check    [1] ContentIntegrityCheck OPTIONAL,
        edi-application-security-elements   [2] EDIApplicationSecurityElementsField OPTIONAL,
        security-extensions                 [3] SecurityExtensionsField OPTIONAL }

   SecurityExtensionsField ::= SET OF SecurityExtensionsSubField

   SecurityExtensionsSubField ::= ExtensionField

-- EDIN Initiator

   EDINInitiatorField ::= ENUMERATED {
        internal-ua (0),
        external-ua (1),
        internal-ms (2)}

-- Notification Extensions

   NotificationExtensionsField ::= SET OF NotificationExtensionsSubField

   NotificationExtensionsSubField ::= ExtensionField

-- Positive Notification fields

   PositiveNotificationFields ::= SEQUENCE {
        pn-common-fields                    [0] CommonFields,
        pn-supplementary-information        [1] EDISupplementaryInformation OPTIONAL,
        pn-extensions                       [2] PNExtensionsField OPTIONAL }

-- Positive Notification Extensions

   PNExtensionsField ::= SET OF PNExtensionsSubField

   PNExtensionsSubField ::= ExtensionField

-- Negative notification fields

   NegativeNotificationFields ::= SEQUENCE {
   nn-common-fields                         [0] CommonFields,
   nn-reason-code                           [1] NNReasonCodeField,
   nn-supplementary-information             [2] EDISupplementaryInformation OPTIONAL,
   nn-extensions                            [3] NNExtensionsField OPTIONAL }

-- Negative Notification Reason Codes

   NNReasonCodeField ::= CHOICE {
        nn-ua-ms-reason-code                [0] NNUAMSReasonCodeField,
        nn-user-reason-code                 [1] NNUserReasonCodeField,
        nn-pdau-reason-code                 [2] NNPDAUReasonCodeField }
```

```
-- Negative Notification Reason Codes from an EDI-UA or EDI-MS

    NNUAMSReasonCodeField ::= SEQUENCE {
        nn-ua-ms-basic-code                 [0] NNUAMSBasicCodeField,
        nn-ua-ms-diagnostic                 [1] NNUAMSDiagnosticField OPTIONAL }

-- Negative Notification Basic Reason Codes from an EDI-UA or EDI-MS. These codes are  those
-- specified in Annex B of Recommendation F.435 for the element of service "EDI Notification Request".

    NNUAMSBasicCodeField ::= INTEGER{
        unspecified (0),
        cannot-deliver-to-user (1),
            -- the EDI Interchange can not be passed on to the user
        delivery-timeout (2),
            -- the EDI Interchange could not be passed on to the user within
            -- a specified time limit
        message-discarded (3),
            -- the UA/MS discarded the message before handoff to user
        subscription-terminated (4),
            -- recipient's subscription terminated after delivery but before
            -- handoff to user
        forwarding-error (5),
            -- EDI Forwarding was attempted, but failed.
        security-error (6)
            -- security error

        -- physical delivery errors indicated by "cannot-deliver-to-user"
         } (0..ub-reason-code)

-- Negative Notification Diagnostic Codes from an EDI-UA or EDI-MS

    NNUAMSDiagnosticField ::= INTEGER {
        -- This field may be used to further specify the error signalled in nn-ua-ms-basic-code
        -- Additional information may be indicated in nn-supplementary-information

        -- general diagnostic codes
        protocol-violation (1),
            -- used if the UA detects a protocol error
        edim-originator-unknown (2),
        edim-recipient-unknown (3),
        edim-recipient-ambiguous (4),
            -- used if the EDIM recipients or originator are not valid
        action-request-not-supported (5),
            -- used when the action requested by the recipient is not performed
        edim-expired (6),
            -- used when the expiry date of the received EDIM occurred before the subject EDIM
            -- was successfully passed to the user or forwarded by the EDI-UA
        edim-obsoleted (7),
            -- used when the EDIM Identifier of the received EDIM was contained in the Obsoleted EDIM
               field
            -- of a previously received EDIM.
        duplicate-edim (8),
            -- used when the same EDIM is received more than once from the same originator
        unsupported-extension (9),
            -- used if the EDIM contains an extension which is not supported by the UA
        incomplete-copy-rejected (10),
            -- used if the EDI-UA does not accept EDIMs with the Incomplete Copy Indication true
        edim-too-large-for-application (11),
            -- used if the EDIM cannot be delivered to the user due to length constraints
        -- forwarding error diagnostic codes
```

```
        forwarded-edim-not-delivered (12),
                -- used when an Non-Delivery Report is received for forwarded EDIM
        forwarded-edim-delivery-time-out (13),
                -- used when no Delivery Report is received within a given period
        forwarding-loop-detected (14),
                -- used if the UA receives an EDIM which contains a previously forwarded EDIM
        unable-to-accept-responsibility (15),
                -- used if the EDI-UA cannot accept or forward responsibility

        -- interchange header diagnostic codes
        interchange-sender-unknown (16),
                -- used when the UA does not recognize the interchange-sender of the EDI interchange
        interchange-recipient-unknown (17),
                -- used when the UA cannot find a valid interchange recipient in the Recipient Specifier
        invalid-heading-field (18),
        invalid-bodypart-type (19),
        invalid-message-type (20),
        invalid-syntax-id (21),

        -- security error diagnostic codes
        message-integrity-failure (22),
        forwarded-message-integrity-failure (23),
        unsupported-algorithm (24),
        decryption-failed (25),
        token-error (26),
        unable-to-sign-notification (27),
        unable-to-sign-message-receipt (28),
        authentication-failure (29),
        security-context-failure (30),
        message-sequence-failure (31),
        message-security-labelling-failure (32),
        repudiation-failure (33),
        proof-of-failure (34)
        } (1..ub-reason-code)

-- Negative Notification Reason Codes from a user

    NNUserReasonCodeField ::= SEQUENCE {
        nn-user-basic-code              [0]  NNUserBasicCodeField,
        nn-user-diagnostic              [1]  NNUserDiagnosticField OPTIONAL }

-- Negative Notification Basic Reason Codes from a user

    NNUserBasicCodeField ::= INTEGER {
        unspecified (0),
        syntax-error (1),
                -- used when the user discovers a syntax error within the EDI interchange
        interchange-sender-unknown (2),
        interchange-recipient-unknown (3),
                -- used when the UA cannot find a valid interchange recipient in the Recipient Specifier
        invalid-heading-field (4),
        invalid-bodypart-type (5),
        invalid-message-type (6),
        functional-group-not-supported (7),
        subscription-terminated (8),
                -- unknown to EDIMS-User service
        no-bilateral-agreement (9),
        user-defined-reason (10)
        } (0..ub-reason-code)
```

-- *Negative Notification Diagnostic Codes from a user*

```
NNUserDiagnosticField ::= INTEGER (1..ub-reason-code)
        -- Contains reason passed by user when the value of nn-user-basic-code is user-defined-reason.
        -- Additional information may be indicated in nn-supplementary-information
```

-- *Negative Notification Reason Codes from a PDAU*

```
NNPDAUReasonCodeField ::= SEQUENCE {
        nn-pdau-basic-code          [0]  NNPDAUBasicCodeField,
        nn-pdau-diagnostic                    [1]  NNPDAUDiagnosticField OPTIONAL }
```

-- *Negative Notification Basic Reason Codes from a PDAU*

```
NNPDAUBasicCodeField ::= INTEGER {
        unspecified (0),
        undeliverable-mail (1),
                -- used if the PDAU determines that it cannot perform physical delivery of the EDIM
        physical-rendition-not-performed (2)
                -- used if the PDAU cannot perform the physical rendition of the EDIM
         } (0..ub-reason-code)
```

-- *Negative Notification Diagnostic Codes from a PDAU*

```
NNPDAUDiagnosticField ::= INTEGER {
        -- This field may be used to further specify the error signalled in nn-pdau-basic-code
        -- Additional information may be indicated in the nn-supplementary-information
        undeliverable-mail-physical-delivery-address-incorrect (32),
        undeliverable-mail-physical-delivery-office-incorrect-or-invalid (33),
        undeliverable-mail-physical-delivery-address-incomplete (34),
        undeliverable-mail-recipient-unknown (35),
        undeliverable-mail-recipient-deceased (36),
        undeliverable-mail-organization-expired (37),
        undeliverable-mail-recipient-refused-to-accept (38),
        undeliverable-mail-recipient-did-not-claim (39),
        undeliverable-mail-recipient-changed-address-permanently (40),
        undeliverable-mail-recipient-changed-address-temporarily (41),
        undeliverable-mail-recipient-changed-temporary-address (42),
        undeliverable-mail-new-address-unknown (43),
        undeliverable-mail-recipient-did-not-want forwarding (44),
        undeliverable-mail-originator-prohibited-forwarding (45),
        physical-rendition-attributes-not-supported (31)
         } (1..ub-reason-code)
```

-- *Negative Notification Extension Field(s)*

```
NNExtensionsField ::= SET OF NNExtensionsSubField

NNExtensionsSubField ::= ExtensionField
```

-- *Forwarded Notification Fields*

```
ForwardedNotificationFields ::= SEQUENCE {
        fn-common-fields                [0] CommonFields,
        forwarded-to                    [1] ForwardedTo,
        fn-reason-code                  [2] FNReasonCodeField,
        fn-supplementary-information    [3] EDISupplementaryInformation OPTIONAL,
        fn-extensions                   [4] FNExtensionsField OPTIONAL }
```

-- *Forwarded To*

```
ForwardedTo ::= ORName
```

-- *Forwarded Reason Code*

```
FNReasonCodeField ::= CHOICE {
        fn-ua-ms-reason-code                [0] FNUAMSReasonCodeField,
        fn-user-reason-code                 [1] FNUserReasonCodeField,
        fn-pdau-reason-code                 [2] FNPDAUReasonCodeField }
```

-- *Forwarding Notification Reason Codes from an EDI-UA or EDI-MS*

```
FNUAMSReasonCodeField ::= SEQUENCE {
        fn-ua-ms-basic-code                 [0]  FNUAMSBasicCodeField,
        fn-ua-ms-diagnostic                 [1]  FNUAMSDiagnosticField OPTIONAL,
        fn-security-check                   [2]  FNUAMSSecurityCheckField DEFAULT FALSE }
```

-- *Forwarding Notification Basic Reason Codes from an EDI-UA or EDI-MS*

```
FNUAMSBasicCodeField ::= INTEGER {
        unspecified (0),
        onward-routing (1),
                -- used whenever the UA decides to re-route the subject EDIM for local reasons
        recipient-unknown (2),
        originator-unknown (3),
        forwarded-by-edi-ms (4)
         } (0..ub-reason-code)
```

-- *Forwarding Notification Diagnostic Reason Codes from an EDI-UA or EDI-MS*

```
FNUAMSDiagnosticField ::= INTEGER {
        -- This field may be used to further specify the error signalled in fn-ua-ms-basic-code.
        -- Additional information may be indicated in fn-supplementary-information.
        recipient-name-changed (1),
        recipient-name-deleted (2)
         } (1..ub-reason-code)
```

-- *Forwarding Notification Security Check Codes from an EDI-UA or EDI-MS*

-- *This field may be used, with a value of TRUE, to indicate that all security features present have been*
-- *validated, with a value of FALSE, to indicate that the security features have not been validated.*

```
FNUAMSSecurityCheckField ::= BOOLEAN
```

-- *Forwarding Notification Reason Codes from a user*

```
FNUserReasonCodeField ::= SEQUENCE {
        fn-user-basic-code                  [0]  FNUserBasicCodeField,
        fn-user-diagnostic                  [1]  FNUserDiagnosticField OPTIONAL }
```

-- *Forwarding Notification Basic Reason Codes from a user*

```
FNUserBasicCodeField ::= INTEGER {
        unspecified (0),
        forwarded-for-archiving (1),
        forwarded-for-information (2),
        forwarded-for-additional-action (3),
        subscription-changed (4),
        heading-field-not-supported (5),
        bodypart-type-not-supported (6),
        message-type-not-supported (7),
        syntax-identifier-not-supported (8),
        interchange-sender-unknown (9),
        user-defined-reason (10)
        } (0..ub-reason-code)
```

```
-- Forwarding Notification Diagnostic Reason Codes from a user

    FNUserDiagnosticField ::= INTEGER (1..ub-reason-code)
        -- Contains reason passed by user when value of fn-user-basic-code is user-defined-reason.
        -- Additional information may be indicated in fn-supplementary-information.

-- Forwarding Notification Reason Codes from a PDAU

    FNPDAUReasonCodeField ::= SEQUENCE {
        fn-pdau-basic-code              [0] FNPDAUBasicCodeField,
        fn-pdau-diagnostic              [1] FNPDAUDiagnosticField OPTIONAL }

-- Forwarding Notification Basic Reason Codes from a PDAU

    FNPDAUBasicCodeField ::= INTEGER {
        unspecified (0),
        forwarded-for-physical-rendition-and-delivery (1)
        } (0..ub-reason-code)

-- Forwarding Notification Diagnostic Codes from a PDAU

    FNPDAUDiagnosticField ::= INTEGER (1..ub-reason-code)

-- Forwarded Notification Extensions

    FNExtensionsField ::= SET OF FNExtensionsSubField

    FNExtensionsSubField ::= ExtensionField

    END -- of EDIMSInformationObjects
```

ANNEX C

(to Recommendation X.435)

Reference definition of Message Store Attributes

(This annex forms an integral part of this Recommendation)

This annex defines for reference purposes the MS attributes specific to EDIM Messaging. It uses the ATTRIBUTE macro of Recommendation X.501.

```
    EDIMSMessageStoreAttributes {joint-iso-ccitt
            mhs-motis(6) edims(7) modules(0) message-store-attributes(4) }

        DEFINITIONS IMPLICIT TAGS ::=
        BEGIN

-- Prologue

-- Exports everything.

    IMPORTS
```

-- *EDIMS Object Identifiers*

id-bat-body, id-bat-edi-body-part, id-bat-edim-body-part,
id-bat-externally-defined-body-part-types, id-bat-interchange-length, id-bat-message-data,
id-bat-message-parameters, id-hat-acknowledgement-request, id-hat-application-reference,
id-hat-cross-referencing-information,
id-hat-date-and-time-of-preparation, id-hat-edi-application-security-element,
id-hat-edi-application-security-extensions, id-hat-edi-bodypart-type,
id-hat-edi-message-type, id-hat-edin-receiver, id-hat-expiry-time,
id-hat-heading, id-hat-heading-extensions, id-hat-incomplete-copy,
id-hat-interchange-sender, id-hat-obsoleted-edims, id-hat-originator, id-hat-processing-priority-code,
id-hat-recipients, id-hat-related-messages, id-hat-sensitivity,
id-hat-service-string-advice, id-hat-syntax-identifier,
id-hat-this-edim, id-nat-edin-originator, id-nat-first-recipient, id-nat-fn-extensions,
id-nat-fn-reason-code, id-nat-fn-supplementary-info, id-nat-forwarded-to,
id-nat-nn-extensions, id-nat-nn-reason-code,
id-nat-nn-supplementary-info, id-nat-notification-extensions, id-nat-notification-security-elements,
id-nat-notification-time, id-nat-pn-extensions, id-nat-pn-supplementary-info, id-nat-subject-edim,
id-rat-action-request-for-this-recipient, id-rat-authorization-information-for-this-recipient,
id-rat-communications-agreement-id-for-this-recipient, id-rat-edi-notification-requests-for-this-recipient,
id-rat-edim-reception-security-requests-for-this-recipient,
id-rat-interchange-control-reference-for-this-recipient, id-rat-interchange-recipient-for-this-recipient,
id-rat-recipient-extensions-for-this-recipient, id-rat-this-recipient,
id-rat-recipient-reference-for-this-recipient,
id-rat-responsibility-passing-allowed-for-this-recipient,
id-rat-test-indicator-for-this-recipient, id-sat-edim-synopsis, id-sat-edims-entry-type
-----
FROM EDIMSObjectIdentifiers {joint-iso-ccitt mhs-motis(6) edims(7) modules(0) object-identifiers(0) }

-- *MS Abstract Service*

SequenceNumber

FROM MSAbstractService {joint-iso-ccitt mhs-motis(6) ms(4) modules(0) abstract-service(1) }

-- *EDIMS Information Objects*

AcknowledgementRequestField, ActionRequestField, ApplicationReferenceField,
AuthorizationInformationField, Body, BodyPartReference, CommunicationsAgreementIdField,
CrossReferencingInformationSubField,
DateAndTimeOfPreparationField, EDIApplicationSecurityElementsField, EDIBodyPart,
EDIBodyPartType, EDIMessageTypeFieldSubField, EDINInitiatorField,
EDINOriginatorField, EDINotificationRequestsField, EDINReceiverField,
EDISupplementaryInformation, ExpiryTimeField,
FirstRecipientField, FNExtensionsSubField, FNReasonCodeField,
ForwardedTo, Heading, HeadingExtensionsSubField, IncompleteCopyField,
InterchangeControlReferenceField, InterchangeRecipientField,
InterchangeSenderField, MessageData, MessageParameters, NNReasonCodeField,
NNExtensionsSubField, NotificationExtensionsSubField, NotificationTimeField,
ObsoletedEDIMsSubfield, OriginatorField, PositiveNotificationFields,
PNExtensionsSubField, ProcessingPriorityCodeField, RecipientExtensionsSubField, RecipientField,
RecipientReferenceField, RecipientsSubField, RelatedMessagesField,
ResponsibilityForwarded, ResponsibilityPassingAllowedField, SecurityElementsField,
ServiceStringAdviceField, SubjectEDIMField,
SyntaxIdentifierField, TestIndicatorField, ThisEDIMField

FROM EDIMSInformationObjects {joint-iso-ccitt mhs-motis(6) edims(7) modules(0) information-objects(2) }

```
-- IPMS Information Objects

    ExternallyDefinedParameters
        ----
        FROM IPMSInformationObjects {joint-iso-ccitt mhs-motis(6) ipms(1) modules(0) information-
        objects(2) }

-- Directory Information Framework

    ATTRIBUTE
        ----
        FROM InformationFramework {joint-iso-ccitt ds(5) modules(1) informationFramework(1) };

-- END imports

-- MESSAGE STORE ATTRIBUTES

-- Summary Attributes

-- EDIMS Entry Type

    edims-entry-type ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIMSEntryType
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-sat-edims-entry-type

    EDIMSEntryType ::= ENUMERATED {
        edim (0),
        pn (1),
        nn (2),
        fn (3) }

-- EDIM Synopsis

    edim-synopsis ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIMSynopsis
        SINGLE VALUE
        ::= id-sat-edim-synopsis

    EDIMSynopsis ::= SEQUENCE OF BodyPartSynopsis

    BodyPartSynopsis ::= CHOICE {
        message                 [0] MessageBodyPartSynopsis,
        non-message             [1] NonMessageBodyPartSynopsis }

    MessageBodyPartSynopsis ::= SEQUENCE {
        number                  [0] SequenceNumber,
        synopsis                [1] EDIMSynopsis }

    NonMessageBodyPartSynopsis ::= SEQUENCE {
        type                    [0] OBJECT IDENTIFIER,
        parameters              [1] ExternallyDefinedParameters OPTIONAL,
        size                    [2] INTEGER,
        processed               [3] BOOLEAN DEFAULT FALSE }

-- EDI Notification Indicator

    edi-notification-indicator ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDINotificationIndicator DEFAULT (0)
        MATCHES FOR EQUALITY
        MULTI VALUE ::=
        id-sat-edi-notification-indicator

    EDINotificationIndicator ::= ENUMERATED {
        no-notification-sent    (0),
        pn-sent                 (1),
        nn-sent                 (2),
        fn-sent                 (3) }
```

-- *Heading Attributes*

-- *Heading*

```
heading ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX Heading
        SINGLE VALUE
        ::= id-hat-heading
```

-- *Heading Fields*

```
this-edim ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ThisEDIMField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-this-edim

originator ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX OriginatorField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-originator

edin-receiver ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDINReceiverField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-edin-receiver

responsibility-forwarded ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ResponsibilityForwarded
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-responsibility-forwarded

edi-bodypart-type ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIBodyPartType
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-edi-bodypart-type

incomplete-copy ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX IncompleteCopyField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-incomplete-copy

expiry-time ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ExpiryTimeField
        MATCHES FOR EQUALITY ORDERING
        SINGLE VALUE
        ::= id-hat-expiry-time

related-messages ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX RelatedMessagesReference
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-hat-related-messages

obsoleted-edims ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ObsoletedEDIMsSubfield
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-hat-obsoleted-edims
```

```
edi-application-security-element ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIApplicationSecurityElement
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-edi-application-security-element

edi-application-security-extensions ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIApplicationSecurityExtension
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-hat-edi-application-security-extensions

cross-referencing-information ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX CrossReferencingInformationSubField
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-hat-cross-referencing-information

edi-message-type ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIMessageTypeFieldSubField
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-hat-edi-message-type

service-string-advice ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ServiceStringAdviceField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-service-string-advice

syntax-identifier ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX SyntaxIdentifierField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-syntax-identifier

interchange-sender ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX InterchangeSenderField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-hat-interchange-sender

date-and-time-of-preparation ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX DateAndTimeOfPreparationField
        MATCHES FOR EQUALITY ORDERING
        SINGLE VALUE
        ::= id-hat-date-and-time-of-preparation

application-reference ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ApplicationReferenceField
        MATCHES FOR EQUALITY SUBSTRINGS
        SINGLE VALUE
        ::= id-hat-application-reference

heading-extensions ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX HeadingExtensionsSubField
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-hat-heading-extensions
```

-- *Recipient Sub-field*

this-recipient ATTRIBUTE
WITH ATTRIBUTE-SYNTAX RecipientField
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-rat-this-recipient

action-request-for-this-recipient ATTRIBUTE
WITH ATTRIBUTE-SYNTAX ActionRequestField
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-rat-action-request-for-this-recipient

edi-notification-requests-for-this-recipient ATTRIBUTE
WITH ATTRIBUTE-SYNTAX EDINotificationRequests
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-rat-edi-notification-requests-for-this-recipient

edi-notification-security-for-this-recipient ATTRIBUTE
WITH ATTRIBUTE-SYNTAX EDINotificationSecurity
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-rat-edi-notification-security-for-this-recipient

edi-reception-security-for-this-recipient ATTRIBUTE
WITH ATTRIBUTE-SYNTAX EDIReceptionSecurity
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-rat-edi-reception-security-for-this-recipient

responsibility-passing-allowed-for-this-recipient ATTRIBUTE
WITH ATTRIBUTE-SYNTAX ResponsibilityPassingAllowedField
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-rat-responsibility-passing-allowed-for-this-recipient

-- *Fields from EDIFACT interchange*

interchange-recipient-for-this-recipient ATTRIBUTE
WITH ATTRIBUTE-SYNTAX InterchangeRecipientField
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-rat-interchange-recipient-for-this-recipient

recipient-reference-for-this-recipient ATTRIBUTE
WITH ATTRIBUTE-SYNTAX RecipientReferenceField
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-rat-recipient-reference-for-this-recipient

interchange-control-reference-for-this-recipient ATTRIBUTE
WITH ATTRIBUTE-SYNTAX InterchangeControlReferenceField
MATCHES FOR EQUALITY SUBSTRINGS
SINGLE VALUE
::= id-rat-interchange-control-reference-for-this-recipient

processing-priority-code-for-this-recipient ATTRIBUTE
WITH ATTRIBUTE-SYNTAX ProcessingPriorityCodeField
MATCHES FOR EQUALITY
SINGLE VALUE
::= id-rat-processing-priority-code-for-this-recipient

```
    acknowledgement-request-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX AcknowledgementRequestField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-acknowledgement-request-for-this-recipient

    communications-agreement-id-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX CommunicationsAgreementIdField
        MATCHES FOR EQUALITY SUBSTRINGS
        SINGLE VALUE
        ::= id-rat-communications-agreement-id-for-this-recipient

    test-indicator-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX TestIndicatorField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-test-indication-for-this-recipient

-- END Fields from EDIFACT

-- Fields from ANSIX12 ISA

    authorization-information-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX AuthorizationInformationField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-rat-authorization-information-for-this-recipient

-- END Fields from ANSIX12 ISA

    recipient-extensions-for-this-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX RecipientExtensionsSubField
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-rat-recipient-extensions-for-this-recipient

-- Body Attributes

-- Body

    body ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX Body
        SINGLE VALUE
        ::= id-bat-body

-- Body Analyses

    interchange-length ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX InterchangeLength
        MATCHES FOR ORDERING
        SINGLE VALUE
        ::= id-bat-interchange-length

    InterchangeLength ::= INTEGER

-- Primary Body Parts

    edi-body-part ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDIBodyPart
        SINGLE VALUE
        ::= id-bat-edi-body-part

    edim-body-part ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX SequenceNumber -- sequence number of the forwarded EDIM entry.
        SINGLE VALUE
        ::= id-bat-edim-body-part
```

```
    message-parameters ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX MessageParameters
        SINGLE VALUE
        ::= id-bat-message-parameters

    message-data ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX MessageData
        SINGLE VALUE
        ::= id-bat-message-data

-- Externally Defined Body Part Types

    externally-defined-body-part-types ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX OBJECT IDENTIFIER
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-bat-externally-defined-body-part-types

-- Description of the externally-defined-body-part-types attribute syntax for parameter portion only

    EDIExternallyDefinedBodyPartParameterAttribute;          ::= SEQUENCE {
        body-part-reference                  [0] BodyPartReference OPTIONAL,
        parameter                            [1] ExternallyDefinedParameters }

-- Notification Attributes

-- Common Fields

    subject-edim ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX SubjectEDIMField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-nat-subject-edim

    edin-originator ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDINOriginatorField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-nat-edin-originator

    first-recipient ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX FirstRecipientField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-nat-first-recipient

    notification-time ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX NotificationTimeField
        MATCHES FOR EQUALITY ORDERING
        SINGLE VALUE
        ::= id-nat-notification-time

    notification-security-elements ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX SecurityElementsField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-nat-notification-security-elements

    edin-initiator ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDINInitiatorField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-nat-edin-initiator

    notification-extensions ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX NotificationExtensionsSubField
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-nat-notification-extensions
```

```
-- Positive Notification Extension Fields

    pn-supplementary-information ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDISupplementaryInformation
        MATCHES FOR EQUALITY SUBSTRINGS
        SINGLE VALUE
        ::= id-nat-pn-supplementary-info

        pn-extensions ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX PNExtensionsSubField
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-nat-pn-extensions

-- Negative Notification Fields

    nn-reason ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX NNReasonCodeField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-nat-nn-reason-code

    nn-supplementary-information ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDISupplementaryInformation
        MATCHES FOR EQUALITY SUBSTRINGS
        SINGLE VALUE
        ::= id-nat-nn-supplementary-info

    nn-extensions ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX NNExtensionsSubField
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-nat-nn-extensions

-- Forwarded Fields

    forwarded-to ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX ForwardedTo
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-nat-forwarded-to

        fn-reason-code ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX FNReasonCodeField
        MATCHES FOR EQUALITY
        SINGLE VALUE
        ::= id-nat-fn-reason-code

    fn-supplementary-information ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX EDISupplementaryInformation
        MATCHES FOR EQUALITY SUBSTRINGS
        SINGLE VALUE
        ::= id-nat-fn-supplementary-info

    fn-extensions ATTRIBUTE
        WITH ATTRIBUTE-SYNTAX FNExtensionsSubField
        MATCHES FOR EQUALITY
        MULTI VALUE
        ::= id-nat-fn-extensions

    END -- of EDIMSMessageStoreAttributes
```

ANNEX D

(to Recommendation X.435)

Reference definition of Message Store Auto-Action

(This annex forms an integral part of this Recommendation)

This annex, a supplement to Annex C, defines for reference purposes the MS Auto-Action specific to EDI Messaging. It uses the AUTO-ACTION macro of Recommendation X.413.

```
EDIMSAutoActionTypes {joint-iso-ccitt
        mhs-motis(6) edims(7) modules(0) message-store-auto-actions(7)}
    DEFINITIONS ::=
    BEGIN

-- Prologue

-- Exports everything.

    IMPORTS

-- EDIMS Object Identifiers

    id-act-edi-auto-forward
        ----
        FROM EDIMSObjectIdentifiers {joint-iso-ccitt mhs-motis(6) edims(7) modules(0) object-identifiers(0)}

-- EDIMS Information Objects

    EDISupplementaryInformation, RecipientField, ActionRequestField,
        EDINotificationRequestsField, ResponsibilityPassingAllowed
        ----
        FROM EDIMSInformationObjects {joint-iso-ccitt mhs-motis(6) edims(7) modules(0) information-
        objects(2) }

-- MS Abstract Service

    AUTO-ACTION, Filter
        ----
        FROM MSAbstractService {joint-iso-ccitt mhs-motis(6) ms(4) modules(0) abstract-service(1)}

-- MS General Auto Actions

    PerMessageAutoForwardFields, PerRecipientAutoForwardFields
        ----
        FROM MSGeneralAutoActionTypes {joint-iso-ccitt mhs-motis(6) ms(4) modules(0)
        general-auto-action-types(3) }

-- MTS Upper Bounds

    ub-recipients
        ----
        FROM MTSUpperBounds {joint-iso-ccitt mhs-motis(6) mts(3) modules(0) upper-bounds(3) }
```

```
-- MTS Abstract Service Definition

    ORName
        ----
        FROM MTSAbstractService {joint-iso-ccitt mhs-motis(6) mts(3)  modules(0) mts-abstract-service(1) };

-- END Imports

-- Auto-Action Types

-- EDI Auto Forwarding Registration

    edi-auto-forward AUTO-ACTION
        REGISTRATION PARAMETER IS EDIAutoForwardRegistrationParameter
        ::= id-act-edi-auto-forward

    EDIAutoForwardRegistrationParameter ::= SEQUENCE {
        filter                              [0] Filter OPTIONAL,
        edi-supplementary-info              [1] EDISupplementaryInfo OPTIONAL,
        delete-after-forwarding             [2] BOOLEAN DEFAULT FALSE,
        edi-forwarding-mode                 CHOICE {
            forwarding-with-responsibility-not-accepted    [3] ForwardWithRespNotAccepted,
            forwarding-with-responsibility-accepted        [4] ForwardWithRespAccepted }

-- Auto Action Registration Parameters for Forwarding with Responsibility not Accepted

    ForwardWithRespNotAccepted ::= SET {
        COMPONENTS OF PerMessageAutoForwardFields, -- from envelope PerMessageFields
        per-recipient-field                 [3] PerRecipientAutoForwardFields,
        notification-argument               [4] NotificationArguments OPTIONAL }

    NotificationArguments ::= SET {
        COMPONENTS OF PerMessageAutoForwardFields, -- from envelope PerMessageFields
        per-recipients-field                [3] SEQUENCE SIZE (1..ub-recipients) OF
                                            PerRecipientAutoForwardFields }

-- Auto Action Registration Parameters for Forwarding with Responsibility Accepted

    ForwardWithRespAccepted ::= SET {
        COMPONENTS OF PerMessageAutoForwardFields, -- from envelope PerMessageFields
        per-recipients-field                [3] SEQUENCE SIZE (1..ub-recipients) OF
                                            PerRecipientAutoForwardFields,
        notification-argument               [4] NotificationArguments OPTIONAL,
        new-edin-receiver-name              [5] RecipientField OPTIONAL,
        per-recipient-heading-fields        [6] SEQUENCE SIZE (1..ub-recipients) OF
                                            NextRecipientFields OPTIONAL }

    NextRecipientFields ::= SEQUENCE {
        next-recipient                      [0] RecipientField,
        next-recipient-action-request       [1] ActionRequestField DEFAULT {id-for-action},
        next-recipient-edi-notification-requests-field      [2] EDINotificationRequestsField OPTIONAL,
        next-responsibility-passing-allowed [3] ResponsibilityPassingAllowedField DEFAULT FALSE }

        END -- of EDIMSAutoActionTypes
```

ANNEX E

(to Recommendation X.435)

Reference definition of EDIMS Functional Objects

(This annex forms an integral part of this Recommendation)

This annex defines for reference purposes the functional objects of EDI Messaging. It uses the OBJECT and REFINE macros of Recommendation X 407.

```
EDIMSFunctionalObjects {joint-iso-ccitt
        mhs-motis(6) edims(7) modules(0) functional-objects(1)}
    DEFINITIONS IMPLICIT TAGS ::=
    BEGIN

-- Prologue

-- Exports everything.

    IMPORTS

-- EDIMS Abstract Service

    origination, reception
        ----
        FROM EDIMSAbstractService {joint-iso-ccitt mhs-motis(6) edims(7) modules(0) abstract-service(3)}

-- EDIMS Object Identifiers

    id-ot-edime, id-ot-edims, id-ot-edi-ms, id-ot-edi-ua,
        id-ot-edimg-user, id-ot-pdau,
        id-ref-primary, id-ref-secondary
        ----
        FROM EDIMSObjectIdentifiers {joint-iso-ccitt mhs-motis(6) edims(7) modules(0) object-identifiers(0)}

-- MS Abstract Service

    retrieval
        ----
        FROM MSAbstractService {joint-iso-ccitt mhs-motis(6) ms(4) modules(0) abstract-service(1)}

-- MTS Abstract Service

    administration, delivery, mTS, submission
        ----
        FROM MTSAbstractService {joint-iso-ccitt mhs-motis(6) mts(3)  modules(0) mts-abstract-service(1)}

-- Abstract service definition conventions

    OBJECT, REFINE
        ----
        FROM AbstractServiceNotation {joint-iso-ccitt mhs-motis(6) asdc(2) modules(0) notation(1) };

-- END imports
```

```
-- "Root" Object Type

   edime OBJECT ::= id-ot-edime

-- Primary Refinement

   edime-refinement REFINE edime AS
      edims
         origination                [S] PAIRED WITH edimg-user
         reception                  [S] PAIRED WITH edimg-user
      edimg-user RECURRING
      ::= id-ref-primary

-- Primary Object Types

-- EDI User

   edimg-user OBJECT
      PORTS {
         origination                [C],
         reception                  [C] }
      ::= id-ot-edimg-user

-- EDI Messaging System

   edims OBJECT
      PORTS {
         origination                [S],
         reception                  [S] }
      ::= id-ot-edims

-- Secondary Refinement

   edims-refinement REFINE edims AS
      mTS
         submission                 [S] PAIRED WITH edi-ua, edi-ms
         delivery                   [S] PAIRED WITH edi-ua, edi-ms
         administration             [S] PAIRED WITH edi-ua, edi-ms
      edi-ua RECURRING
         origination                [S] VISIBLE
         reception                  [S] VISIBLE
      edi-ms RECURRING
         submission                 [S] PAIRED WITH edi-ua
         retrieval                  [S] PAIRED WITH edi-ua
         administration             [S] PAIRED WITH edi-ua
      pdau RECURRING
         reception                  [S] VISIBLE
      ::= id-ref-secondary

-- Secondary Object Types

-- EDI User Agent

   edi-ua OBJECT
      PORTS {
         origination                [S],
         reception                  [S],
         submission                 [C],
         delivery                   [C],
         retrieval                  [C],
         administration             [C] }
      ::= id-ot-edi-ua
```

```
-- EDI Message Store

    edi-ms OBJECT
        PORTS {
            submission              [S],
            retrieval               [S],
            administration          [S],
            submission              [C],
            delivery                [C],
            administration          [C] }
        ::= id-ot-edi-ms

-- Physical Delivery Access Unit

    pdau OBJECT
        PORTS {
            reception               [S] }
        ::= id-ot-pdau

    END -- of EDIMSFunctionalObjects
```

ANNEX F

(to Recommendation X.435)

Reference definition of EDIMS Abstract Service

(This annex forms an integral part of this Recommendation)

This annex defines for reference purposes the EDIMS Abstract Service. It uses the PORT and ABSTRACT-OPERATION and ABSTRACT-ERROR macros of Recommendation X.407.

```
    EDIMSAbstractService {joint-iso-ccitt
            mhs-motis(6) edims(7) modules(0) abstract-service(3)}
        DEFINITIONS IMPLICIT TAGS ::=
        BEGIN

-- Prologue

-- Exports everything.

    IMPORTS

-- EDIMS Information Objects

    EDIM, EDIN, InformationObject
            ----
        FROM EDIMSInformationObjects {joint-iso-ccitt mhs-motis(6) edims(7) modules(0) information-
        objects(2) }

-- EDIMS Object Identifiers

    id-pt-origination, id-pt-reception
        ----
        FROM EDIMSObjectIdentifiers {joint-iso-ccitt mhs-motis(6) edims(7) modules(0) object-identifiers(0) }
```

```
-- MTS Abstract Service

    MessageDeliveryEnvelope, MessageSubmissionEnvelope,
        MessageSubmissionIdentifier, MessageSubmissionTime,
        ProbeSubmissionEnvelope, ProbeSubmissionIdentifier,
        ProbeSubmissionTime, RecipientImproperlySpecified,
        ReportDeliveryEnvelope
        ----
        FROM MTSAbstractService {joint-iso-ccitt mhs-motis(6) mts(3)  modules(0) mts-abstract-service(1) }

-- Abstract service definition conventions
    ABSTRACT-ERROR, ABSTRACT-OPERATION, PORT
        ----
        FROM AbstractServiceNotation {joint-iso-ccitt mhs-motis(6) asdc(2) modules(0) notation(1) };

-- Primary Port Types

-- Origination

    origination PORT
        CONSUMER INVOKES {
            OriginateProbe,
            OriginateEDIM,
            OriginateEDIN }
            ::= id-pt-origination

-- Reception

    reception PORT
        SUPPLIER INVOKES {
            ReceiveReport,
            ReceiveEDIM,
            ReceiveEDIN }
            ::= id-pt-reception

-- ABSTRACT OPERATIONS

-- Origination Abstract Operations

-- Originate Probe

    OriginateProbe ::= ABSTRACT-OPERATION
        ARGUMENT SET {
            envelope                    [0] ProbeSubmissionEnvelope,
            content                     [1] EDIM }
        RESULT SET {
            submission-identifier       [0] ProbeSubmissionIdentifier,
            submission-time             [1] ProbeSubmissionTime }
        ERRORS { RecipientImproperlySpecified }

-- Originate EDIM

    OriginateEDIM ::= ABSTRACT-OPERATION
        ARGUMENT SET {
            envelope                    [0] MessageSubmissionEnvelope,
            content                     [1] EDIM }
        RESULT SET {
            submission-identifier       [0] MessageSubmissionIdentifier,
            submission-time     [1] MessageSubmissionTime }
        ERRORS { RecipientImproperlySpecified }
```

```
-- Originate EDIN

   OriginateEDIN ::= ABSTRACT-OPERATION
         ARGUMENT SET {
               envelope                    [0] MessageSubmissionEnvelope,
               content                     [1] EDIN }
         RESULT SET {
               submission-identifier       [0] MessageSubmissionIdentifier,
               submission-time             [1] MessageSubmissionTime }
         ERRORS { RecipientImproperlySpecified }

-- Reception Abstract Operations

-- Receive Report

   ReceiveReport ::= ABSTRACT-OPERATION
         ARGUMENT SET {
               envelope                    [0] ReportDeliveryEnvelope,
               undelivered-object          [1] InformationObject OPTIONAL }
         RESULT
         ERRORS {}

-- Receive EDIM

   ReceiveEDIM ::= ABSTRACT-OPERATION
         ARGUMENT SET {
               envelope                    [0] MessageDeliveryEnvelope,
               content                     [1] EDIM }
         RESULT
         ERRORS {}

-- Receive EDIN

   ReceiveEDIN ::= ABSTRACT-OPERATION
         ARGUMENT SET {
               envelope                    [0] MessageDeliveryEnvelope,
               content                     [1] EDIN }
         RESULT
         ERRORS {}

   END -- of EDIMSAbstractService
```

ANNEX G

(to Recommendation X.435)

Reference definition of EDIMS Upper Bounds Parameters

(This annex forms an integral part of this Recommendation)

This annex defines for reference purposes the upper bounds of various variable-length information items whose abstract syntaxes are defined in the ASN.1 modules of prior annexes.

```
   EDIMSUpperBounds { joint-iso-ccitt
               mhs-motis(6) edims(7) modules(0) upper-bounds(5) }
         DEFINITIONS ::=
         BEGIN

-- Prologue

-- Exports everything.

         IMPORTS -- nothing -- ;
```

-- *Upper bounds*

```
    ub-application-reference                INTEGER ::= 14
    ub-authorization-information            INTEGER ::= 10
    ub-authorization-information-qualifier  INTEGER ::= 2
    ub-communications-agreement-id          INTEGER ::= 35
    ub-edi-association-assigned-code        INTEGER ::= 6
    ub-edi-application-security-elements    INTEGER ::= 8191
    ub-edi-controlling-agency               INTEGER ::= 2
    ub-edi-document-release                 INTEGER ::= 3
    ub-edi-document-version                 INTEGER ::= 3
    ub-edi-message-type                     INTEGER ::= 6
    ub-identification-code-qualifier        INTEGER ::= 4
    ub-identification-code                  INTEGER ::= 35
    ub-interchange-control-reference        INTEGER ::= 14
    ub-local-reference                      INTEGER ::= 64
    ub-processing-priority-code             INTEGER ::= 1
    ub-reason-code                          INTEGER ::= 32767
    ub-recipient-reference-qualifier        INTEGER ::= 2
    ub-recipient-reference                  INTEGER ::= 14
    ub-recipients                           INTEGER ::= 32767
    ub-routing-address                      INTEGER ::= 14
    ub-syntax-identifier                    INTEGER ::= 4
    ub-syntax-version                       INTEGER ::= 5
    END -- of EDIMSUpperBounds
```

ANNEX H

(to Recommendation X.435)

Reference definition of Directory Object Classes and Attributes

(This annex forms an integral part of this Recommendation)

This annex defines for reference purposes the object identifiers, object classes, attributes, and attribute syntaxes specific to EDI use of Directory. It uses the OBJECT-CLASS, ATTRIBUTE, and ATTRIBUTE-SYNTAX macros of Recommendation X.501. Annex J contains a discussion and description of the objects defined here.

```
EDIUseOfDirectory  {joint-iso-ccitt
        mhs-motis(6) edims(7) modules(0) edi-directory-cl-att(6) }
    DEFINITIONS IMPLICIT TAGS ::=
    BEGIN
```

-- *Prologue*

-- *Exports everything*

```
    IMPORTS
```

```
-- EDIMS Object Identifiers

    id-dir
        ----
        FROM EDIMSObjectIdentifiers {joint-iso-ccitt mhs-motis(6) edims(7) modules(0) object-identifiers(0) }

-- EDIMS Information Objects

    EDIBodyPartType, EDIMessageTypeFieldSubField, SyntaxIdentifier, SyntaxVersion
        ----
        FROM EDIMSAbstractService { joint-iso-ccitt mhs-motis(6) edims(7) modules(0) information-
        objects(2) }

-- EDIMS Upper bounds

    ub-edi-association-assigned-code, ub-edi-controlling-agency,
        ub-edi-document-release, ub-edi-document-version
        ----
        FROM EDIMSUpperBounds {joint-iso-ccitt mhs-motis(6) edims(7)  modules(0) upper-bounds(5) }

-- MHS Directory Object Classes and Attributes

    mhs-user, mhs-user-agent, mhs-message-store
        ----
        FROM MHSDirectoryObjectAndAttributes {joint-iso-ccitt mhs-motis(6) arch(5) modules(0) directory(1)
        }

-- Information Framework

    ATTRIBUTE, ATTRIBUTE-SYNTAX, OBJECT-CLASS
        ----
        FROM  InformationFramework { joint-iso-ccitt ds(5) modules(1) informationFramework(1) }

-- Selected Object Classes

    applicationEntity, top
        ----
        FROM SelectedObjectClasses {joint-iso-ccitt ds(5) modules(1)  selectedObjectClasses(6) }

-- Selected Attribute Types and Syntaxes

    caseExactStringSyntax
        ----
        FROM SelectedAttributeTypes {joint-iso-ccitt ds(5) modules(1) selectedAttributeTypes(5) };

-- END Imports

-- OBJECT IDENTIFIER ASSIGNMENTS FOR USE OF DIRECTORY

-- Categories

    id-doc                          ID ::=  {id-dir  0}  -- directory object classes
    id-dat                          ID ::=  {id-dir  1}  -- directory attribute types
    id-das                          ID ::=  {id-dir  2}  -- directory attribute syntaxes

-- Directory Object Classes

    id-doc-edi-user                 ID ::= {id-doc 0}
    id-doc-edi-user-agent           ID ::= {id-doc 1}
    id-doc-edi-message-store        ID ::= {id-doc 2}

-- Directory Attribute Types

    id-dat-edi-name                 ID ::= {id-dat 0}
    id-dat-edi-routing-address      ID ::= {id-dat 1}
    id-dat-edi-capabilities         ID ::= {id-dat 2}
```

```
-- Directory Attribute Syntaxes

   id-das-edi-capabilities                    ID ::= {id-das 0}

-- END Object Identifier Assignments

-- Object Classes for EDI Use of Directory

-- EDI User

   edi-user OBJECT CLASS
         SUBCLASS OF top
         MUST CONTAIN {edi-name}
         MAY CONTAIN {edi-routing-address, edi-capabilities}
         ::= id-doc-edi-user

-- EDI User Agent

   edi-user-agent OBJECT-CLASS
         SUBCLASS OF  mhs-user-agent
         MAY CONTAIN  {edi-capabilities}
         ::= id-doc-edi-user-agent

-- EDI Message Store

   edi-message-store OBJECT-CLASS
         SUBCLASS OF  mhs-message-store
         MAY CONTAIN  {edi-capabilities}
         ::= id-doc-edi-message-store

-- ATTRIBUTES

-- EDI Name

   edi-name ATTRIBUTE
         WITH ATTRIBUTE-SYNTAX  caseExactStringSyntax
         SINGLE VALUE
         ::= id-dat-edi-name

   -- The edi-name shall be one of the following:
   --       * a name assigned by an EDI naming authority, e.g.  the Sender-ID or the Receiver-ID,
   --       * a name assigned by the EDI user's organization.

-- EDI Routing Address

   edi-routing-address ATTRIBUTE
         WITH ATTRIBUTE-SYNTAX  caseExactStringSyntax
         SINGLE VALUE
         ::= id-dat-edi-routing-address

               -- The term edi-routing-address reflects its derivation from a data element in the
               -- EDI Interchange with the same name.

-- EDI Capabilities

   edi-capabilities ATTRIBUTE
         WITH ATTRIBUTE-SYNTAX edi-capabilities-syntax
         MULTI VALUE
         ::= id-dat-edi-capabilities

-- ATTRIBUTE SYNTAXES

-- EDI Capabilities Syntax

   edi-capabilities-syntax ATTRIBUTE-SYNTAX
         EDIUserCapability
         MATCHES FOR EQUALITY
         ::= id-das-edi-capabilities
```

```
EDIUserCapability ::=  SEQUENCE {
        edi-bodypart-type                   [0] EDIBodyPartType OPTIONAL,
        edi-processable-document            [1] EDIProcessableDocument OPTIONAL }

EDIProcessableDocument ::= SEQUENCE {
        standardVersion                     [0] SyntaxVersion OPTIONAL,
        standardSyntaxId                    [1] SyntaxIdentifier OPTIONAL,
        documentType                        [2] EDIMessageTypeFieldSubField OPTIONAL,
        documentVersion                     [3] DocumentVersion OPTIONAL,
        documentRelease                     [4] DocumentRelease OPTIONAL,
        controllingAgency                   [5] ControllingAgency OPTIONAL,
        associationAssignedCode             [6] AssociationAssignedCode OPTIONAL }

AssociationAssignedCode;        ::= TeletexString (SIZE(1..ub-edi-association-assigned-code))

ControllingAgency; ::= TeletexString (SIZE(1..ub-edi-controlling-agency))

DocumentRelease;  ::= TeletexString (SIZE(1..ub-edi-document-release))

DocumentVersion;  ::= TeletexString (SIZE(1..ub-edi-document-version))

END -- EDIMUseOfDirectory module.
```

ANNEX I

(to Recommendation X.435)

Enhanced Security Model

(This annex forms an integral part of this Recommendation)

I.1 *Introduction*

This annex describes the enhancements required to the security model defined in Recommendation X.402.

In order to provide the security services defined in this Recommendation and the underlying security services of the MTS, the MTS and MSs must support secure messaging as defined in Recommendations X.400, X.402, X.411 and X.413.

I.2 *Security Services*

The additional security services and pervasive mechanisms described in Recommendation F.435 require the security model defined in § 10 of Recommendation X.402 to be enhanced with the following security services:

— Non-repudiation/Proof of Reception;

— Non-repudiation/Proof of Retrieval;

— Non-repudiation/Proof of Transfer;

— Non-repudiation of Content.

I.3 *Enhancements to clause 10.2: Security Services*

I.3.1 *Changes to Recommendation X.402*

Changes to Table 7/X.402 are shown in Table I-1/X.435. Two new classes of services are added; these are EDIM Responsibility Authentication and Non-repudiation of EDIM Responsibility.

TABLE I-1/X.435

Additions to Table 7/X.402

Services	UA UA	UA MS	MS MTA	UA MTA	MTA MS	MTA MTA	MTA UA	MS UA
Origin Authentication	(as defined in Recommendation X.402)							
EDIM Responsibility Authentication								
Proof of EDI Notification	**X**	–	–	–	–	–	–	–
Proof of Retrieval	–	**X**	–	–	–	–	–	–
Proof of Transfer	–	–	–	–	–	**X**	–	–
Secure Access Management	(as defined in Recommendation X.402)							
Data Confidentiality	(as defined in Recommendation X.402)							
Data Integrity	(as defined in Recommendation X.402)							
Non-repudiation	(as defined in Recommendation X.402)							
Non-repudiation of EDIM Responsibility								
Non-repudiation of EDI Nofification	**X**	–	–	–	–	–	–	–
Non-repudiation of Retrieval	–	**X**	–	–	–	–	–	–
Non-repudiation of Transfer	–	–	–	–	–	**X**	–	–
Non-repudiation of Content	**X**	–	–	–	–	–	–	–
Message Security Labelling	(as defined in Recommendation X.402)							
Security Management Services	(as defined in Recommendation X.402)							

Note – In the Table I-1/X.435 UA means EDI-UA and Ms means EDI-MS. The column headings in the above table correspond to those of Recommendation X.402 (except that typographical errors in Recommendation X.402 are not reproduced in the above table). Rows shown in bold typeface indicate classes of security services.

I.3.2 *EDIM Responsibility authentication services*

I.3.2.1 *Proof of EDI Notification*

This security service enables the originator of a message to obtain corroboration that his message has been received, and EDIM Responsibility has been accepted, forwarded, or refused.

This service may be provided by using the Content Integrity check on message submission applied to the EDI Notification of the subject EDIM.

I.3.2.2 *Proof of retrieval*

This security service enables the MS administrator to obtain corroboration that a particular message has been retrieved from the EDI-MS by the EDI-UA.

Implementation of this security service is a local issue. Additional pervasive mechanisms described in Recommendation F.435 may be used to provide this service.

I.3.2.3 *Proof of transfer*

This security service enables an MTA or an MD to obtain corroboration that a message has been transferred (relayed) to another MTA within another domain. Implementation of this security service is a local issue. Additional pervasive mechanisms described in Recommendation F.435 may be used to provide this service.

Note — As a local matter this service may also be useful between MTAs within an MD.

I.4 *Non-repudiation of EDIM Responsibility services*

I.4.1 *Non-repudiation of EDI Notification*

This security service provides the Originator of a message with irrevocable proof that the message has been received, and EDIM Responsibility has been accepted, forwarded, or refused.

I.4.2 *Non-repudiation of retrieval*

This security service provides the EDI-MS administrator and the EDI-UA with irrevocable proof that a message has been retrieved from the EDI-MS by the EDI- UA. Implementation of this security service is a local issue. Additional pervasive mechanisms described in Recommendation F.435 may be used to provide this service.

I.4.3 *Non-repudiation of transfer*

This security service provides an MTA or an MD with irrevocable proof that a message has been transferred (relayed) to another MTA within another domain. Implementation of this security service is a local issue. Additional pervasive mechanisms described in Recommendation F.435 may be used to provide this service.

Note — As a local matter this service may also be useful between MTAs within an MD.

I.4.4 *Non-repudiation of Content*

This security service provides an EDIMG user with irrevocable proof of the authenticity and integrity of the content of the message.

This security service may be provided in two ways:

1) using a Notarisation Mechanism, or

2) using the Non-repudiation of Origin security service applied to the subject message and the EDI Notification of the subject message, provided the EDI Notification includes irrevocable proof of the content of the subject message.

ANNEX J

(to Recommendation X.435)

Directory Object Classes and Attributes

(This annex forms an integral part of this Recommendation)

J.1 *Introduction*

Several Directory object class attributes and attribute syntaxes are specific for an *EDI user*. These are defined in Annex H of this Recommendation. In this annex, *EDI user* refers to a generic EDI user that is not bound to a communication mechanism or any named entity, such as country or organization. The term *EDI user* is used in this annex to mean a generic EDI user. *EDI user* is not to be confused with the terms “EDI messaging system user” and “user” defined in the main text of this Recommendation.

J.2 *Object Classes*

The object classes specific to EDI use of the Directory are:

— EDI User object class;

— EDI User Agent object class;

— EDI Message Store object class.

J.2.1 *EDI User Object Class*

The EDI User object class defines the characteristics of an *EDI user*. The attributes in its definition identify the EDI user's name and, to the extent that they are present, identify the *EDI user*'s capabilities.

Note — The definition of the EDI User object class is generic and is formally outside the scope of MHS. However, no other group has provided a definition and therefore the present definition is provided.

J.2.2 *EDI User Agent Object Class*

An EDI User Agent object class defines an Application Entity that is able to realize an EDI-UA. The attributes in its definition, to the extent that they are present, define the capabilities of the EDI-UA, identify the EDI-UA's owner, its deliverable content length, content types and EITs, and its OR Address. Some of these attributes are derived from the MHS User Agent object class defined in Recommendation X.402.

J.2.3 *EDI Message Store Object Class*

An EDI Message Store object class defines an Application Entity that is able to realize an EDI-MS. The attributes in its definition, to the extent that they are present, describe the EDI-MS, identify its owner, specify its capabilities and enumerate the optional attributes, auto actions and content types it supports. Some of these attributes are derived from the MHS Message Store object class defined in Recommendation X.402.

J.3 *Attributes*

The attributes specific to EDI use of the Directory are:

— EDI Name attribute;

— EDI Routing Address attribute;

— EDI Capabilities attribute.

J.3.1 *EDI Name Attribute*

The EDI Name attribute identifies the *EDI user*. The EDI Name attribute corresponds to the Sender identification code of the Interchange sender (or Recipient identification code of the Interchange recipient) fields of the EDI Interchange header segment.

J.3.2 *EDI Routing Address Attribute*

The EDI Routing Address attribute further qualifies the name of an *EDI user*. It corresponds to the Routing Address sub-field of the Interchange Recipient field defined in the EDIM Heading field.

J.3.3 *EDI Capabilities Attribute*

The EDI Capabilities attribute defines the capabilities of an *EDI user*. These capabilities include the support of EDI documents and EDI Interchange types.

The EDI Interchange types are represented by object identifiers.

J.4 *Attribute Syntaxes*

The attribute syntax specific to EDI use of the Directory is identified as EDI Capabilities attribute syntax.

The EDI Capabilities attribute syntax describes an attribute each of whose values identifies two components:

— supported EDI Interchange types (EDI Bodypart Types Syntax),

— EDI documents processable by the EDI user.

Only equality matching rules apply for this attribute.

J.4.1 *EDI Bodypart Type Syntax*

The EDI Bodypart Type syntax identifies the EDI standard (EDIFACT, ANSIX12, UNTDI or Private), and character set and/or encoding that *EDI user* is able to handle. It is characterized by an object identifier. Annex A of this Recommendation defines a set of object identifiers that may be used as a value for this attribute.

J.4.2 *EDI Processable Document Syntax*

An EDI Processable Document syntax, depending on its type, identifies an EDI document by:

a) *Standard Version:* the value identifies the version of the Standard.

b) *Standard Syntax Identifier:* the value identifies the syntax version of the standard.

Note — For example, for EDIFACT, this identifies which syntax level is supported (Level A or B).

c) *Document Type:* the value identifies the structure of the document.

d) *Document Version:* the value identifies the version of the Document Type.

e) *Document Release:* the value identifies the release of the Document Type.

f) *Controlling Agency:* this value identifies the agency that ratified the definition of the standard document.

g) *Association Assigned Code:* this identifies who developed the definition of the document.

ANNEX K

(to Recommendation X.435)

Comparison of terms of EDI syntaxes

(This annex does not form an integral part of this Recommendation)

The purpose of this annex is to facilitate comparison between the terms used in different EDI standards.

The heading fields of an EDIM are described in § 8. These descriptions, in many cases, reflect the terminology of the EDIFACT syntax (ISO 9735). Where another EDI syntax standard is used (as reflected in the EDI Body Part Type field in the header), the terminology will not be fully compatible.

Thus, Table K-1/X.435 outlines the comparable fields (data elements) in the United Nations Trade Data Interchange (UNTDI) and the American National Standards Institute X12 (ANSIX12) standards.

The following definitions from Annex A of ISO 9735 are included in order to aid understanding of the material in this annex:

— *Interchange:* communication between partners in the form of a structured set of messages and service segments starting with an interchange control header and ending with an interchange control trailer.

— *Segment:* a predefined and identified set of functionally related data element values which are identified by their sequential position within the set. A segment starts with a segment tag and ends with a segment terminator. It can be a service segment or a user data segment.

— *Data element:* a unit of data for which the identification, description and value representation have been specified.

Table K-1/X.435 lists the EDIM Heading fields which are related to EDI Interchange header segments and shows the corresponding EDIFACT, UNTDI and ANSIX12 data elements present in, respectively, the UNA plus UNB, STX and ISA segments.

TABLE K-1/X.435

Comparison of terms for EDI Interchange header fields

X.435 Fields	EDIFACT	UNTDI	ANSIX12
Heading	(UNA and UNB)	(STX)	(ISA)
Service String Advice	Service string advice	–	1 Data Element Separat. 2 Segment Terminator 3 Subelement Separator
Syntax Identifier	Syntax identifier	Syntax rules identifier	1 Interchange Standard Identifier 2 Interchange Version ID
Interchange Sender	Interchange sender	Transmission sender	Interchange Sender ID
Interchange Recipient	Interchange recipient	Transmission recipient	Interchange Receiver ID
Date And Time Of Preparation	Date/time of preparation	Date and time of transmission	1 Interchange Date 2 Interchange Time
Interchange Control Reference	Interchange control reference	Sender's transmission reference	Interchange Control Number
Recipient Reference	Recipients reference, password	Recipient's transmission reference/password	Security Information
Application Reference	Application reference	Application reference	–
Proccessing Priority Code	Proccessing priority code	Transmission priority code	–
Acknowledgment Request	Acknowledgment request	–	Acknowledgment Requested
Communications Agreement ID	Communications agreement ID	–	–
Test Indicator	Test indicator	–	Test Indicator
Authorization Information	–	–	Authorization Information

The equivalents shown in the following table may also be found to be useful. Table K-2/X.435 relates certain segments of EDIFACT, UNTDI and ANSIX12 in order to show the equivalent terms for each of the three EDI standards.

TABLE K-2/X.435

Comparison of terms fo EDI Interchange header segments

EDIFACT	UNTDI	ANSIX12
Interchange Header (UNA and UNB)	Start of Transmission (STX)	Interchange Header (ISA)
Functional Group Header (UNG)	–	Functional Group Header (GS)
Message Header (UNH)	Message Header (MHD)	Transaction Set Header (ST)

ANNEX L

(to Recommendation X.435)

Comparison of terms in this Recommendation and Recommendation F.435

(This annex does not form an integral part of this Recommendation)

The purpose of this annex is to facilitate comparison between the terminology used in this Recommendation and that used in Recommendation F.435.

Table L-1/X.435 shows how Elements of Service defined in Recommendation F.435 are realized with protocol elements in this Recommendation. The Elements of Service appear in the order in which they are defined in Annex B of Recommendation F.435. For this Recommendation, reference is made to the title of the divisions which define the protocol elements.

TABLE L-1/X.435

Comparison of terms in Recommendation X.435 with those of Recommendation F.435

Recommendation F.435	Recommendation X.435
Application Security Element	EDI Application Security Element
Character Set	EDI Body Part Type
Cross Reference Information	Cross Referencing Information
EDI Forwarding	EDI Forwarding
EDI Message Type(s)	EDI Message Type
EDI Notification Request	EDI Notification Requests
EDI Standard Indication	EDI Body Part Type
EDI-message Identification	EDI Identifier
EDIM Responsibility Forwarding Allowed Indication	Responsibility Passing Allowed
EDIN Receiver	EDIN Receiver
Expiry Date/Time Indication	Expiry Time
Incomplete Copy Indication	Incomplete Copy
Interchange Header	Heading Fields from Interchange Header
Multi-part Body	EDI Messages
Non-repudiation of Content Originated	Originate EDIM
Non-repudiation of Content Received	Originate EDIN and Internal Procedures
Non-repudiation of Content Received Request	Originate EDIN and Internal Procedures
Non-repudiation of EDI Notification	Originate EDIN and Internal Procedures
Non-repudiation of EDI Notification Request	EDI Notification Requests
Obsoleting Indication	Obsoleted EDIMs
Originator Indication	Originator
Proof of Content Received	Originate EDIN and Internal Procedures
Proof of Content Received Request	Originate EDIN and Internal Procedures
Proof of EDI Notification	Originate EDIN and Internal Procedures
Proof of EDI Notification Request	EDI Notification Requests
Recipient Indication	Recipients
Related Message(s)	Related Messages
Services Indication	Heading Extensions
Store EDI Message Auto-forward	Auto Action Types
Typed Body	EDI Messages

ANNEX M

(to Recommendation X.435)

Realization of an EDIMG User in the Directory

(This annex does not form an integral part of this Recommendation)

An EDIMG User object class that a Directory administrator can realize contains a set of characteristics that define its application, communication mechanism, depending entity, and naming. The following text describes how such an EDIMG User object class, for use with EDI messaging, can be realized from the generic EDI User object class and suggests a manner in which it can be defined.

This need can be rationalized from the following observations:

a) The description of the EDI User object class in Annex J of this Recommendation is that of a generic EDI user. That is, a description that does not presuppose a notion of a specific communication mechanism such as MHS. EDI users may desire to use other communication mechanisms.

b) The definition of the MHS User object class in Recommendation X.402 is of a generic MHS User. It does not presuppose that a MHS User is associated with any particular kind of "named" entity, such as country, or organization. Also, its definition does not limit the MHS User to the Interpersonal Messaging Service.

c) The selected object classes in Recommendation X.521 define the characteristics for a set of "independent" entities, such as country and organization, and their name forms. These entities are generic in the sense that they are not bound to any particular kind of user application.

d) Recommendation X.521, Annex B, suggests a set of relationships among these entities. These relationships form the DIT structure, and thus the naming of the entities. As in point b above, the notion of an application or how applications are used in a communication mechanism is open ended.

e) The Directory recommendations do not prescribe a "binding" mechanism that will allow the formation of composite objects from generic objects.

To realize a Directory entry for an EDIMG user requires that a new unregistered object class be defined. This new object class forms a composite of the characteristics from each desired generic object class, for example, by combining the EDI User object class and MHS User object class into a new unregistered object class. In ASN.1 this may be expressed as:

```
edimg-user OBJECT CLASS ::= SUBCLASS OF edi-user, mhs-user
```

Note — An Unregistered Object Class is discussed in § 9.4.1 of Recommendation X.501, as an object class without an assigned object identifier. It is intended for local use as a means of conveniently adding new attribute types to a pre-defined superclass.

In this example, the edimg-user is a type identifier specified by the defining Directory Administration. Additionally, the Administration may include private attributes by adding the MUST CONTAIN and MAY CONTAIN statements to the unregistered object class definition.

In addition to the definition of the content of Directory entries by use of the object class notation, a naming policy for these entries is also required. For example, using the approach of Annex B of Recommendation X.521 it may be specified that for entries of the EDI User object class, the EDI Name attribute is used for naming; entries of this object class may be immediately subordinate to entries of for example, Organization object class or Organizational Unit object class.

To provide an alternative name for an EDIMG user requires that another unregistered object class be defined. This new object class forms a composite of the characteristics from the alias object class and the desired EDI user naming attribute. In ASN.1, this may be expressed as:

edimg-user-alias OBJECT CLASS ::= SUBCLASS OF alias MUST CONTAIN {edi-name}

The alias may contain only naming attributes. Its allowed relationships within the DIT shall be specified, as described above, for the naming policy of the unregistered EDIMG User object class.