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TELEMATIC SERVICES

TERMINAL EQUIPMENTS AND PROTOCOLS
FOR TELEMATIC SERVICES

INFORMATION TECHNOLOGY –

OPEN DOCUMENT ARCHITECTURE (ODA) AND INTERCHANGE FORMAT:

OPEN DOCUMENT INTERCHANGE FORMAT

ITU-T Recommendation T.415

(Previously "CCITT Recommendation")

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. Some 179 member countries, 84 telecom operating entities, 145 scientific and industrial organizations and 38 international organizations participate in ITU-T which is the body which sets world telecommunications standards (Recommendations).

The approval of Recommendations by the Members of ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, 1993). In addition, the World Telecommunication Standardization Conference (WTSC), which meets every four years, approves Recommendations submitted to it and establishes the study programme for the following period.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC. The text of ITU-T Recommendation T.415 was approved by the WTSC (Helsinki, March 1-12, 1993). The identical text is also published as ISO/IEC International Standard 8613-5.

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NOTES

1   As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exists as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similary, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

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

CONTENTS

INTRODUCTION

This ITU-T Recommendation | International Standard was prepared as a joint publication by CCITT Study Group VIII and ISO/IEC Joint Technical Committee 1.

At present, ITU-T Rec. T.410 Series | ISO/IEC 8613 consists of:

– Introduction and general principles;

– Document structures;

– Document profile;

– Open document interchange format;

– Character content architectures;

– Raster graphics content architectures;

– Geometric graphics content architectures;

– Formal specification of the Open Document Architecture (FODA).

(The formal specification is applicable to ISO/IEC 8613 only.)

Further Recommendations | International Standards may be added to this set of Recommendations | International Standards.

Development of this set of Recommendations | International Standards was originally in parallel with the ECMA-101 standard: *Open Document Architecture*.

This set of Recommendations | International Standards is a new edition of the CCITT T.410 Series of Recommendations (1988) and ISO 8613:1989.

Significant technical changes are the inclusion of the following amendments as agreed by CCITT and ISO/IEC:

– Alternative Representation;

– Annex on use of MHS/MOTIS;

– Colour;

– Conformance Testing annex;

– Document Application Profile Proforma and Notation;

– Security;

– Streams;

– Styles;

– Tiled Raster Graphics.

In addition, a number of technical corrigenda have been applied.

This Recommendation | International Standard contains seven annexes:

– Annex A (non-integral): Coded representation;

– Annex B (non-integral): Application class tag assignments;

– Annex C (non-integral): Summary of object identifiers;

– Annex D (non-integral): Examples;

– Annex E (integral): Open Document Language (ODL) (this annex is applicable to ISO/IEC 8613-5 only);

– Annex F (non-integral): Examples of Open Document Language representations (this annex is applicable to ISO/IEC 8613-5 only);

– Annex G (non-integral): Use of the Distinguished or Canonical Encoding Type.

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY –
OPEN DOCUMENT ARCHITECTURE (ODA) AND INTERCHANGE FORMAT:
OPEN DOCUMENT INTERCHANGE FORMAT

1 Scope

The purpose of ITU-T Rec. T.410 Series | ISO/IEC 8613 is to facilitate the interchange of documents.

In the context of these Recommendations | International Standards, documents are considered to be items such as memoranda, letters, invoices, forms and reports, which may include pictures and tabular material. The content elements used within the documents may include graphic characters, raster graphics elements and geometric graphics elements, all potentially within one document.

NOTE – These Recommendations | International Standards are designed to allow for extensions, including hypermedia features, spreadsheets and additional types of content such as audio and video.

In addition to the content types defined in these Recommendations | International Standards, ODA also provides for arbitrary content types to be included in documents.

These Recommendations | International Standards apply to the interchange of documents by means of data communications or the exchange of storage media.

These Recommendations | International Standards provide for the interchange of documents for either or both of the following purposes:

–   to allow presentation as intended by the originator;

–   to allow processing, such as editing and reformatting.

The composition of a document in interchange can take several forms:

–   formatted form, allowing presentation of the document;

–   processable form, allowing processing of the document;

–   formatted processable form, allowing both presentation and processing of the document.

These Recommendations | International Standards also provide for the interchange of ODA information structures used for the processing of interchanged documents.

This Recommendation | International Standard defines

–   the format of the data stream used to interchange documents structured in accordance with ITU-T Rec. T.412 | ISO/IEC 8613-2;

–   the representation of the constituents which may appear in an interchanged document.

NOTES

1   This ITU-T Recommendation | International Standard does not specify the coded representation of content elements.

2   Data formats for presentation attributes and coding attributes are defined in other Recommendations | International Standards in ITU-T Rec. T.410 Series | ISO/IEC 8613.

2 Normative references

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

2.1 Identical Recommendations | International Standards

- ITU-T Recommendation T.411 (1993) | ISO/IEC 8613-1:1994, *Information technology – Open Document Architecture (ODA) and Interchange Format: Introduction and general principles*.
- ITU-T Recommendation T.412 (1993) | ISO/IEC 8613-2:1994, *Information technology – Open Document Architecture (ODA) and Interchange Format: Document structures*.
- ITU-T Recommendation T.414 (1993) | ISO/IEC 8613-4:1994, *Information technology – Open Document Architecture (ODA) and Interchange Format: Document profile*.
- ITU-T Recommendation T.416 (1993) | ISO/IEC 8613-6:1994, *Information technology – Open Document Architecture (ODA) and Interchange Format: Character content architectures*.
- ITU-T Recommendation T.417 (1993) | ISO/IEC 8613-7:1994, *Information technology – Open Document Architecture (ODA) and Interchange Format: Raster graphics content architectures*.
- ITU-T Recommendation T.418 (1993) | ISO/IEC 8613-8:1994, *Information technology – Open Document Architecture (ODA) and Interchange Format: Geometric graphics content architectures*.
- ITU-T Recommendation X.209-3[1] | ISO/IEC 8825-3:...[1], *Information technology – Open Systems Interconnection – Specification of ASN.1 Encoding Rules: Distinguished and Canonical encoding rules*.
- ITU-T Recommendation X.509 (1993) | ISO/IEC 9594-8:1994, *The Directory – Authentication framework*.

2.2 Paired Recommendations | International Standards equivalent in technical content

- CCITT Recommendation X.208 (1988), *Specification of Abstract Syntax Notation One (ASN.1)*.

  ISO/IEC 8824:1990, *Information technology – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1)*.
- CCITT Recommendation X.209 (1988), *Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)*.

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

2.3 Additional references

- ISO 2022:1986, *Information processing – ISO 7-bit and 8-bit coded character sets – Code extension techniques*.
- ISO 8601:1988, *Data elements and interchange formats – Information interchange – Representation of dates and times*.
- ISO/IEC 8613-10:1991, *Information technology – Office Document Architecture (ODA) and Interchange Format – Part 10: Formal specifications*.
- ISO 8879:1986, *Information processing – Text and office systems – Standard Generalized Markup Language (SGML)*.
- ISO 9069:1988, *Information processing – SGML support facilities – SGML Document Interchange Format (SDIF)*.
- ISO/IEC 9541-2:1991, *Information technology – Font information interchange – Part 2: Interchange format*.

3 Definitions

For the purposes of this Recommendation | International Standard, the definitions given in ITU-T Rec. T.411 | ISO/IEC 8613-1 apply.

In addition, the definitions of CCITT Rec. X.208 | ISO/IEC 8824 and CCITT Rec. X.209 | ISO/IEC 8825 apply to this Recommendation | International Standard.

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[1] Presently at the stage of draft.

4   Abbreviations

For the purposes of this Specification, the abbreviations given in ITU-T Rec. T.411 | ISO/IEC 8613-1 apply.

For the purposes of this Specification, the following additional abbreviations apply:

DTD   Document type definition

EOC   End of contents

GI   SGML generic identifier

IA5   International Alphabet no. 5

ID   SGML unique identifier

LIT   Literal start or end

LITA   Literal start or end (alternative)

LPD   Link process definition

OSI   Open Systems Interconnection

ULA   Upper Layer Applications

UTC   Coordinated Universal Time

5   Conventions

For the purpose of this Specification, the conventions given in ITU-T Rec. T.411 | ISO/IEC 8613-1 apply.

6   Document representations

A document structured in accordance with ITU-T Rec. T.410 Series | ISO/IEC 8613 is represented for interchange by either the Open Document Interchange Format (ODIF), or the Open Document Language (ODL) in conjunction with the SGML Document Interchange Format (SDIF). The ODIF and ODL/SDIF representations are technically equivalent; a document can be transformed from one to the other without loss of semantic information about the document constituents and attributes.

The use of ODL and SDIF is applicable to ISO/IEC 8613 only.

NOTE – Both data structure (ODIF) and language (ODL) representations have been standardized in order to meet the document representation requirements of distinct application environments. ODIF, being a data structure specified using ASN.1, is particularly intended for use in an OSI environment. ODL is particularly appropriate for systems that share information through marked-up text files, especially where human users can access the markup directly.

6.1   ODIF

ODIF is an abstract data syntax in which the constituents and attributes of the document are represented by a hierarchy of data structures and data items, specified using the abstract syntax notation ASN.1 defined in CCITT Rec. X.208 | ISO/IEC 8824.

The coded representation of each data structure or data item is obtained by applying a set of encoding rules.

ODIF is specified in clause 7.

NOTE – ASN.1 is a formal description method that allows data types relevant to an application to be specified in terms of other data types, including basic data types such as "integer" and "octet string" which are defined in CCITT Rec. X.208 | ISO/IEC 8824 itself. Basic encoding rules for ASN.1 are defined in CCITT Rec. X.209 | ISO/IEC 8825 and are summarized in Annex A.

6.2   ODL and SDIF

The use of ODL and SDIF is applicable to ISO/IEC 8613 only.

ODL is a language in which the constituents and attributes of the document are identified by descriptive tags, and are grouped into one or more storage entities (e.g. files) as the user may require.

For interchange, each ODL entity is represented as a single data structure or data item, specified using ASN.1, in a data stream constructed according to the SGML Document Interchange Format defined in ISO 9069.

ODL is specified in Annex E.

NOTE – ODL is an SGML application conforming to ISO 8879.

7   Open Document Interchange Format (ODIF)

7.1   General description

A document structured in accordance with ITU-T Rec. T.410 Series | ISO/IEC 8613 is represented by a data stream consisting of one or more data structures of the following types:

–   document profile descriptor;

–   layout object descriptor;

–   layout object class descriptor;

–   logical object descriptor;

–   logical object class descriptor;

–   presentation style descriptor;

–   layout style descriptor;

–   text unit;

–   sealed document profile descriptor;

–   enciphered document profile descriptor;

–   pre-enciphered document body part descriptor;

–   post-enciphered document body part descriptor.

These data structures are called *interchange data elements*. Within a data stream, the interchange data elements are ordered in accordance with certain rules which are specified below. This Specification defines two such sets of rules; they are called *interchange format class A* and *interchange format class B*.

Which of these sets of rules applies to a given data stream is indicated in the document profile descriptor. In all cases, a data stream contains one and only one document profile descriptor which is always the first interchange data element in the data stream. The document profile descriptor may be the only data structure in the data stream.

When an ODIF data stream is used as part of an ASN.1 external data type, the abstract syntax shall be formed by an ASN.1 **SEQUENCE OF** type referencing the **Interchange-Data-Element** type; the encoding of the data value shall consist of an integral number of octets, formed by applying the ASN.1 basic encoding rules; and the value of the associated ASN.1 object identifier shall be **{ 2 8 0 0 }**.

NOTE – The manner of incorporating the interchange data elements, or the external data type, in an application protocol or the manner of mapping them on service data units (in an OSI environment) is not defined by this Specification.

7.2   Interchange format class A

According to interchange format class A, a data stream consists of one document profile descriptor and, optionally, one or more interchange data elements of the following types:

–   layout object descriptor;

–   layout object class descriptor;

–   logical object descriptor;

–   logical object class descriptor;

–   presentation style descriptor;

–   layout style descriptor;

–   text unit;

–   sealed document profile descriptor;

–   enciphered document profile descriptor;

–   pre-enciphered document body part descriptor;

–   post-enciphered document body part descriptor.

The order of the interchange data elements is as follows:

a)   document profile descriptor;

b)   layout object class descriptors;

c)   logical object class descriptors;

d)   text units representing generic content portions;

e)   presentation style descriptors;

f)   layout style descriptors;

g)   layout object descriptors;

h)   logical object descriptors;

i)   text units representing specific content portions;

j)   sealed document profile descriptors;

k)   enciphered document profile descriptors;

l)   pre-enciphered document body part descriptors;

m)   post-enciphered document body part descriptors.

Within each of the groups of layout object descriptors and logical object descriptors, the order of the descriptors is equal to the sequential order defined in ITU-T Rec. T.412 | ISO/IEC 8613-2.

If the data stream contains layout object descriptors, the text units representing specific content portions are ordered according to the sequential layout order; otherwise, they are ordered according to the sequential logical order.

Within each of the other groups of interchange data elements, the order is arbitrary.

For basic objects for which alternative descriptions have been specified there is one descriptor representing the primary description and one descriptor for each alternative description. In the data stream, the descriptors for alternative descriptions of basic object descriptions follow immediately after the descriptors for their primary description, in the order of decreasing preference. The text units representing the content portions associated to alternative subtrees follow immediately after the text units representing the content portions associated to the primary subtree, in the order of decreasing preference.

7.3   Interchange format class B

According to interchange format class B, a data stream consists of one document profile descriptor and, optionally, one or more interchange data elements of the following types:

–   layout object descriptor;

–   layout object class descriptor;

–   presentation style descriptor;

–   text unit;

–   sealed document profile descriptor;

–   enciphered document profile descriptor;

–   post-enciphered document body part descriptor.

Interchange format class B can be used only to represent documents that do not contain any specific or generic logical structure, i.e. documents that conform to the formatted document architecture class.

NOTE – Interchange format class B is provided only for use with the document application profile for the interchange of Group 4 facsimile documents as specified in CCITT Rec. T.503.

The order of the interchange data elements is as follows:

a)   document profile descriptor;

b)   layout object class descriptors and associated text units;

c)   presentation style descriptors;

d)   layout object descriptors and associated text units;

e)   sealed document profile descriptors;

f)   enciphered document profile descriptors;

g)   post-enciphered document body part descriptors.

Within the group of layout object class descriptors and associated text units, the order is such that a group of descriptors that have identical identifiers, except for the last number in each identifier, follow each other in the data stream without any other descriptor between them. However, each descriptor of an object class for a basic layout object is followed immediately by the associated text units.

Within the group of layout object descriptors and associated text units, the order of the descriptors is equal to the sequential order defined in ITU-T Rec. T.412 | ISO/IEC 8613-2. However, each descriptor of a basic layout object is followed immediately by the associated text units.

Within the group of presentation style descriptors, the order is arbitrary.

7.4 Descriptors and text units

A document profile descriptor, layout object descriptor, layout object class descriptor, logical object descriptor, logical object class descriptor, presentation style descriptor, layout style descriptor, sealed document profile descriptor, enciphered document profile descriptor, pre-enciphered document body part descriptor or post-enciphered document body part descriptor consists of simple and composite data items representing the attributes of the constituent concerned.

The document profile, each object class, each style, each object and each protected part is represented by one descriptor.

A text unit consists of two parts:

  a)   an attribute field, i.e. a data structure consisting of simple and composite data items representing the attributes of the content portion concerned;

  b)   an information field, i.e. a data structure that is either a data item or a set of data items representing the content elements making up the content portion concerned.

Each content portion is represented by one text unit.

The data formats of the interchange data elements are specified in 7.6 to 7.15, using the abstract syntax notation ASN.1 defined in CCITT Rec. X.208 | ISO/IEC 8824.

NOTE – Subclauses 7.6 to 7.15 by themselves do not completely define the data stream format; additional rules are specified in 7.1 to 7.5 of this Specification and in other Specifications in ITU-T Rec. T.410 Series | ISO/IEC 8613. For example, the keyword **OPTIONAL** merely indicates that a particular data structure or data item is not part of every instance of the containing data structure; the conditions controlling the presence or absence of the data structure or data item are specified in ITU-T Rec. T.412 or T.414 | ISO/IEC 8613-2 or 8613-4.

7.5 ASN.1 encoding and cryptographic techniques

7.5.1 Enciphered information

The parts of the document body or the parts of the document profile which are the output of an encipherment process will form a new constituent of the document. It consists of an identifier and the enciphered information. The latter is of the ASN.1 **OCTET STRING** type, the value of which will remain unchanged in any transfer.

7.5.2 Sealed information

The ODA security attributes and ODA document parts are defined in ASN.1. To ensure a unique encoding of ASN.1, the ASN.1 Distinguished or Canonical Encoding Rules are used. These rules are defined in ITU-T Rec. X.209-3 | ISO/IEC 8825-3, and information on how they can be used is found in Annex G. The ASN.1 Distinguished and Canonical Encoding Rules specify a set of restrictions on the ASN.1 Basic Encoding Rules, which provide a unique mapping between ASN.1 and its representation. This is required from a cryptographical point of view.

The main difference between the Distinguished and the Canonical Encoding Rules is that the former use definite length encoding, while the latter use indefinite length. The Distinguished Encoding Rules are more suitable if the encoded value is small enough to fit into the available memory and there is a need to skip rapidly over some nested values. The Canonical Encoding Rules are more suitable if there is a need to encode values that are so large that they cannot readily fit into the available memory or it is necessary to encode and transmit part of a value before the entire value is available.

The parts of the document profile and the parts of the document body subject to sealing will remain unchanged after the sealing process. The ASN.1 Distinguished and Canonical Encoding Rules will assure that the same encoding of the information can be established by the recipient as that used by the originator when sealing. This is necessary in order to obtain identical fingerprints of the information, the means by which one associates the content with the seal.

The seal is composed of a set of data. Three basic steps are performed to generate this seal:

  a)   The chosen information (encoded using the ASN.1 Distinguished or Canonical Encoding Rules, according to the document profile attribute "sealed information encoding") is input to a hashing process which generates a fingerprint, the encoded form of the fingerprint being an **OCTET STRING**.

  b)   The fingerprint together with additional optional information is called **Sealed-Information**. The optional parameters are the date and time of day, in accordance with ISO 8601, the name and the location of the creator of the seal. This is (again encoded using the ASN.1 Distinguished or Canonical Encoding Rules,

according to the document profile attribute "sealed information encoding") input to a cryptographic process which generates the seal, the encoded form of the seal being an **OCTET STRING**.

c) Information on the seal method is provided such that the seal can be checked. This is specified in the **Seal-Method** type and consists of information on the generation of the fingerprint as well as information on how to decipher the seal.

The order of the constituents is the same as the one specified by the interchange format class.

When the order of the constituents is not completely specified by the interchange format class, the following rules apply:

– object classes are to be sealed in the same order as they are specified in the parameter "sealed constituents";

– for interchange format class A, the common content portions are to be sealed in the same order as the corresponding object classes;

– presentation styles are to be sealed in the same order as they are specified in the parameter "sealed constituents";

– layout styles are to be sealed in the same order as they are specified in the parameter "sealed constituents".

7.6   Interchange data elements

Interchange–Data–Elements { 2 8 1 5 5 }

DEFINITIONS   ::= BEGIN

EXPORTS Interchange-Data-Element;

```
IMPORTS  Document-Profile-Descriptor
         FROM Document-Profile-Descriptor                                  -- see 7.7
         Layout-Class-Descriptor, Layout-Object-Descriptor
         FROM Layout-Descriptors                                           -- see 7.9
         Logical-Class-Descriptor, Logical-Object-Descriptor
         FROM Logical-Descriptors                                          -- see 7.10
         Presentation-Style-Descriptor, Layout-Style-Descriptor
         FROM Style-Descriptors                                            -- see 7.11
         Text-Unit
         FROM Text-Units                                                   -- see 7.13
         Sealed-Doc-Prof-Descriptor, Enciphered-Doc-Prof-Descriptor,
         Preenciphered-Bodypart-Descriptor, Postenciphered-Bodypart-Descriptor
         FROM Protected-Part-Descriptors;                                  -- see 7.15
```

```
Interchange-Data-Element              ::=  CHOICE {
   document-profile                       [0] IMPLICIT Document-Profile-Descriptor,
   layout-object-class                    [1] IMPLICIT Layout-Class-Descriptor,
   layout-object                          [2] IMPLICIT Layout-Object-Descriptor,
   content-portion                        [3] IMPLICIT Text-Unit,
   logical-object-class                   [5] IMPLICIT Logical-Class-Descriptor,
   logical-object                         [6] IMPLICIT Logical-Object-Descriptor,
   presentation-style                     [7] IMPLICIT Presentation-Style-Descriptor,
   layout-style                           [8] IMPLICIT Layout-Style-Descriptor,
   sealed-doc-prof-descriptor             [9] IMPLICIT Sealed-Doc-Prof-Descriptor,
   enciphered-doc-prof-descriptor         [10] IMPLICIT Enciphered-Doc-Prof-Descriptor,
   preenciphered-bodypart-descriptor      [11] IMPLICIT Preenciphered-Bodypart-Descriptor,
   postenciphered-bodypart-descriptor     [12] IMPLICIT Postenciphered-Bodypart-Descriptor }

                                      END
```

7.7   Document profile descriptor

Document-Profile-Descriptor { 2 8 1 5 6 }

DEFINITIONS   ::= BEGIN

EXPORTS Document-Profile-Descriptor, Character-Data;

```
IMPORTS  Resource-Name, Object-or-Class-Identifier, Protected-Part-Identifier, Style-Identifier
         FROM Identifiers-and-Expressions                                 -- see 7.8
```

Measure-Pair, Transparency, Colour, Dimension-Pair, One-Of-Four-Angles,
Border, Medium-Type, Comment-String,
Content-Background-Colour, Content-Foreground-Colour
FROM Layout-Descriptors   *-- see 7.9*
Protection
FROM Logical-Descriptors   *-- see 7.10*
Content-Architecture-Class, Content-Type, Block-Alignment, Fill-Order
FROM Style-Descriptors   *-- see 7.11*
Type-Of-Coding
FROM Text-Units   *-- see 7.13*
Colour-Characteristics, Colour-Spaces-List, Colour-Expression, Colour-Table
FROM Colour-Attributes   *-- see 7.14*
Character-Content-Defaults, Char-Presentation-Feature,
Character-Coding-Attribute
FROM Character-Profile-Attributes { 2 8 1 6 4 }   *-- see ITU-T Rec. T.416 | ISO/IEC 8613-6*
Raster-Gr-Content-Defaults, Ra-Gr-Presentation-Feature,
Ra-Gr-Coding-Attribute
FROM Raster-Gr-Profile-Attributes { 2 8 1 7 4 }   *-- see ITU-T Rec. T.417 | ISO/IEC 8613-7*
Geo-Gr-Content-Defaults, Geo-Gr-Presentation-Feature,
Geo-Gr-Coding-Attribute
FROM Geo-Gr-Profile-Attributes { 2 8 1 8 4 }   *-- see ITU-T Rec. T.418 | ISO/IEC 8613-8*
Font-Attribute-Set
FROM ISO-STANDARD-9541-FONT-ATTRIBUTE-SET { 1 0 9541 2 2 };   *-- see ISO/IEC 9541-2*

Document-Profile-Descriptor   ::= SET {
  generic-layout-structure   [0] IMPLICIT NumericString OPTIONAL,
  specific-layout-structure   [1] IMPLICIT NumericString OPTIONAL,
  generic-logical-structure   [4] IMPLICIT NumericString OPTIONAL,
  specific-logical-structure   [5] IMPLICIT NumericString OPTIONAL,
  presentation-styles   [6] IMPLICIT NumericString OPTIONAL,
  layout-styles   [7] IMPLICIT NumericString OPTIONAL,
  sealed-profiles   [12] IMPLICIT NumericString OPTIONAL,
  enciphered-profiles   [13] IMPLICIT NumericString OPTIONAL,
  preenciphered-bodyparts   [14] IMPLICIT NumericString OPTIONAL,
  postenciphered-bodyparts   [15] IMPLICIT NumericString OPTIONAL,

  -- for the generic structures,
  -- 'partial-generator-set' is represented by "0", 'complete-generator–set'
  -- is represented by "1", 'factor–set' is represented by "2";
  -- for the other cases, the numeric string has the value 'present'
  -- represented by "1"

  external-document–class   [9] Document-Reference OPTIONAL,
  resource-document   [10] Document-Reference OPTIONAL,
  resources   [11] IMPLICIT SET OF SET {
    resource-identifier   Resource-Name,
    object-class-identifier   Object-or-Class-Identifier } OPTIONAL,
  document-characteristics   [2] IMPLICIT Document-Characteristics,
  document-management-attributes   [3] IMPLICIT Document-Management-Attributes OPTIONAL,
  document-security-attributes   [16] IMPLICIT Document-Security-Attributes OPTIONAL }

Document-Characteristics   ::= SET {
  document-application-profile   CHOICE {
                                             [0] IMPLICIT INTEGER {
                                               group-4-facsimile (2) },
                                             [4] IMPLICIT OBJECT IDENTIFIER } OPTIONAL,
  doc-appl-profile-defaults   [10] IMPLICIT Doc-Appl-Profile-Defaults OPTIONAL,
  document-architecture-class   [1] IMPLICIT INTEGER {
                                             formatted (0),
                                             processable (1),
                                             formatted-processable (2) },
  content-architecture-classes   [5] IMPLICIT SET OF OBJECT IDENTIFIER,
  interchange-format-class   [6] IMPLICIT INTEGER {
                                             if–a (0),
                                             if–b (1) },

```
    oda-version                               [8]  IMPLICIT SEQUENCE {
      standard-or-recommendation                   Character-Data,
      publication-date                             Date-and-Time },
    alternative-feature-sets                  [11] IMPLICIT SET OF SET OF OBJECT IDENTIFIER OPTIONAL,
    non-basic-doc-characteristics             [2]  IMPLICIT Non-Basic-Doc-Characteristics OPTIONAL,
    non-basic-struc-characteristics           [3]  IMPLICIT Non-Basic-Struc-Characteristics OPTIONAL,
    additional-doc-characteristics            [9]  IMPLICIT Additional-Doc-Characteristics OPTIONAL }

Doc-Appl-Profile-Defaults               ::= SET {
    document-architecture-defaults            [0]  IMPLICIT Document-Architecture-Defaults OPTIONAL,
    character-content-defaults                [1]  IMPLICIT Character-Content-Defaults OPTIONAL,
    raster-gr-content-defaults                [2]  IMPLICIT Raster-Gr-Content-Defaults OPTIONAL,
    geo-gr-content-defaults                   [3]  IMPLICIT Geo-Gr-Content-Defaults OPTIONAL,

       -- the following tags are reserved for additional types
       -- of content defaults:
          -- [4] videotex, for use in conjunction with CCITT Recommendations
          -- [5] audio
          -- [6] dynamic-graphics

    external-content-architecture-defaults    [7]  IMPLICIT SEQUENCE OF EXTERNAL OPTIONAL }

Document-Architecture-Defaults          ::= SET {
    content-architecture-class                CHOICE {
                                              [0]  IMPLICIT Content-Architecture-Class,
                                              [1]  IMPLICIT Content-Type } OPTIONAL,
    page-dimensions                           [2]  IMPLICIT Measure-Pair OPTIONAL,
    transparency                              [3]  IMPLICIT Transparency OPTIONAL,
    colour                                    [4]  IMPLICIT Colour OPTIONAL,
    colour-of-layout-object                   [11] Colour-Expression OPTIONAL,
    object-colour-table                       [12] IMPLICIT Colour-Table OPTIONAL,
    content-background-colour                 [13] Content-Background-Colour OPTIONAL,
    content-foreground-colour                 [14] Content-Foreground-Colour OPTIONAL,
    content-colour-table                      [15] IMPLICIT Colour-Table OPTIONAL,
    layout-path                               [5]  IMPLICIT One-Of-Four-Angles OPTIONAL,
    medium-type                               [6]  IMPLICIT Medium-Type OPTIONAL,
    block-alignment                           [7]  IMPLICIT Block-Alignment OPTIONAL,
    border                                    [8]  IMPLICIT Border OPTIONAL,
    page-position                             [9]  IMPLICIT Measure-Pair OPTIONAL,
    type-of-coding                            [10] Type-Of-Coding OPTIONAL }

Non-Basic-Doc-Characteristics           ::= SET {
    profile-character-sets                    [5]  IMPLICIT OCTET STRING OPTIONAL,
    comments-character-sets                   [1]  IMPLICIT OCTET STRING OPTIONAL,
    alternative-repr-char-sets                [6]  IMPLICIT OCTET STRING OPTIONAL,

       -- each of these octet strings represents a string of escape sequences

    page-dimensions                           [2]  IMPLICIT SET OF Dimension-Pair OPTIONAL,
    medium-types                              [8]  IMPLICIT SET OF Medium-Type OPTIONAL,
    layout-paths                              [21] IMPLICIT SET OF One-Of-Four-Angles OPTIONAL,
    transparencies                            [22] IMPLICIT SET OF Transparency OPTIONAL,
    protections                               [23] IMPLICIT SET OF Protection OPTIONAL,
    block-alignments                          [24] IMPLICIT SET OF Block-Alignment OPTIONAL,
    fill-orders                               [25] IMPLICIT SET OF Fill-Order OPTIONAL,
    colours                                   [26] IMPLICIT SET OF Colour OPTIONAL,
    colours-of-layout-object                  [30] IMPLICIT SET OF Colour-Expression OPTIONAL,
    object-colour-tables                      [31] IMPLICIT SET OF Colour-Table OPTIONAL,
    content-background-colours                [32] IMPLICIT SET OF Content-Background-Colour OPTIONAL,
    content-foreground-colours                [33] IMPLICIT SET OF Content-Foreground-Colour OPTIONAL,
    content-colour-tables                     [34] IMPLICIT SET OF Colour-Table OPTIONAL,
    borders                                   [27] IMPLICIT SET OF Border OPTIONAL,
    page-positions                            [28] IMPLICIT SET OF Measure-Pair OPTIONAL,
    types-of-coding                           [29] IMPLICIT SET OF Type-Of-Coding OPTIONAL,
    char-presentation-features                [9]  IMPLICIT SET OF Char-Presentation-Feature OPTIONAL,
    ra-gr-presentation-features               [4]  IMPLICIT SET OF Ra-Gr-Presentation-Feature OPTIONAL,
    geo-gr-presentation-features              [12] IMPLICIT SET OF Geo-Gr-Presentation-Feature OPTIONAL,
```

-- the following tags are reserved for additional types
-- of presentation features:
    -- [13] videotex, for use in conjunction with CCITT Recommendations
    -- [14] audio
    -- [15] dynamic-graphics

```
character-coding-attributes           [16] IMPLICIT SET OF Character-Coding-Attribute OPTIONAL,
ra-gr-coding-attributes                [3] IMPLICIT SET OF Ra-Gr-Coding-Attribute OPTIONAL,
geo-gr-coding-attributes              [17] IMPLICIT SET OF Geo-Gr-Coding-Attribute OPTIONAL,
```

-- the following tags are reserved for additional types
-- of coding attributes:
    -- [18] videotex, for use in conjunction with CCITT Recommendations
    -- [19] audio
    -- [20] dynamic-graphics

```
ext-non-basic-pres-features           [10] IMPLICIT SEQUENCE OF EXTERNAL OPTIONAL,
ext-non-basic-coding-attributes       [11] IMPLICIT SEQUENCE OF EXTERNAL OPTIONAL }

Non-Basic-Struc-Characteristics       ::= SET {
    number-of-objects-per-page            [0] IMPLICIT INTEGER OPTIONAL }

Additional-Doc-Characteristics        ::= SET {
    unit-scaling                          [3] IMPLICIT SEQUENCE { INTEGER,INTEGER } OPTIONAL,
    fonts-list                            [2] IMPLICIT Fonts-List OPTIONAL,
    colour-characteristics                [0] IMPLICIT Colour-Characteristics OPTIONAL,
    colour-spaces-list                    [1] IMPLICIT Colour-Spaces-List OPTIONAL }

Fonts-List                            ::= SET OF SET {
    font-identifier                           INTEGER,
    font-reference                            Font-Reference }

Font-Reference                        ::= SET {
    user-visible-name                     [0] IMPLICIT Comment-String OPTIONAL,
    user-readable-comment                 [1] IMPLICIT Comment-String OPTIONAL,
    reference-properties                  [2] IMPLICIT SET OF SET {
        precedence-number                     [0] IMPLICIT INTEGER OPTIONAL,
        properties                            [1] IMPLICIT Font-Attribute-Set,
        user-readable-comment                 [2] IMPLICIT Comment-String OPTIONAL } }

Document-Management-Attributes        ::= SET {
    document-description                  [7] IMPLICIT Document-Description OPTIONAL,
    dates-and-times                       [0] IMPLICIT Dates-and-Times OPTIONAL,
    originators                           [1] IMPLICIT Originators OPTIONAL,
    other-user-information                [2] IMPLICIT Other-User-Information OPTIONAL,
    external-references                   [3] IMPLICIT External-References OPTIONAL,
    local-file-references                 [4] IMPLICIT Local-File-References OPTIONAL,
    content-attributes                    [5] IMPLICIT Content-Attributes OPTIONAL,
    security-information                  [6] IMPLICIT Security-Information OPTIONAL }

Document-Description                  ::= SET {
    title                                 [0] IMPLICIT Character-Data OPTIONAL,
    subject                               [1] IMPLICIT Character-Data OPTIONAL,
    document-type                         [2] IMPLICIT Character-Data OPTIONAL,
    abstract                              [3] IMPLICIT Character-Data OPTIONAL,
    keywords                              [4] IMPLICIT SET OF Character-Data OPTIONAL,
    document-reference                    [5] Document-Reference OPTIONAL }
Character-Data                        ::= [APPLICATION 3] IMPLICIT OCTET STRING
```

-- string of characters from the sets designated by the attribute
-- "profile character sets", plus space, carriage return and line feed

```
Document-Reference                    ::= CHOICE {
    unique-reference                          OBJECT IDENTIFIER,
    descriptive-reference                     Character-Data }

Dates-and-Times                       ::= SET {
    document-date-and-time                [0] IMPLICIT Date-and-Time OPTIONAL,
    creation-date-and-time                [1] IMPLICIT Date-and-Time OPTIONAL,
```

```
      local-filing-date-and-time            [2] IMPLICIT SEQUENCE OF Date-and-Time OPTIONAL,
      expiry-date-and-time                  [3] IMPLICIT Date-and-Time OPTIONAL,
      start-date-and-time                   [4] IMPLICIT Date-and-Time OPTIONAL,
      purge-date-and-time                   [5] IMPLICIT Date-and-Time OPTIONAL,
      release-date-and-time                 [6] IMPLICIT Date-and-Time OPTIONAL,
      revision-history                      [7] IMPLICIT SEQUENCE OF SET {
         revision-date-and-time                [0] IMPLICIT Date-and-Time OPTIONAL,
         version-identifier                    [1] IMPLICIT Character-Data OPTIONAL,
         revisers                              [2] IMPLICIT SET OF SET {
            names                                 [0] IMPLICIT SET OF Personal-Name OPTIONAL,
            position                              [1] IMPLICIT Character-Data OPTIONAL,
            organization                          [2] IMPLICIT Character-Data OPTIONAL } OPTIONAL,
         version-reference                     [3] Document-Reference OPTIONAL,
         user-comments                         [4] IMPLICIT Character-Data OPTIONAL } OPTIONAL }


Date-and-Time                            ::= [APPLICATION 4] IMPLICIT PrintableString


      -- string of characters representing a date and, optionally, a time
      -- in accordance with ISO 8601


Originators                              ::= SET {
      organizations                         [0] IMPLICIT SET OF Character-Data OPTIONAL,
      preparers                             [1] IMPLICIT SEQUENCE OF SET {
         personal-name                         [0] IMPLICIT Personal-Name OPTIONAL,
         organization                          [1] IMPLICIT Character-Data OPTIONAL } OPTIONAL,
      owners                                [2] IMPLICIT SEQUENCE OF SET {
         personal-name                         [0] IMPLICIT Personal-Name OPTIONAL,
         organization                          [1] IMPLICIT Character-Data OPTIONAL } OPTIONAL,
      authors                               [3] IMPLICIT SEQUENCE OF SET {
         personal-name                         [0] IMPLICIT Personal-Name OPTIONAL,
         organization                          [1] IMPLICIT Character-Data OPTIONAL } OPTIONAL }


Personal-Name                            ::= [APPLICATION 6] IMPLICIT SET {
      surname                               [0] IMPLICIT Character-Data,
      givenname                             [1] IMPLICIT Character-Data OPTIONAL,
      initials                              [2] IMPLICIT Character-Data OPTIONAL,
      generation-qualifier                  [3] IMPLICIT Character-Data OPTIONAL }


Other-User-Information                   ::= SET {
      copyright                             [0] IMPLICIT SET OF SET {
         copyright-information                 [0] IMPLICIT SET OF Character-Data OPTIONAL,
         copyright-dates                       [1] IMPLICIT SET OF Date-and-Time OPTIONAL } OPTIONAL,
      status                                [1] IMPLICIT Character-Data OPTIONAL,
      user-specific-codes                   [2] IMPLICIT SET OF Character-Data OPTIONAL,
      distribution-list                     [3] IMPLICIT SEQUENCE OF SET {
         personal-name                         [0] IMPLICIT Personal-Name OPTIONAL,
         organization                          [1] IMPLICIT Character-Data OPTIONAL } OPTIONAL,
      additional-information                [5] ANY OPTIONAL }


External-References                      ::= SET {
      references-to-other-documents         [0] IMPLICIT SET OF Document-Reference OPTIONAL,
      superseded-documents                  [1] IMPLICIT SET OF Document-Reference OPTIONAL }
Local-File-References                    ::= SET OF SET {
      file-name                             [0] IMPLICIT Character-Data OPTIONAL,
      location                              [1] IMPLICIT Character-Data OPTIONAL,
      user-comments                         [2] IMPLICIT Character-Data OPTIONAL }


Content-Attributes                       ::= SET {
      document-size                         [1] IMPLICIT INTEGER OPTIONAL,
      number-of-pages                       [2] IMPLICIT INTEGER OPTIONAL,
      languages                             [4] IMPLICIT SET OF Character-Data OPTIONAL }


Security-Information                     ::= SET {
      authorization                         CHOICE {
         person                                [0] IMPLICIT Personal-Name,
         organization                          [4] IMPLICIT Character-Data } OPTIONAL,
      security-classification               [1] IMPLICIT Character-Data OPTIONAL,
```

```
    access-rights                          [2] IMPLICIT SET OF Character-Data OPTIONAL }

Document-Security-Attributes       ::= SET {
    sealed-info-encoding                   [7] IMPLICIT OBJECT IDENTIFIER OPTIONAL,
    oda-security-label                     [0] IMPLICIT Oda-Security-Label OPTIONAL,
    sealed-doc-profiles                    [1] IMPLICIT Sealed-Doc-Profiles OPTIONAL,
    presealed-doc-bodyparts                [2] IMPLICIT Sealed-Doc-Bodyparts OPTIONAL,
    postsealed-doc-bodyparts               [3] IMPLICIT Sealed-Doc-Bodyparts OPTIONAL,
    enciphered-doc-profiles                [4] IMPLICIT Protected-Doc-Parts OPTIONAL,
    preenciphered-doc-bodyparts            [5] IMPLICIT Protected-Doc-Parts OPTIONAL,
    postenciphered-doc-bodyparts           [6] IMPLICIT Protected-Doc-Parts OPTIONAL }

Oda-Security-Label                 ::= SEQUENCE {
    oda-label-text                         [0] IMPLICIT Character-Data OPTIONAL,
    oda-label-data                         [1] IMPLICIT OCTET STRING OPTIONAL }

Seal-Data                          ::= SEQUENCE {
    seal-method                            [0] IMPLICIT Seal-Method OPTIONAL,
    sealed-information                     [1] IMPLICIT Sealed-Information OPTIONAL,
    seal                                   [2] IMPLICIT OCTET STRING }

Seal-Method                        ::= SEQUENCE {
    fingerprint-method                     [0] IMPLICIT Method-Information OPTIONAL,
    fingerprint-key-information            [1] IMPLICIT Key-Information OPTIONAL,
    sealing-method                         [2] IMPLICIT Method-Information OPTIONAL,
    sealing-key-information                [3] IMPLICIT Key-Information OPTIONAL }

Sealed-Information                 ::= SEQUENCE {
    fingerprint                            [0] IMPLICIT OCTET STRING OPTIONAL,
    time                                   [1] IMPLICIT Date-and-Time OPTIONAL,
    sealing-orig-id                        [2] IMPLICIT Personal-Name OPTIONAL,
    location                               [3] IMPLICIT Location OPTIONAL }

Method-Information                 ::= SEQUENCE {
    unique-method-info                     [0] IMPLICIT OBJECT IDENTIFIER OPTIONAL,
    descriptive-method-info                [1] IMPLICIT Character-Data OPTIONAL }

Key-Information                    ::= SEQUENCE {
    method-information                     [0] IMPLICIT Method-Information OPTIONAL,
    additional-information                 [1] IMPLICIT Additional-Information OPTIONAL }

Additional-Information             ::= SEQUENCE {
    descriptive-information                [0] IMPLICIT Character-Data OPTIONAL,
    octet-string                           [1] IMPLICIT OCTET STRING OPTIONAL }

Location                           ::= SEQUENCE {
    unique-location                        [0] IMPLICIT OBJECT IDENTIFIER OPTIONAL,
    descriptive-location                   [1] IMPLICIT Character-Data OPTIONAL }

Sealed-Doc-Profiles                ::= SET OF SEQUENCE {
    sealed-doc-prof-descriptor-id          [0] IMPLICIT Protected-Part-Identifier,
    privileged-recipients                  [1] IMPLICIT SET OF Personal-Name OPTIONAL,
    doc-prof-seal                          [2] IMPLICIT Seal-Data }
Sealed-Doc-Bodyparts               ::= SET OF SEQUENCE {
    seal-id                                [0] IMPLICIT INTEGER,
    sealed-constituents                    [1] IMPLICIT Sealed-Constituents,
    privileged-recipients                  [2] IMPLICIT SET OF Personal-Name OPTIONAL,
    doc-bodypart-seal                      [3] IMPLICIT Seal-Data }

Sealed-Constituents                ::= SEQUENCE {
    object-class-identifiers               [0] IMPLICIT SEQUENCE OF Object-or-Class-Identifier
                                                                                    OPTIONAL,
    presentation-style-identifiers         [1] IMPLICIT SEQUENCE OF Style-Identifier OPTIONAL,
    layout-style-identifiers               [2] IMPLICIT SEQUENCE OF Style-Identifier OPTIONAL,
    object-identifiers                     [3] IMPLICIT SEQUENCE OF Object-or-Class-Identifier
                                                                                    OPTIONAL }
```

```
Protected-Doc-Parts                      ::=  SET OF SEQUENCE {
   protected-doc-part-id                      [0] IMPLICIT Protected-Part-Identifier,
   priv-recipients-info                       [1] IMPLICIT SET OF Priv-Recipients-Info }

Priv-Recipients-Info                     ::=  SEQUENCE {
   privileged-recipients                      [0] IMPLICIT SET OF Personal-Name OPTIONAL,
   encipherment-method-info                   [1] IMPLICIT Method-Information OPTIONAL,
   encipherment-key-info                      [2] IMPLICIT Key-Information OPTIONAL }

                                         END
```

7.8   Identifiers and expressions

Identifiers-and-Expressions { 2 8 1 5 7 }

DEFINITIONS   ::= BEGIN

EXPORTS Content-Portion-Identifier, Object-or-Class-Identifier,
**   Style-Identifier, Protected-Part-Identifier, Category-Name,**
**   Resource-Name, Binding-Name,**
**   Construction-Expression, Object-Id-Expression,**
**   Numeric-Expression, String-Expression;**


```
IMPORTS  Layout-Object-Type
         FROM Layout-Descriptors                                                     -- see 7.9
         Logical-Object-Type
         FROM Logical-Descriptors;                                                   -- see 7.10
```


Content-Portion-Identifier   ::= [APPLICATION 0] IMPLICIT PrintableString

   -- only digits and space are used in the present version
   -- of this Specification; other characters are reserved for extensions

Object-or-Class-Identifier   ::= [APPLICATION 1] IMPLICIT PrintableString

   -- only digits and space are used in the present version
   -- of this Specification; other characters are reserved for extensions;
   -- a 'null' value is represented by an empty string

Style-Identifier   ::= [APPLICATION 5] IMPLICIT PrintableString

   -- only digits and space are used in the present version
   -- of this Specification; other characters are reserved for extensions;
   -- a 'null' value is represented by an empty string

Protected-Part-Identifier   ::= [APPLICATION 7] IMPLICIT PrintableString

   -- only digits and space are used in the present version
   -- of this Specification; other characters are reserved for extensions;
   -- a 'null' value is represented by an empty string
Category-Name   ::= PrintableString

   -- a 'null' value is represented by an empty string

Resource-Name   ::= PrintableString

Binding-Name   ::= PrintableString


```
Construction-Expression             ::=  CHOICE {
   construction-type                      Construction-Type,
   single-term-construction               [3] Construction-Term }

Construction-Type                   ::=  CHOICE {
   sequence-construction                  [0] IMPLICIT Term-Sequence,
   aggregate-construction                 [1] IMPLICIT Term-Sequence,
```

```
    choice-construction                         [2] IMPLICIT Term-Sequence }

Term-Sequence                         ::=  SEQUENCE OF Construction-Term

Construction-Term                     ::=  CHOICE {
    required-construction-factor               [0] Construction-Factor,
    optional-construction-factor               [1] Construction-Factor,
    repetitive-construction-factor             [2] Construction-Factor,
    optional-repetitive-factor                 [3] Construction-Factor }

Construction-Factor                   ::=  CHOICE {
    object-class-identifier                    Object-or-Class-Identifier,
    construction-type                          Construction-Type }

Object-Id-Expression                  ::=  CHOICE {
    current-object-function                    [0] IMPLICIT NULL,
    preceding-object-function                  [1] Object-Id-Expression,
    superior-object-function                   [3] Object-Id-Expression,
    current-instance-function                  [4] Current-Instance-Function }

Numeric-Expression                    ::=  CHOICE {
    numeric-literal                            [0] IMPLICIT INTEGER,
    increment-application                      [1] Numeric-Expression,
    decrement-application                      [2] Numeric-Expression,
    ordinal-application                        [3] CHOICE {
        identifier                                 Object-or-Class-Identifier,
        expression                                 Object-Id-Expression },
    binding-reference                          [4] IMPLICIT Binding-Reference }

Binding-Reference                     ::=  SET {
    object-reference                           CHOICE {
        identifier                                 Object-or-Class-Identifier,
        expression                                 Binding-Selection-Function },
    binding-identifier                         Binding-Name }

Binding-Selection-Function            ::=  CHOICE {
    current-object-function                    [0] IMPLICIT NULL,
    preceding-function                         [1] Object-Id-Expression,
    superior-function                          [3] Object-Id-Expression,
    current-instance-function                  [4] Current-Instance-Function }

Current-Instance-Function             ::=  SEQUENCE {
    first-parameter                            CHOICE {
        identifier                                 [0] IMPLICIT Object-or-Class-Identifier,
        layout-object-type                         [1] IMPLICIT Layout-Object-Type,
        logical-object-type                        [2] IMPLICIT Logical-Object-Type },
    second-parameter                           CHOICE {
        identifier                                 Object-or-Class-Identifier,
        expression                                 Object-Id-Expression } }

String-Expression                     ::=  SEQUENCE OF Atomic-String-Expression
Atomic-String-Expression              ::=  CHOICE {
    string-literal                             [0] IMPLICIT OCTET STRING,
    binding-reference                          [2] IMPLICIT Binding-Reference,
    make-string-application                    [3] Numeric-Expression,
    upper-alpha-application                    [4] Numeric-Expression,
    lower-alpha-application                    [5] Numeric-Expression,
    upper-roman-application                    [6] Numeric-Expression,
    lower-roman-application                    [7] Numeric-Expression }

                                           END
```

7.9   Layout descriptors

Layout-Descriptors { 2 8 1 5 8 }

DEFINITIONS   **::= BEGIN**

EXPORTS Layout-Object-Descriptor, Layout-Class-Descriptor,
         Layout-Object-Type, Transparency, Comment-String,
         Binding-Pair, One-Of-Four-Angles, Measure-Pair, Dimension-Pair,
         Medium-Type, Colour, Border, Content-Background-Colour, Content-Foreground-Colour,
         Enciphered, Sealed;

IMPORTS Object-or-Class-Identifier, Style-Identifier, Protected-Part-Identifier,
         Category-Name, Resource-Name, Binding-Name,
         Construction-Expression, Object-Id-Expression,
         Numeric-Expression, String-Expression
         FROM Identifiers-and-Expressions   *-- see 7.8*
         Presentation-Attributes
         FROM Style-Descriptors   *-- see 7.11*
         Default-Value-Lists-Layout
         FROM Default-Value-Lists   *-- see 7.12*
         Colour-Expression, Colour-Table
         FROM Colour-Attributes;   *-- see 7.14*

```
Position-Spec                        ::=  SET {
  offset                                  [0] IMPLICIT SET {
    leading                                  [0] IMPLICIT INTEGER OPTIONAL,
    trailing                                 [1] IMPLICIT INTEGER OPTIONAL,
    left-hand                                [2] IMPLICIT INTEGER OPTIONAL,
    right-hand                               [3] IMPLICIT INTEGER OPTIONAL } OPTIONAL,
  separation                              [1] IMPLICIT SET {
    leading                                  [0] IMPLICIT INTEGER OPTIONAL,
    trailing                                 [1] IMPLICIT INTEGER OPTIONAL,
    centre                                   [2] IMPLICIT INTEGER OPTIONAL } OPTIONAL,
  alignment                               [2] IMPLICIT INTEGER {
                                             right-hand (0), centred (1),
                                             left-hand (2) } OPTIONAL,
  fill-order                              [3] IMPLICIT INTEGER {
                                             normal (0), reverse (1) } OPTIONAL }

Dimension-Pair                       ::=  SEQUENCE {
  horizontal                              CHOICE {
    fixed                                    [0]  IMPLICIT INTEGER,
    not-present                              [4]  IMPLICIT NULL },
  vertical                                CHOICE {
    fixed                                    [0]  IMPLICIT INTEGER,
    variable                                 [1]  IMPLICIT INTEGER,
    not-present                              [4]  IMPLICIT NULL } }
```

    -- the choice 'not-present' indicates that the parameter is not present

```
Dimension-Spec                       ::=  SEQUENCE {
  horizontal                              Dimension,
  vertical                                Dimension}
Dimension                            ::=  CHOICE {
  fixed                                   [0] IMPLICIT INTEGER,
  rule-a                                  [1] IMPLICIT SET {
    minimum                                  [0] IMPLICIT INTEGER OPTIONAL,
    maximum                                  [1] IMPLICIT INTEGER OPTIONAL },
  rule-b                                  [2] IMPLICIT SET {
    minimum                                  [0] IMPLICIT INTEGER OPTIONAL,
    maximum                                  [1] IMPLICIT INTEGER OPTIONAL },
  maximum-size                            [3] IMPLICIT NULL,
  not-present                             [4] IMPLICIT NULL }
```

    -- the choice 'not-present' indicates that the parameter is not present

```
Transparency                         ::=  INTEGER { transparent (0), opaque (1) }
```

```
Comment-String                    ::= OCTET STRING

    -- string of characters from the sets designated by
    -- the document profile attribute "comments character sets",
    -- plus code extension control functions,
    -- space, carriage return and line feed

Binding-Pair                      ::= SET {
  binding-identifier                  [0] IMPLICIT Binding-Name,
  binding-value                       CHOICE {
                                      [1] Object-Id-Expression,
                                      [2] Numeric-Expression,
                                      [3] String-Expression,
                                      [4] IMPLICIT Object-or-Class-Identifier,
                                      [5] IMPLICIT INTEGER,
                                      [6] IMPLICIT OCTET STRING } }

One-Of-Four-Angles                ::= INTEGER { d0 (0), d90 (1), d180 (2), d270 (3) }

Measure-Pair                      ::= SEQUENCE {
  horizontal                          CHOICE {
    fixed                             [0] IMPLICIT INTEGER,
    not-present                       [4] IMPLICIT NULL },
  vertical                            CHOICE {
    fixed                             [0] IMPLICIT INTEGER,
    not-present                       [4] IMPLICIT NULL } }

    -- the choice 'not-present' indicates that the parameter is not present

Medium-Type                       ::= SEQUENCE {
  nominal-page-size                   Measure-Pair OPTIONAL,
  side-of-sheet                       INTEGER { unspecified (0), recto (1), verso (2) } OPTIONAL,
  colour-of-medium                    [3] Colour-Of-Medium OPTIONAL }

Colour                            ::= INTEGER { colour-of-media (0), coloured (1) }

Border                            ::= SET {
  left-hand-edge                      [0] IMPLICIT Border-Edge OPTIONAL,
  right-hand-edge                     [1] IMPLICIT Border-Edge OPTIONAL,
  trailing-edge                       [2] IMPLICIT Border-Edge OPTIONAL,
  leading-edge                        [3] IMPLICIT Border-Edge OPTIONAL}

Border-Edge                       ::= SET {
  line-width                          [0] IMPLICIT INTEGER OPTIONAL,
  line-type                           [1] IMPLICIT INTEGER {
                                          invisible (0), solid (1),
                                          dashed (2), dot (3),
                                          dash-dot (4),
                                          dash-dot-dot (5)} OPTIONAL,
  freespace-width                     [2] IMPLICIT INTEGER OPTIONAL,
  border-line-colour                  [3] Border-Line-Colour OPTIONAL }

    -- a 'null' border edge is represented by an empty set
Colour-Of-Medium                  ::= CHOICE {
  unspecified-colour                  [3] IMPLICIT NULL,
  specified-colour                    Colour-Expression }

Border-Line-Colour                ::= CHOICE {
  implementation-defined              [3] IMPLICIT NULL,
  colour-expression                   Colour-Expression }

Content-Background-Colour         ::= CHOICE {
  content-background-transparency     [2] IMPLICIT NULL,
  colour-expression                   Colour-Expression }

Content-Foreground-Colour         ::= CHOICE {
  implementation-defined              [3] IMPLICIT NULL,
  content-foreground-transparency     [2] IMPLICIT NULL,
```

```
colour-expression                           Colour-Expression }

Enciphered                          ::= SEQUENCE {
  enciphered-subordinates               CHOICE {
    none-all                              [0] IMPLICIT INTEGER { none(0), all(1) },
    partial                               [1] IMPLICIT SEQUENCE OF NumericString },
  protected-part-id                     [2] IMPLICIT Protected-Part-Identifier OPTIONAL }

Sealed                              ::= SEQUENCE {
  sealed-status                         [0] IMPLICIT INTEGER { no(0), yes(1) },
  seal-ids                              [1] IMPLICIT SET OF INTEGER OPTIONAL }

Layout-Object-Descriptor            ::= SEQUENCE {
  object-type                           Layout-Object-Type OPTIONAL,
  descriptor-body                       Layout-Object-Descriptor-Body OPTIONAL}

Layout-Object-Type                  ::= INTEGER { document-layout-root (0),
                                        page-set (1), page (2), frame (3), block (4) }

Layout-Object-Descriptor-Body       ::= SET {
  object-identifier                     Object-or-Class-Identifier OPTIONAL,
  subordinates                          [0] IMPLICIT SEQUENCE OF NumericString OPTIONAL,
  content-portions                      [1] IMPLICIT SEQUENCE OF NumericString OPTIONAL,
  object-class                          [2] IMPLICIT Object-or-Class-Identifier OPTIONAL,
  position                              [3] IMPLICIT Measure-Pair OPTIONAL,
  dimensions                            [4] IMPLICIT Dimension-Pair OPTIONAL,
  transparency                          [5] IMPLICIT Transparency OPTIONAL,
  presentation-attributes               [6] IMPLICIT Presentation-Attributes OPTIONAL,
  default-value-lists                   [7] IMPLICIT Default-Value-Lists-Layout OPTIONAL,
  user-readable-comments                [8] IMPLICIT Comment-String OPTIONAL,
  bindings                              [9] IMPLICIT SET OF Binding-Pair OPTIONAL,
  layout-path                           [11] IMPLICIT One-Of-Four-Angles OPTIONAL,
  imaging-order                         [12] IMPLICIT SEQUENCE OF NumericString OPTIONAL,
  layout-stream-categories              [36] IMPLICIT SET OF Category-Name OPTIONAL,
  layout-stream-sub-categories          [37] IMPLICIT SET OF Category-Name OPTIONAL,
  permitted-categories                  [13] IMPLICIT SET OF Category-Name OPTIONAL,

        -- a 'null' value is represented by an empty set

  user-visible-name                     [14] IMPLICIT Comment-String OPTIONAL,
  page-position                         [15] IMPLICIT Measure-Pair OPTIONAL,
  medium-type                           [16] IMPLICIT Medium-Type OPTIONAL,
  presentation-style                    [17] IMPLICIT Style-Identifier OPTIONAL,
  balance                               [21] IMPLICIT SEQUENCE OF Object-or-Class-Identifier
                                                                              OPTIONAL,

        -- a 'null' value is represented by an empty sequence

  colour                                [22] IMPLICIT Colour OPTIONAL,
  colour-of-layout-object               [29] Colour-Expression OPTIONAL,
  object-colour-table                   [30] IMPLICIT Colour-Table OPTIONAL,
  content-background-colour             [31] Content-Background-Colour OPTIONAL,
  content-foreground-colour             [32] Content-Foreground-Colour OPTIONAL,
  content-colour-table                  [33] IMPLICIT Colour-Table OPTIONAL,
  border                                [23] IMPLICIT Border OPTIONAL,
  application-comments                  [25] IMPLICIT OCTET STRING OPTIONAL,
  primary                               [27] IMPLICIT Object-or-Class-Identifier OPTIONAL,
  alternative                           [28] IMPLICIT Object-or-Class-Identifier OPTIONAL,
  enciphered                            [34] IMPLICIT Enciphered OPTIONAL,
  sealed                                [35] IMPLICIT Sealed OPTIONAL }

Layout-Class-Descriptor             ::= SEQUENCE {
  object-type                           Layout-Object-Type,
  descriptor-body                       Layout-Class-Descriptor-Body }

Layout-Class-Descriptor-Body        ::= SET {
  object-class-identifier               Object-or-Class-Identifier,
  generator-for-subordinates            [0] Construction-Expression OPTIONAL,
```

```
content-portions                        [1] IMPLICIT SEQUENCE OF NumericString OPTIONAL,
position                                CHOICE {
   fixed-position                          [3] IMPLICIT Measure-Pair,
   variable-position                      [26] IMPLICIT Position-Spec } OPTIONAL,
dimensions                              [4] IMPLICIT Dimension-Spec OPTIONAL,
transparency                            [5] IMPLICIT Transparency OPTIONAL,
presentation-attributes                 [6] IMPLICIT Presentation-Attributes OPTIONAL,
default-value-lists                     [7] IMPLICIT Default-Value-Lists-Layout OPTIONAL,
user-readable-comments                  [8] IMPLICIT Comment-String OPTIONAL,
bindings                                [9] IMPLICIT SET OF Binding-Pair OPTIONAL,
content-generator                      [10] IMPLICIT String-Expression OPTIONAL,
layout-path                            [11] IMPLICIT One-Of-Four-Angles OPTIONAL,
layout-stream-categories               [36] IMPLICIT SET OF Category-Name OPTIONAL,
layout-stream-sub-categories           [37] IMPLICIT SET OF Category-Name OPTIONAL,
permitted-categories                   [13] IMPLICIT SET OF Category-Name OPTIONAL,
```

-- *a 'null' value is represented by an empty set*

```
user-visible-name                      [14] IMPLICIT Comment-String OPTIONAL,
page-position                          [15] IMPLICIT Measure-Pair OPTIONAL,
medium-type                            [16] IMPLICIT Medium-Type OPTIONAL,
presentation-style                     [17] IMPLICIT Style-Identifier OPTIONAL,
logical-source                         [18] IMPLICIT Object-or-Class-Identifier OPTIONAL,
balance                                [21] IMPLICIT SEQUENCE OF Object-or-Class-Identifier
                                                                              OPTIONAL,
```

-- *a 'null' value is represented by an empty sequence*

```
colour                                 [22] IMPLICIT Colour OPTIONAL,
colour-of-layout-object                [29] Colour-Expression OPTIONAL,
object-colour-table                    [30] IMPLICIT Colour-Table OPTIONAL,
content-background-colour              [31] Content-Background-Colour OPTIONAL,
content-foreground-colour              [32] Content-Foreground-Colour OPTIONAL,
content-colour-table                   [33] IMPLICIT Colour-Table OPTIONAL,
border                                 [23] IMPLICIT Border OPTIONAL,
resource                               [24] IMPLICIT Resource-Name OPTIONAL,
application-comments                   [25] IMPLICIT OCTET STRING OPTIONAL,
enciphered                             [34] IMPLICIT Enciphered OPTIONAL,
sealed                                 [35] IMPLICIT Sealed OPTIONAL }

                                       END
```

7.10   Logical descriptors

Logical-Descriptors { 2 8 1 5 9 }

DEFINITIONS   ::= BEGIN

```
EXPORTS Logical-Object-Descriptor, Logical-Class-Descriptor,
        Logical-Object-Type, Protection;
IMPORTS Object-or-Class-Identifier, Style-Identifier,
        Resource-Name, Construction-Expression, String-Expression
        FROM Identifiers-and-Expressions                          -- see 7.8
        Comment-String, Binding-Pair, Enciphered, Sealed
        FROM Layout-Descriptors                                   -- see 7.9
        Presentation-Attributes FROM Style-Descriptors            -- see 7.11
        Default-Value-Lists-Logical
        FROM Default-Value-Lists;                                 -- see 7.12


Logical-Object-Descriptor              ::= SEQUENCE {
   object-type                             Logical-Object-Type OPTIONAL,
   descriptor-body                         Logical-Object-Descriptor-Body OPTIONAL }

Logical-Object-Type                    ::= INTEGER {document-logical-root (0),
                                              composite-logical-object (1),
```

basic-logical-object (2) }

```
Logical-Object-Descriptor-Body          ::= SET {
   object-identifier                        Object-or-Class-Identifier OPTIONAL,
   subordinates                             [0] IMPLICIT SEQUENCE OF NumericString OPTIONAL,
   content-portions                         [1] IMPLICIT SEQUENCE OF NumericString OPTIONAL,
   object-class                             [2] IMPLICIT Object-or-Class-Identifier OPTIONAL,
   presentation-attributes                  [6] IMPLICIT Presentation-Attributes OPTIONAL,

      -- only for use for the attribute content-architecture-class;
      -- the content architecture specific attributes can only be referenced by
      -- use of presentation style

   default-value-lists                      [7] IMPLICIT Default-Value-Lists-Logical OPTIONAL,
   user-readable-comments                   [8] IMPLICIT Comment-String OPTIONAL,
   bindings                                 [9] IMPLICIT SET OF Binding-Pair OPTIONAL,
   content-generator                        [10] IMPLICIT String-Expression OPTIONAL,
   user-visible-name                        [14] IMPLICIT Comment-String OPTIONAL,
   presentation-style                       [17] IMPLICIT Style-Identifier OPTIONAL,
   layout-style                             [19] IMPLICIT Style-Identifier OPTIONAL,
   protection                               [20] IMPLICIT Protection OPTIONAL,
   application-comments                     [25] IMPLICIT OCTET STRING OPTIONAL,
   primary                                  [27] IMPLICIT Object-or-Class-Identifier OPTIONAL,
   alternative                              [28] IMPLICIT Object-or-Class-Identifier OPTIONAL,
   enciphered                               [34] IMPLICIT Enciphered OPTIONAL,
   sealed                                   [35] IMPLICIT Sealed OPTIONAL }

Logical-Class-Descriptor                 ::= SEQUENCE {
   object-type                              Logical-Object-Type,
   descriptor-body                          Logical-Class-Descriptor-Body }

Logical-Class-Descriptor-Body            ::= SET {
   object-class-identifier                  Object-or-Class-Identifier,
   generator-for-subordinates               [0] Construction-Expression OPTIONAL,
   content-portions                         [1] IMPLICIT SEQUENCE OF NumericString OPTIONAL,
   presentation-attributes                  [6] IMPLICIT Presentation-Attributes OPTIONAL,

      -- only for use for the attribute content-architecture-class;
      -- the content architecture specific attributes can only be referenced by
      -- use of presentation style

   default-value-lists                      [7] IMPLICIT Default-Value-Lists-Logical OPTIONAL,
   user-readable-comments                   [8] IMPLICIT Comment-String OPTIONAL,
   bindings                                 [9] IMPLICIT SET OF Binding-Pair OPTIONAL,
   content-generator                        [10] IMPLICIT String-Expression OPTIONAL,
   user-visible-name                        [14] IMPLICIT Comment-String OPTIONAL,
   presentation-style                       [17] IMPLICIT Style-Identifier OPTIONAL,
   layout-style                             [19] IMPLICIT Style-Identifier OPTIONAL,
   protection                               [20] IMPLICIT Protection OPTIONAL,
   resource                                 [24] IMPLICIT Resource-Name OPTIONAL,
   application-comments                     [25] IMPLICIT OCTET STRING OPTIONAL,
   enciphered                               [34] IMPLICIT Enciphered OPTIONAL,
   sealed                                   [35] IMPLICIT Sealed OPTIONAL }

Protection                               ::= INTEGER { unprotected (0), protected (1) }

                                         END
```

7.11   Style descriptors

Style-Descriptors { 2 8 1 5 10 }

DEFINITIONS   ::= BEGIN

EXPORTS Presentation-Style-Descriptor, Presentation-Attributes,
         Content-Type, Content-Architecture-Class,
         Layout-Style-Descriptor, Fill-Order, Block-Alignment;

```
IMPORTS  Object-or-Class-Identifier, Style-Identifier,
         Category-Name, Object-Id-Expression
         FROM Identifiers-and-Expressions                              -- see 7.8
         Comment-String, Transparency, Colour, Border,
         Layout-Object-Type, Content-Background-Colour, Content-Foreground-Colour, Sealed
         FROM Layout-Descriptors                                       -- see 7.9
         Colour-Expression, Colour-Table
         FROM Colour-Attributes                                        -- see 7.14
         Character-Attributes
         FROM Character-Presentation-Attributes { 2 8 1 6 2 }          -- see ITU-T Rec. T.416 | ISO/IEC 8613-6
         Raster-Graphics-Attributes
         FROM Raster-Gr-Presentation-Attributes { 2 8 1 7 2 }          -- see ITU-T Rec. T.417 | ISO/IEC 8613-7
         Geometric-Graphics-Attributes
         FROM Geo-Gr-Presentation-Attributes { 2 8 1 8 2 } ;           -- see ITU-T Rec. T.418 | ISO/IEC 8613-8
```

```
Presentation-Style-Descriptor          ::= SET {
  style-identifier                          Style-Identifier,
  user-readable-comments                    [0] IMPLICIT Comment-String OPTIONAL,
  user-visible-name                         [1] IMPLICIT Comment-String OPTIONAL,
  application-comments                      [25] IMPLICIT OCTET STRING OPTIONAL,
  transparency                              [2] IMPLICIT Transparency OPTIONAL,
  presentation-attributes                   [3] IMPLICIT Presentation-Attributes OPTIONAL,
  colour                                    [4] IMPLICIT Colour OPTIONAL,
  colour-of-layout-object                   [29] Colour-Expression OPTIONAL,
  object-colour-table                       [30] IMPLICIT Colour-Table OPTIONAL,
  content-background-colour                 [31] Content-Background-Colour OPTIONAL,
  content-foreground-colour                 [32] Content-Foreground-Colour OPTIONAL,
  content-colour-table                      [33] IMPLICIT Colour-Table OPTIONAL,
  border                                    [5] IMPLICIT Border OPTIONAL,
  sealed                                    [6] IMPLICIT Sealed OPTIONAL,
  derived-from                              [7] IMPLICIT Style-Identifier OPTIONAL }
```

```
Presentation-Attributes                 ::= SET {
  content-architecture-class                CHOICE {
                                               Content-Architecture-Class,
                                               Content-Type } OPTIONAL,
  character-attributes                      [0] IMPLICIT Character-Attributes OPTIONAL,
  raster-graphics-attributes                [1] IMPLICIT Raster-Graphics-Attributes OPTIONAL,
  geometric-graphics-attributes             [2] IMPLICIT Geometric-Graphics-Attributes OPTIONAL,
```

```
        -- the following tags are reserved for additional types
        -- of presentation attributes:
           -- [3] videotex, for use in conjunction with CCITT Recommendations
           -- [4] audio
           -- [5] dynamic-graphics
```

```
  ext-cont-arch-pres-attributes             [6] IMPLICIT SEQUENCE OF EXTERNAL OPTIONAL}
```

```
Content-Type                            ::= [APPLICATION 2] IMPLICIT INTEGER {
                                            formatted-raster-graphics (1) }
        -- The integer representation for content architecture class,
        -- Content-Type, is only to be used if the value of the document
        -- profile attribute "document application profile" is an integer.
        -- The value 'formatted-raster-graphics' represents the formatted raster
        -- graphics content architecture as defined in ITU-T Rec. T.417 | ISO/IEC 8613-7.
```

```
Content-Architecture-Class              ::= OBJECT IDENTIFIER
```

```
Layout-Style-Descriptor                 ::= SET {
  style-identifier                          Style-Identifier,
  user-readable-comments                    [0] IMPLICIT Comment-String OPTIONAL,
  user-visible-name                         [1] IMPLICIT Comment-String OPTIONAL,
  application-comments                      [25] IMPLICIT OCTET STRING OPTIONAL,
  layout-directives                         [4] IMPLICIT Layout-Directives OPTIONAL,
  sealed                                    [6] IMPLICIT Sealed OPTIONAL,
  derived-from                              [7] IMPLICIT Style-Identifier OPTIONAL }
```

```
Layout-Directives                          ::= SET {
  indivisibility                               CHOICE {
    to-layout-object-class                       [0] IMPLICIT Object-or-Class-Identifier,
    to-layout-category                           [1] IMPLICIT Category-Name,
    to-layout-object-type                        [2] IMPLICIT Layout-Object-Type,
    null                                        [15] IMPLICIT NULL} OPTIONAL,
  separation                                     [3] IMPLICIT Separation OPTIONAL,
  offset                                         [4] IMPLICIT Offset OPTIONAL,
  fill-order                                     [5] IMPLICIT Fill-Order OPTIONAL,
  concatenation                                  [6] IMPLICIT Concatenation OPTIONAL,
  new-layout-object                            CHOICE {
    to-layout-object-class                       [7] IMPLICIT Object-or-Class-Identifier,
    to-layout-category                           [8] IMPLICIT Category-Name,
    to-layout-object-type                        [9] IMPLICIT Layout-Object-Type,
    null                                        [16] IMPLICIT NULL } OPTIONAL,
  same-layout-object                            [10] IMPLICIT Same-Layout-Object OPTIONAL,
  layout-object-class                           [11] IMPLICIT Object-or-Class-Identifier OPTIONAL,
  logical-stream-category                       [19] IMPLICIT Category-Name OPTIONAL,
  logical-stream-sub-category                   [20] IMPLICIT Category-Name OPTIONAL,
  layout-category                               [12] IMPLICIT Category-Name OPTIONAL,
  synchronization                              CHOICE {
                                                [13] IMPLICIT Object-or-Class-Identifier,
                                                [17] Object-Id-Expression,
                                                [18] IMPLICIT NULL } OPTIONAL,
  block-alignment                               [14] IMPLICIT Block-Alignment OPTIONAL,
  floatability-range                            [24] IMPLICIT Floatability-Range OPTIONAL }

Separation                                 ::= SET {
  leading                                        [0] IMPLICIT INTEGER OPTIONAL,
  trailing                                       [1] IMPLICIT INTEGER OPTIONAL,
  centre                                         [2] IMPLICIT INTEGER OPTIONAL }

Offset                                     ::= SET {
  leading                                        [3] IMPLICIT INTEGER OPTIONAL,
  trailing                                       [2] IMPLICIT INTEGER OPTIONAL,
  left-hand                                      [1] IMPLICIT INTEGER OPTIONAL,
  right-hand                                     [0] IMPLICIT INTEGER OPTIONAL }

Fill-Order                                 ::= INTEGER { normal (0), reverse (1) }

Concatenation                              ::= INTEGER { non-concatenated (0), concatenated (1) }

Same-Layout-Object                         ::= SET {
  logical-object                               CHOICE {
                                                [0] IMPLICIT Object-or-Class-Identifier,
                                                [4] Object-Id-Expression,
                                                [5] IMPLICIT NULL },
  layout-object                                CHOICE {
                                                [1] IMPLICIT Object-or-Class-Identifier,
    to-stream-root-category                      [6] IMPLICIT Category-Name,
    to-stream-sub-category                       [7] IMPLICIT Category-Name,
    to-layout-category                           [2] IMPLICIT Category-Name,
                                                [3] IMPLICIT Layout-Object-Type } OPTIONAL }

Floatability-Range                         ::= SET {
  forward-limit                                [0] SEQUENCE {
    logical-object                                 CHOICE {
                                                    [2] IMPLICIT Object-or-Class-Identifier,
                                                    [3] Object-Id-Expression,
                                                    [4] IMPLICIT NULL } ,
    layout-object                                  CHOICE {
      to-layout-object-class                        [5] IMPLICIT Object-or-Class-Identifier,
      to-stream-root-category                       [6] IMPLICIT Category-Name,
      to-stream-sub-category                        [7] IMPLICIT Category-Name,
      to-layout-category                            [8] IMPLICIT Category-Name,
      to-layout-object-type                         [9] IMPLICIT Layout-Object-Type,
                                                   [10] IMPLICIT NULL } OPTIONAL } OPTIONAL,
  backward-limit                               [1] SEQUENCE {
```

```
    logical-object                                CHOICE {
                                                    [2] IMPLICIT Object-or-Class-Identifier,
                                                    [3] Object-Id-Expression,
                                                    [4] IMPLICIT NULL } ,
    layout-object                                 CHOICE {
      to-layout-object-class                        [5] IMPLICIT Object-or-Class-Identifier,
      to-stream-root-category                       [6] IMPLICIT Category-Name,
      to-stream-sub-category                        [7] IMPLICIT Category-Name,
      to-layout-category                            [8] IMPLICIT Category-Name,
      to-layout-object-type                         [9] IMPLICIT Layout-Object-Type,
                                                   [10] IMPLICIT NULL } OPTIONAL } OPTIONAL }

Block-Alignment                    ::=  INTEGER {
                                           right-hand (0), left-hand (1),
                                           centred (2), null (3) }

                                   END
```

7.12   Default value lists

Default-Value-Lists { 2 8 1 5 11 }

DEFINITIONS   ::= BEGIN

EXPORTS Default-Value-Lists-Logical, Default-Value-Lists-Layout;

```
IMPORTS   Style-Identifier, Category-Name
          FROM Identifiers-and-Expressions                            -- see 7.8
          Measure-Pair, One-Of-Four-Angles, Medium-Type,
          Dimension-Pair, Transparency, Colour, Border,
          Content-Background-Colour, Content-Foreground-Colour, Sealed
          FROM Layout-Descriptors                                     -- see 7.9
          Protection FROM Logical-Descriptors                         -- see 7.10
          Presentation-Attributes
          FROM Style-Descriptors                                      -- see 7.11
          Colour-Expression, Colour-Table
          FROM Colour-Attributes;                                     -- see 7.14
```

```
Default-Value-Lists-Layout               ::=  SET {
  page-set-attributes                        [1] IMPLICIT Page-Set-Attributes OPTIONAL,
  page-attributes                            [2] IMPLICIT Page-Attributes OPTIONAL,
  frame-attributes                           [3] IMPLICIT Frame-Attributes OPTIONAL,
  block-attributes                           [4] IMPLICIT Block-Attributes OPTIONAL }

Default-Value-Lists-Logical              ::=  SET {
  composite-logical-attributes               [5] IMPLICIT Composite-Logical-Attributes OPTIONAL,
  basic-logical-attributes                   [6] IMPLICIT Basic-Logical-Attributes OPTIONAL }

Page-Set-Attributes                      ::=  SET {
  layout-stream-categories                   < Attribute OPTIONAL,
  layout-stream-sub-categories               < Attribute OPTIONAL }
Page-Attributes                          ::=  SET {
  dimensions                                 < Attribute OPTIONAL,
  transparency                               < Attribute OPTIONAL,
  presentation-attributes                    < Attribute OPTIONAL,
  page-position                              < Attribute OPTIONAL,
  medium-type                                < Attribute OPTIONAL,
  presentation-style                         < Attribute OPTIONAL,
  layout-stream-categories                   < Attribute OPTIONAL,
  layout-stream-sub-categories               < Attribute OPTIONAL,
  colour                                     < Attribute OPTIONAL,
  colour-of-layout-object                    < Attribute OPTIONAL,
  object-colour-table                        < Attribute OPTIONAL,
  content-background-colour                  < Attribute OPTIONAL,
  content-foreground-colour                  < Attribute OPTIONAL,
  content-colour-table                       < Attribute OPTIONAL,
  sealed                                     < Attribute OPTIONAL }
```

```
Frame-Attributes                      ::=  SET {
   position                              < Attribute OPTIONAL,
   dimensions                            < Attribute OPTIONAL,
   transparency                          < Attribute OPTIONAL,
   layout-path                           < Attribute OPTIONAL,
   permitted-categories                  < Attribute OPTIONAL,
   layout-stream-categories              < Attribute OPTIONAL,
   layout-stream-sub-categories          < Attribute OPTIONAL,
   colour                                < Attribute OPTIONAL,
   colour-of-layout-object               < Attribute OPTIONAL,
   object-colour-table                   < Attribute OPTIONAL,
   border                                < Attribute OPTIONAL,
   sealed                                < Attribute OPTIONAL }

Block-Attributes                      ::=  SET {
   position                              < Attribute OPTIONAL,
   dimensions                            < Attribute OPTIONAL,
   transparency                          < Attribute OPTIONAL,
   presentation-attributes               < Attribute OPTIONAL,
   presentation-style                    < Attribute OPTIONAL,
   layout-stream-categories              < Attribute OPTIONAL,
   layout-stream-sub-categories          < Attribute OPTIONAL,
   colour                                < Attribute OPTIONAL,
   colour-of-layout-object               < Attribute OPTIONAL,
   object-colour-table                   < Attribute OPTIONAL,
   content-background-colour             < Attribute OPTIONAL,
   content-foreground-colour             < Attribute OPTIONAL,
   content-colour-table                  < Attribute OPTIONAL,
   border                                < Attribute OPTIONAL,
   sealed                                < Attribute OPTIONAL }

Composite-Logical-Attributes          ::=  SET {
   protection                            < Attribute OPTIONAL,
   layout-style                          < Attribute OPTIONAL,
   sealed                                < Attribute OPTIONAL }

Basic-Logical-Attributes              ::=  SET {
   presentation-attributes               < Attribute OPTIONAL,

   -- only for use for the attribute content-architecture-class;
   -- the content architecture specific attributes can only be referenced by
   -- use of presentation style

   protection                            < Attribute OPTIONAL,
   presentation-style                    < Attribute OPTIONAL,
   layout-style                          < Attribute OPTIONAL,
   sealed                                < Attribute OPTIONAL }

Attribute                             ::=  CHOICE {
   position                              [0] IMPLICIT Measure-Pair,
   dimensions                            [1] IMPLICIT Dimension-Pair,
   transparency                          [2] IMPLICIT Transparency,
   presentation-attributes               [3] IMPLICIT Presentation-Attributes,
   layout-path                           [4] IMPLICIT One-Of-Four-Angles,
   page-position                         [5] IMPLICIT Measure-Pair,
   medium-type                           [6] IMPLICIT Medium-Type,
   permitted-categories                  [7] IMPLICIT SET OF Category-Name,
   layout-stream-categories             [19] IMPLICIT SET OF Category-Name,
   layout-stream-sub-categories         [20] IMPLICIT SET OF Category-Name,
   protection                            [8] IMPLICIT Protection,
   presentation-style                    [9] IMPLICIT Style-Identifier,
   layout-style                         [10] IMPLICIT Style-Identifier,
   colour                               [11] IMPLICIT Colour,
   colour-of-layout-object              [14] Colour-Expression,
   object-colour-table                  [15] IMPLICIT Colour-Table,
   content-background-colour            [16] Content-Background-Colour,
   content-foreground-colour            [17] Content-Foreground-Colour,
   content-colour-table                 [18] IMPLICIT Colour-Table,
   border                               [12] IMPLICIT Border,
```

    sealed   **[13] IMPLICIT Sealed }**

                                             END

7.13   Text units

Text-Units { 2 8 1 5 12 }

DEFINITIONS   **::= BEGIN**

EXPORTS Text-Unit, Type-Of-Coding;

IMPORTS Content-Portion-Identifier
       FROM Identifiers-and-Expressions   *-- see 7.8*
       Character-Coding-Attributes
       FROM Character-Coding-Attributes { 2 8 1 6 3 }   *-- see ITU-T Rec. T.416 | ISO/IEC 8613-6*
       Raster-Gr-Coding-Attributes
       FROM Raster-Gr-Coding-Attributes { 2 8 1 7 3 }   *-- see ITU-T Rec. T.417 | ISO/IEC 8613-7*
       Geo-Gr-Coding-Attributes
       FROM Geo-Gr-Coding-Attributes { 2 8 1 8 3 } ;   *-- see ITU-T Rec. T.418 | ISO/IEC 8613-8*

Text-Unit   **::= SEQUENCE {**
  content-portion-attributes   **Content-Portion-Attributes OPTIONAL,**
  content-information   **Content-Information OPTIONAL }**

Content-Portion-Attributes   **::= SET {**
  content-identifier-layout   **Content-Portion-Identifier OPTIONAL,**
  content-identifier-logical   **[4] IMPLICIT Content-Portion-Identifier OPTIONAL,**
  type-of-coding   **Type-Of-Coding OPTIONAL,**
  coding-attributes   **CHOICE {**
    character-coding-attributes   **[1] IMPLICIT Character-Coding-Attributes,**
    raster-gr-coding-attributes   **[2] IMPLICIT Raster-Gr-Coding-Attributes,**
    geo-gr-coding-attributes   **[7] IMPLICIT Geo-Gr-Coding-Attributes,**
    videotex-coding-attributes   **[8] IMPLICIT Videotex-Coding-Attributes,**

    -- the use of the data item "videotex-coding-attributes" is applicable to
    -- ITU-T Rec. T.410 Series only

    -- the following tags are reserved for additional types
    -- of coding attributes:
      -- [9] audio
      -- [10] dynamic-graphics

    ext-cont-arch-coding-attributes   **[11] IMPLICIT EXTERNAL } OPTIONAL,**
  alternative-representation   **[3] IMPLICIT Alternative-Representation OPTIONAL }**

Content-Information   **::= CHOICE {**
  content   **OCTET STRING,**
  tiled-content   **Tiled-Content }**
Tiled-Content   **::= SEQUENCE OF OCTET STRING**

Type-Of-Coding   **::= CHOICE {**
                                    [0] IMPLICIT INTEGER { t6 (1)},
                                    [6] IMPLICIT OBJECT IDENTIFIER}

Alternative-Representation   **::= OCTET STRING**

    -- string of characters from the sets designated by the document
    -- profile attribute "alternative representation character sets",
    -- plus carriage return and line feed

                                        END

7.14   Colour attributes

Colour-Attributes { 2 8 1 5 14 }

DEFINITIONS   ::= BEGIN

EXPORTS Colour-Expression, Colour-Table, Colour-Spaces-List, Colour-Characteristics;

IMPORTS Character-Data
          FROM Document-Profile-Descriptor;   *-- see 7.7*

Real-Or-Int	**::=**	**CHOICE { REAL, INTEGER }**

Colour-Expression   ::= SEQUENCE {
  colour-access-mode   [0] IMPLICIT INTEGER { direct (0), indexed (1) },
                                          [1] CHOICE {
    direct-colour   [0] IMPLICIT Direct-Colour,
    indexed-colour   [1] IMPLICIT Indexed-Colour } }

Direct-Colour   ::= SET {
  colour-space-id   [0] IMPLICIT INTEGER OPTIONAL,
  colour-specification   [1] Colour-Specification OPTIONAL,
  colour-tolerance   [2] IMPLICIT Colour-Tolerance OPTIONAL }

Colour-Specification   ::= CHOICE {
  cmyk-colour   [0] IMPLICIT CMYK-Colour,
  rgb-colour   [1] IMPLICIT RGB-Colour,
  cie-colour   [2] IMPLICIT CIE-Colour }

CMYK-Colour   ::= SET {
  c-value   [0] Real-Or-Int,
  m-value   [1] Real-Or-Int,
  y-value   [2] Real-Or-Int,
  k-value   [3] Real-Or-Int OPTIONAL }

RGB-Colour   ::= SET {
  r-value   [0] Real-Or-Int,
  g-value   [1] Real-Or-Int,
  b-value   [2] Real-Or-Int }

CIE-Colour   ::= SET {
  x-value   [0] Real-Or-Int,
  y-value   [1] Real-Or-Int,
  z-value   [2] Real-Or-Int }

Colour-Tolerance   ::= CHOICE {
  unspecified-tolerance   [0] IMPLICIT NULL,
  specified-tolerance   [1] IMPLICIT Specified-Tolerance }

Specified-Tolerance   ::=   SET {
  tolerance-value   [0]   IMPLICIT Real-Or-Int,
  tolerance-space   [1]   IMPLICIT INTEGER { cieluv (3), cielab (4) } }

Indexed-Colour   ::= SET {
  index   [0] IMPLICIT INTEGER OPTIONAL }

Colour-Table   ::= SET {
  colour-space-id   [0] IMPLICIT INTEGER,
  colour-table-entries   [1] IMPLICIT SET OF SET {
    index   [0] IMPLICIT INTEGER,
    colour-coordinates   [1] Colour-Specification,
    colour-tolerance   [2] IMPLICIT Colour-Tolerance OPTIONAL } }

Colour-Characteristics   ::= SET {
  colour-spaces-present   [0] IMPLICIT SEQUENCE OF SET {
    colour-space-type   [0] IMPLICIT Colour-Space-Type,

```
    colour-calibration-type                      [1]  IMPLICIT Colour-Space-Calibration-Type },
  colour-modes-present                           [1]  IMPLICIT Colour-Modes-Present,
  minimum-colour-tolerance                       [2]  IMPLICIT Colour-Tolerance OPTIONAL,
  maximum-colour-table-length                    [3]  IMPLICIT INTEGER OPTIONAL,
    -- "maximum number of colour table entries" --
  maximum-rgb-lut-length                         [4]  IMPLICIT INTEGER OPTIONAL,
    -- "maximum number of look-up table entries" --
  maximum-cmy-k-grid-size                        [5]  IMPLICIT INTEGER OPTIONAL }


Colour-Space-Type                  ::= INTEGER { rgb (0), cmyk (1), cmy (2), cieluv (3), cielab (4) }


Colour-Space-Calibration-Type      ::= INTEGER {
                                           no-calibration (0),
                                           matrices (1),
                                           lookup-tables (2),
                                           matrices-and-lookup-tables (3) }


Colour-Modes-Present               ::= INTEGER {
                                           direct (0), indexed (1), both (2) }


Colour-Spaces-List                 ::= SET OF Colour-Space


Colour-Space                       ::= SET {
  colour-space-id                          [0] IMPLICIT INTEGER,
  colour-space-type                        [1] IMPLICIT Colour-Space-Type,
  colour-space-name                        [2] IMPLICIT Character-Data OPTIONAL,
  colour-data-scaling                      [3] Colour-Data-Scaling OPTIONAL,
  calibration-data                         [4] IMPLICIT Calibration-Data OPTIONAL }


Colour-Data-Scaling                ::= SET {
  first-component                          [0] IMPLICIT Scale-And-Offset,
  second-component                         [1] IMPLICIT Scale-And-Offset,
  third-component                          [2] IMPLICIT Scale-And-Offset,
  fourth-component                         [3] IMPLICIT Scale-And-Offset OPTIONAL }


Scale-And-Offset                   ::= SET {
  colour-scale                             [0] Real-Or-Int,
  colour-offset                            [1] Real-Or-Int }


Calibration-Data                   ::= CHOICE {
  rgb                                      [0] IMPLICIT RGB-Calibration,
  cmyk                                     [1] IMPLICIT CMY-K-Calibration,
  cmy                                      [2] IMPLICIT CMY-K-Calibration,
  cieluv                                   [3] IMPLICIT CIE-Calibration,
  cielab                                   [4] IMPLICIT CIE-Calibration }


CIE-Calibration                    ::= SET {
  reference-white                          [0] IMPLICIT CIE-Ref }


RGB-Calibration                    ::= SET {
  reference-white                          [0] IMPLICIT CIE-Ref,
  matrix1                                  [1] IMPLICIT Three-by-Three-Matrix OPTIONAL,
  lookup-table                             [3] IMPLICIT Colour-Lookup-Table OPTIONAL,
  matrix2                                  [2] IMPLICIT Three-by-Three-Matrix OPTIONAL }
Three-by-Three-Matrix              ::= SEQUENCE {
  row-1                                    Three-Nums,
  row-2                                    Three-Nums,
  row-3                                    Three-Nums }


Three-Nums                         ::= SEQUENCE {
  column-1                                 Real-Or-Int,
  column-2                                 Real-Or-Int,
  column-3                                 Real-Or-Int }


Colour-Lookup-Table                ::= SET {
  number-of-entries                        [0] IMPLICIT INTEGER,
  m                                        [1] IMPLICIT INTEGER,
  n                                        [2] IMPLICIT INTEGER,
```

colour-table	[3] IMPLICIT SET OF Colour-Table-Entry }
Colour-Table-Entry	**::= SET {**
index	[3] IMPLICIT INTEGER,
r	[0] Real-Or-Int,
g	[1] Real-Or-Int,
b	[2] Real-Or-Int }
CMY-K-Calibration	**::= SET {**
reference-white	[0] IMPLICIT CIE-Ref,
comment	[1] IMPLICIT Character-Data OPTIONAL,
cmyk-lut	[2] IMPLICIT Grid-Specification }
Grid-Specification	**::= SET OF SET {**
grid-location	[0] IMPLICIT CMYK-Colour,
grid-value	[1] IMPLICIT Grid-Value }
Grid-Value	**::= SET {**
x-value	[0] IMPLICIT REAL,
y-value	[1] IMPLICIT REAL,
z-value	[2] IMPLICIT REAL }
CIE-Ref	**::= SET {**
xn-value	[0] Real-Or-Int,
yn-value	[1] Real-Or-Int,
zn-value	[2] Real-Or-Int }
	END

7.15   Protected part descriptors

Protected-Part-Descriptors { 2 8 1 5 13 }

DEFINITIONS   ::= BEGIN

EXPORTS Sealed-Doc-Prof-Descriptor,
Enciphered-Doc-Prof-Descriptor,
Preenciphered-Bodypart-Descriptor,
Postenciphered-Bodypart-Descriptor;

IMPORTS Protected-Part-Identifier
FROM Identifiers-and-Expressions;   *-- see 7.8*

Sealed-Doc-Prof-Descriptor	**::= SEQUENCE {**
sealed-doc-prof-identifier	**Protected-Part-Identifier,**
sealed-doc-prof-information	**Document-Profile-Attribute-Names }**
Document-Profile-Attribute-Names	**::= BIT STRING {**
	generic-layout-structure (0), specific-layout-structure (1),
	generic-logical-structure (2), specific-logical-structure (3),
	layout-styles (4), presentation-styles (5), sealed-profiles (6),
	enciphered-profiles (7), pre-enciphered-body-parts (8),
	post-enciphered-body-parts (9), external-document-class (10),
	resource-document (11), resources (12),
	document-application-profile (13),
	document-application-profile-defaults (14),
	document-architecture-class (15),
	content-architecture-classes (16), interchange-format-class (17),
	oda-version (18), alternative-feature-sets (19),
	profile-character-sets (20), comments-character-sets (21),
	alternative-representation-character-sets (22),
	page-dimensions (23), medium-types (24), layout-paths (25),
	protections (26), block-alignments (27), fill-orders (28),
	transparencies (29), colours (30), colours-of-layout-object (31),
	object-colour-tables (32), content-background-colours (33),
	content-foreground-colours (34), content-colour-tables (35),
	borders (36), page-positions (37), types-of-coding (38),

coding-attributes (39), presentation-features (40),
number-of-objects-per-page (41), unit-scaling (42),
fonts-list (43), colour-characteristics (44),
colour-spaces-list (45), title (46), subject (47),
document-reference (48), document-type (49), abstract (50),
keywords (51), document-date-and-time (52),
creation-date-and-time (53), local-filing-date-and-time (54),
expiry-date-and-time (55), start-date-and-time (56),
purge-date-and-time (57), release-date-and-time (58),
revision-history (59), organizations (60), preparers (61),
owners (62), authors (63), copyright (64), status (65),
user-specific-codes (66), distribution-list (67),
additional-information (68), references-to-other-documents (69),
superseded-documents (70), local-file-references (71),
document-size (72), number-of-pages (73), languages (74),
authorization (75), security-classification (76), access-rights (77),
sealed-information-encoding (78), oda-security-label (79),
sealed-document-profiles (80),
pre-sealed-document-body-parts (81),
post-sealed-document-body-parts (82),
enciphered-document-profiles (83),
pre-enciphered-document-body-parts (84),
post-enciphered-document-body-parts (85) }

Enciphered-Doc-Prof-Descriptor	**::=**	**SEQUENCE {**
enciphered-doc-prof-identifier		**Protected-Part-Identifier,**
enciphered-doc-prof-information		**Enciphered-Information }**

Preenciphered-Bodypart-Descriptor	**::=**	**SEQUENCE {**
preenciphered-bodypart-identifier		**Protected-Part-Identifier,**
preenciphered-bodypart-info		**Enciphered-Information }**

Postenciphered-Bodypart-Descriptor	**::=**	**SEQUENCE {**
postenciphered-bodypart-identifier		**Protected-Part-Identifier,**
postenciphered-bodypart-info		**Enciphered-Information }**

Enciphered-Information	**::=**	**OCTET STRING**

END

Annex A

Coded representation

(This annex does not form an integral part of this Recommendation | International Standard)

This annex is a summary of the basic encoding rules for the abstract syntax notation ASN.1 defined in CCITT Rec. X.209 | ISO/IEC 8825.

The coded representation of each data structure or data item that constitutes, or constitutes part of, a descriptor or a text unit consists of a type field, a length field and a value field.

If the data item concerned is an elementary data item, then the type field specifies the elementary data type, the length field specifies the length of the value field, and the value field represents the value of the data item.

If the data structure or data item concerned is not elementary, then the type field identifies the attribute or group of attributes corresponding to the data structure or data item, the length field specifies the length of the value field, and the value field consists of one or more triplets, each of which is composed of a type field, a length field and a value field, representing the subordinate data structures and data items.

The *type field* (which is called "identifier octets" in CCITT Rec. X.209 | ISO/IEC 8825) consists of one or more bytes. The bits of the first byte are used as follows:

bits 8 and 7:   tag class   (00: universal,
                                        01: application,
                                        10: context-specific,
                                        11: private);
bit 6:   contents encoding form   (0: simple,
                                              1: structured);
bits 5 to 1:   00000 to 11110: tag number;
                      11111 indicates a multi-octet type field.

The tag numbers for universal tags shown in Table A.1 have been assigned in CCITT Rec. X.208 | ISO/IEC 8824 and CCITT Rec. X.209 | ISO/IEC 8825.

Table A.1 – Universal class tags

Built-in data types	Defined data types
0: End-of-contents 1: Boolean 2: Integer 3: Bit String 4: Octet String 5: Null 6: Object Identifier 7: Object Descriptor 8: External 9: Real 10: Enumerated 11: Encrypted 16: Sequence 17: Set	18: Numeric String 19: Printable String 20: Teletex String 21: Videotex String 22: IA5 String 23: UTC Time 24: Generalized Time 25: Graphic Character String 26: General String 27: Visible String

Data items of type End-of-contents, Boolean, Integer or Null are simple (elementary data items). Sequences and Sets are structured (data structures with subordinate data items). Data items of type Bit String, Octet String or any of the defined data types can be either simple or structured.

The *length field* consists of one or more bytes. It takes one of three forms: short, long and indefinite. The bits of the first byte are used as follows:

    bit 8:   length field form   (0: short,
                                        1: long or indefinite)
    bits 7 to 1:   if bit 8 = 0:   number of bytes of the value field;
                  if bit 8 = 1:   number of bytes of the length field following the first byte;
                                0000000 indicates the indefinite form of the length field.

A data structure or data item with an indefinite length field must be structured and must be terminated by a delimiter consisting of an End-of-contents (EOC) item. An EOC item consists of two bytes: a type field of one byte and a length field of one byte. Both are equal to zero. An EOC item has no value field.

Annex B

Application class tag assignments

(This annex does not form an integral part of this Recommendation | International Standard)

The application class tag assignments made in various clauses of this Specification are summarized in Table B.1.

Table B.1 – Application class tags

Tag	Data type	Reference (Subclause)
APPLICATION 0	**Content-Portion-Identifier**	7.8
APPLICATION 1	**Object-or-Class-Identifier**	7.8
APPLICATION 2	**Content-Type**	7.11
APPLICATION 3	**Character-Data**	7.7
APPLICATION 4	**Date-and-Time**	7.7
APPLICATION 5	**Style-Identifier**	7.8
APPLICATION 6	**Personal-Name**	7.7
APPLICATION 7	**Protected-Part-Identifier**	7.8

Annex C

Summary of object identifiers

(This annex does not form an integral part of this Recommendation | International Standard)

Values of ASN.1 object identifiers are assigned in various clauses in this Specification. These are summarized in Table C.1.

Table C.1 – Summary of ASN.1 object identifiers

Object identifier value	Meaning	Reference (Subclause)
{ 2 8 0 0 }	Identifies External data type	7.1
{ 2 8 1 5 5 }	Identifies Module **Interchange-Data-Elements**	7.6
{ 2 8 1 5 6 }	Identifies Module **Document-Profile-Descriptor**	7.7
{ 2 8 1 5 7 }	Identifies Module **Identifiers-and-Expressions**	7.8
{ 2 8 1 5 8 }	Identifies Module **Layout-Descriptors**	7.9
{ 2 8 1 5 9 }	Identifies Module **Logical-Descriptors**	7.10
{ 2 8 1 5 10 }	Identifies Module **Style-Descriptors**	7.11
{ 2 8 1 5 11 }	Identifies Module **Default-Value-Lists**	7.12
{ 2 8 1 5 12 }	Identifies Module **Text-Units**	7.13
{ 2 8 1 5 13 }	Identifies Module **Protected-Part-Descriptors**	7.15
{ 2 8 1 5 14 }	Identifies Module **Colour-Attributes**	7.14

Annex D

Examples

(This annex does not form an integral part of this Recommendation | International Standard)

The first four examples in this annex consist of data streams representing various versions of the sample document in Annex B of ITU-T Rec. T.412 | ISO/IEC 8613-2.

Four versions of the sample document are considered:

– Example 1: specific layout structure only. This example is specified by B.4.1, including Figure B.7 and Table B.1, of ITU-T Rec. T.412 | ISO/IEC 8613-2.

– Example 2: specific logical structure only. This example is specified by B.4.2, including Figure B.8 and Tables B.2, B.3 of ITU-T Rec. T.412 | ISO/IEC 8613-2.

– Example 3: specific logical structure, generic logical structure and generic layout structure. This example is specified by B.5, including Figures B.8, B.9, B.10, and Tables B.4, B.5, B.6, B.7 of ITU-T Rec. T.412 | ISO/IEC 8613-2.

– Example 4: specific layout structure only, as generated from the structures in example 3. This example is specified by B.6, including Figure B.11 and Table B.8, of ITU-T Rec. T.412 | ISO/IEC 8613-2.

The four examples are presented in D.1, D.2, D.3 and D.4 below. The data stream constituting each example is shown in two forms of notation:

a) the ASN.1 notation for data values defined in CCITT Rec. X.208 | ISO/IEC 8824;

b) the hexadecimal notation of the encoded data values, after applying the basic encoding rules defined in CCITT Rec. X.209 | ISO/IEC 8825.

The ASN.1 notation is shown on the left and the hexadecimal notation is shown on the right of each page. The symbol **LL** represents a length field of which the length is unknown.

NOTE – ODL data streams equivalent to these examples are presented in Annex F.

In addition, D.5 presents an example consisting of a data stream representing the sample document profile in Annex C of ITU-T Rec. T.414 | ISO/IEC 8613-4.

D.1   Example 1:   Sample document from Annex B of ITU-T Rec. T.412 | ISO/IEC 8613-2; Specific layout structure only

```
document-profile {                                       A06F
  specific-layout-structure "1",                         810131
  document-characteristics {                             A26A
    document-architecture-class formatted,               810100
    content-architecture-classes {                       A512
      { 2 8 2 6 0 },                                      060458020600
      { 2 8 2 7 0 },                                      060458020700
      { 2 8 2 8 0 }},                                     060458020800
    interchange-format-class if-b,                        860101
    oda-version {                                         A84E
      standard-or-recommendation                          43424954552D54205265632E2054
        "ITU-T Rec. T.410 Series (1993) | ISO/IEC 8613 : 1994;   2E34313020536572696573202831
        version 2.00",                                    39393329207C2049534F2F494943
                                                          2038363133203A20313939343B20
                                                          76657273696F6E20322E3030
      publication-date "19920501" }}},                    4408313939323230353031
layout-object {                                          A21B
  object-type document-layout-root,                      020100
  descriptor-body {                                      3116
    object-identifier "1",                               410131
    user-visible-name "Letter",                          8E064C6574746572
    subordinates {                                       A009
      "0","1","2" }}},                                    120130120131120132
layout-object {                                          A232
  object-type page,                                      020102
  descriptor-body {                                      312D
    object-identifier "1 0",                             4103312030
    user-visible-name "Header Page",                     8E0B48656164657220506167
```

```
    dimensions {                                  A408
        horizontal 9920,                          800226C0
        vertical fixed 14030 },                   800236CE
    subordinates {                                A00F
    "0","1","2","3","4" }}},                       12013012013112013212013
                                                         120134
layout-object {                                   A238
  object-type block,                              020104
  descriptor-body {                               3133
    object-identifier "1 0 0",                    41053120302030
    user-visible-name "Logo",                     8E044C6F676F
    position {                                    A308
        horizontal 710,                           800202C6
        vertical 730},                            800202DA
    dimensions {                                  A408
        horizontal 3685,                          80020E65
        vertical fixed 2495 },                    800209BF
    presentation-attributes {                     A60B
        content-architecture-class
        { 2 8 2 7 0 },                            060458020700
        raster-graphics-attributes {              A103
          pel-transmission-density p2 }},         820105
    content-portions{ "0" }}},                    A103120130
content-portion {                                 A3LL
  content-portion-attributes {                    31LL
    content-identifier-layout "1 0 0 0",          4007312030203030
    raster-gr-coding-attributes {                 A204
      number-of-pels-per-line 737 }},             800202E1
    content-information {/*Array of raster        04LL.......................................
    graphic elements for the logo*/ }},           ......................................
layout-object {                                   A22B
  object-type block,                              020104
  descriptor-body {                               3126
    object-identifier "1 0 1",                    41053120302031
    user-visible-name "Date",                     8E0444617465
    position {                                    A308
        horizontal 5440,                          80021540
        vertical 1275 },                          800204FB
    dimensions {                                  A408
        horizontal 3060,                          80020BF4
        vertical fixed 540 },                     8002021C
    content-portions { "0" }}},                   A103120130
 content-portion {                                A321
  content-portion-attributes {                    3109
    content-identifier-layout "1 0 1 0" },        4007312030203130
  content-information { "CESSON, 26 JUNE 1985" }}, 0414434553534F4E2C..
                                                  ..31393835
layout-object {                                   A230
  object-type block,                              020104
  descriptor-body {                               312B
    object-identifier "1 0 2",                    41053120302032
    user-visible-name "Addressee",                8E094164647265737365
    position {                                    A308
        horizontal 1105,                          80020451
        vertical 4310 },                          800210D6
    dimensions {                                  A408
        horizontal 4505,                          80021199
        vertical fixed 540},                      8002021C
    content-portions { "0" }}},                   A103120130
content-portion {                                 A32C
  content-portion-attributes {                    3109
    content-identifier-layout "1 0 2 0" },        4007312030203230
  content-information { "To members of ISO/       041F546F206D656D626572
        TC97/SC18/WG3" }},                        73....574733
layout-object {                                   A236
  object-type block,                              020104
```

```
descriptor-body {                                      3131
  object-identifier "1 0 3",                           41053120302033
  user-visible-name "Subject",                         8E075375626A656374
  position {                                           A308
      horizontal 1105,                                 80020451
      vertical 6660 },                                 80021A04
  dimensions {                                         A408
      horizontal 7200,                                 80021C20
      vertical fixed 905 },                            80020389
  presentation-attributes {                            A606
    character-attributes {                             A004
      line-spacing 300 }},                             8702012C
  content-portions { "0" }}},                          A103120130
content-portion {                                      A3LL
  content-portion-attributes {                         3109
    content-identifier-layout "1 0 3 0" },             400731203020332030
  content-information { "SUBJECT: PROPOSED             04LL5456424A4543553A..
          EXAMPLE TO CLARIFY                           ....................................................................
          THE DOCUMENT \n                             ....................................................................
          ARCHITECTURE MODEL" }},                      ...................................... 4D4F44454C
layout-object {                                        A235
  object-type block,                                   020104
  descriptor-body {                                    3130
    object-identifier "1 0 4",                         41053120302034
    user-visible-name "Summary",                       8E0753756D6D617279
    position {                                         A308
        horizontal 2180,                               80020884
        vertical 9695 },                               800225DF
    dimensions {                                       A408
        horizontal 5585,                               800215D1
        vertical fixed 2325 },                         80020915
    presentation-attributes {                          A605
        character-attributes {                         A003
          alignment justified }},                      880103
  content-portions { "0" }}},                          A103120130
content-portion {                                      A3LL
  content-portion-attributes {                         31LL
    content-identifier-layout "1 0 4 0" },             400731203020342030
  content-information {/*Formatted string of          04LL53554D4D4152415259..
          SUMMARY- */ }},                              ....................................................................
layout-object {                                        A232
  object-type page,                                    020102
  descriptor-body {                                    312D
    object-identifier "1 1",                           4103312031
    user-visible-name "Body Page 1",                   8E0B426F6479205061676531
    dimensions {                                       A408
        horizontal 9920,                               800226C0
        vertical fixed 14030 },                        800236CE
    subordinates {                                     A00F
    "0","1","2","3","4" }}},                           12013012013112013212013312
layout-object {                                        A238
  object-type block,                                   020104
  descriptor-body {                                    3133
    object-identifier "1 1 0",                         41053120312030
    user-visible-name "Para A",                        8E06506172612041
    position {                                         A308
        horizontal 1105,                               80020451
        vertical 1105 },                               80020451
    dimensions {                                       A408
        horizontal 7935,                               80021EFF
        vertical fixed 1785 },                         800206F9
    presentation-attributes {                          A609
        character-attributes {                         A007
          line-spacing 300,                            8702012C
          alignment justified }},                      880103
    content-portions { "0" }}},                        A103120130
content-portion {                                      A3LL
  content-portion-attributes {                         3109
```

content-identifier-layout "1 1 0 0" },	400731203120302030
content-information { /* Formatted string	04LL414141..
of A's */ }},	....
layout-object {	A238
object-type block,	020104
descriptor-body {	3133
object-identifier "1 1 1",	41053120312031
user-visible-name "Para B",	8E06506172612042
position {	A308
horizontal 1105,	80020451
vertical 3770 },	80020EBA
dimensions {	A408
horizontal 7935,	80021EFF
vertical fixed 1785 },	800206F9
presentation-attributes {	A609
character-attributes {	A007
line-spacing 400,	87020190
alignment justified }},	880103
content-portions { "0" }}},	A103120130
content-portion {	A3LL
content-portion-attributes {	3109
content-identifier-layout "1 1 1 0" },	400731203120312030
content-information { /* Formatted string	04LL4242..
of B's */ }},	....
layout-object {	A236
object-type block,	020104
descriptor-body {	3131
object-identifier "1 1 2",	41053120312032
user-visible-name "Drawing",	8E0744726177696E67
position {	A308
horizontal 2180,	80020884
vertical 6460 },	8002193C
dimensions {	A408
horizontal 5045,	800213B5
vertical fixed 4140 },	8002102C
presentation-attributes {	A606
content-architecture-class	060458020800
{ 2 8 2 8 0 }},	
content-portions { "0" }}},	A103120130
content-portion {	A3LL
content-portion-attributes {	3109
content-identifier-layout "1 1 2 0" },	400731203120322030
content-information { /* Ordered set of	04LL..
geometric graphics	....
content elements for	....
the diagram */ }},	....
layout-object {	A22E
object-type block,	020104
descriptor-body {	3129
object-identifier "1 1 3",	41053120312033
user-visible-name "Caption",	8E0743617074696F6E
position {	A308
horizontal 2550,	800209F6
vertical 10800 },	80022A30
dimensions {	A408
horizontal 3970,	80020F82
vertical fixed 370 },	80020172
content-portions { "0" }}},	A103120130
content-portion {	A3LL
content-portion-attributes {	3109
content-identifier-layout "1 1 3 0" },	400731203120332030
content-information { /* Formatted string	04LL63617074696F6E..
for the caption */ }},	....
layout-object {	A23B
object-type block,	020104
descriptor-body {	3136
object-identifier "1 1 4",	41053120312034
user-visible-name "Para C(1)",	8E09506172612043283129

```
        position {                                          A308
            horizontal 1105,                                80020451
            vertical 11980 },                               80022ED6
        dimensions {                                        A408
            horizontal 7935,                                80021EFF
            vertical fixed 1075 },                          80020433
        presentation-attributes {                           A609
            character-attributes {                          A007
                line-spacing 300,                           8702012C
                alignment justified }},                     880103
        content-portions { "0" }}},                         A103120130
content-portion {                                           A3LL
    content-portion-attributes {                            3109
        content-identifier-layout "1 1 4 0" },              400731203120342030
    content-information { /* Formatted string               04LL..............................................
                of C's */ }},                               ..............................................
layout-object {                                             A232
    object-type page,                                       020102
    descriptor-body {                                       312D
        object-identifier "1 2",                            4103312032
        user-visible-name "Body Page 2",                    8E0B426F6479205506167652032
        dimensions {                                        A408
            horizontal 9920,                                800226C0
            vertical fixed 14030 },                         800236CE
        subordinates { "0","1","2","3","4" }}},             A00F1201301201311201321201 33
                                                                                  120134

layout-object {                                             A23B
    object-type block,                                      020104
    descriptor-body {                                       3136
        object-identifier "1 2 0",                          41053120322030
        user-visible-name "Para C(2)",                      8E09506172612043283229
        position {                                          A308
            horizontal 1105,                                80020451
            vertical 1105 },                                80020451
        dimensions {                                        A408
            horizontal 7935,                                80021EFF
            vertical fixed 1275 },                          800206F9
        presentation-attributes {                           A609
            character-attributes {                          A007
                line-spacing 300,                           8702012C
                alignment justified }},                     880103
        content-portions { "0" }}},                         A003120130
content-portion {                                           A3LL
    content-portion-attributes {                            3109
        content-identifier-layout "1 2 0 0" },              400731203230302030
    content-information { /* Formatted string               04LL4343................................................
                of C's */ }},                               ................................................
layout-object {                                             A238
    object-type block,                                      020104
    descriptor-body {                                       3133
        object-identifier "1 2 1",                          41053120322031
        user-visible-name "Para D",                         8E06506172612044
        position {                                          A308
            horizontal 1105,                                80020451
            vertical 3260 },                                80020CBC
        dimensions {                                        A408
            horizontal 7935,                                80021EFF
            vertical fixed 1615 },                          8002064F
        presentation-attributes {                           A609
            character-attributes {                          A007
                line-spacing 300,                           8702012C
                alignment justified }},                     880103
        content-portions { "0" }}},                         A103120130
content-portion {                                           A3LL
    content-portion-attributes {                            3109
        content-identifier-layout "1 2 1 0" },              400731203220312030
    content-information { /* Formatted string               04LL444444.............................................
                of D's */ }},                               .............................................
```

layout-object {	A238
object-type block,	020104
descriptor-body {	3133
object-identifier "1 2 2",	41053120322032
user-visible-name "Ending",	8E06456E64696E67
position {	A308
horizontal 1985,	800207C1
vertical 5755 },	8002167B
dimensions {	A408
horizontal 6860,	80021ACC
vertical fixed 2155 },	8002086B
presentation-attributes {	A609
character-attributes {	A007
line-spacing 300,	8702012C
alignment justified }},	880103
content-portions { "0" }}},	A103120130
content-portion {	A3LL
content-portion-attributes {	3109
content-identifier-layout "1 2 2 0" },	400731203220322030
content-information { /* Formatted string of	04LL464F524D414C2045
FORMAL ENDING */ }},	4E44494E47 ....
layout-object {	A23D
object-type block,	020104
descriptor-body {	3138
object-identifier "1 2 3",	41053120322033
user-visible-name "Signature",	8E095369676E6174757265
position {	A308
horizontal 3260,	80020CBC
vertical 8675 },	800221E3
dimensions {	A408
horizontal 5585,	800215D1
vertical fixed 2495 },	800209BF
presentation-attributes {	A60B
content-architecture-class	
{ 2 8 2 7 0 },	060458020700
raster-graphics-attributes {	A103
pel-transmission-density p2 }},	820105
content-portions { "0" }}},	A103120130
content-portion {	A3LL
content-portion-attributes {	310F
content-identifier-layout "1 2 3 0",	400731203220332030
raster-gr-coding-attributes {	A204
number-of-pels-per-line 1117 }},	8002045D
content-information { /* Array of	04LL..
raster-graphics content	....
elements for the	....
signature */ }},	....
layout-object {	A233
object-type block,	020104
descriptor-body {	312E
object-identifier "1 2 4",	41053120322034
user-visible-name "Name",	8E044E616D65
position {	A308
horizontal 5950,	8002173E
vertical 11170 },	80022BA2
dimensions {	A408
horizontal 2520,	800209D8
vertical fixed 905 },	80020389
presentation-attributes {	A606
character-attributes {	A004
line-spacing 300 }},	8702012C
content-portions { "0" }}},	A103120130
content-portion {	A3LL
content-portion-attributes {	3109
content-identifier-layout "1 2 4 0" },	400731203220342030
content-information { "Miss Aude HEA \n	04LL4D697373 ....
Document Architect" }}	....

D.2 Example 2: Sample document from Annex B of ITU-T Rec. T.412 | ISO/IEC 8613-2; Specific logical structure only

```
document-profile {                                          A072
  presentation-styles "1",                                  860131
  specific-logical-structure "1",                           850131
  document-characteristics {                                A26A
    document-architecture-class
        formatted-processable,                              810101
    content-architecture-classes {                          A512
      { 2 8 2 6 1 },                                        060458020601
      { 2 8 2 7 1 },                                        060458020701
      { 2 8 2 8 0 }},                                       060458020800
    interchange-format-class if-a,                          860100
    oda-version {                                           A84E
      standard-or-recommendation                            43424954552D54205265632E2054
        "ITU-T Rec. T.410 Series (1993) | ISO/IEC 8613 : 1994;   2E34313020536572696573202831
        version 2.00",                                      39393329207C2049534F2F494943
                                                            2038363133203A20313939343B20
                                                            76657273696F6E20322E3030
      publication-date "19920501" }}} ,                     4408313939320353031
presentation-style {                                        A70D
  style-identifier "5 0",                                   4503352030
  presentation-attributes {                                 A306
    character-attributes {                                  A004
      line-spacing 300 }}},                                 8702012C
presentation-style {                                        A711
  style-identifier "5 1",                                   4503352031
  presentation-attributes {                                 A30A
    character-attributes {                                  A008
      first-line-offset 1417,                               97020589
      line-spacing 300 }}},                                 8702012C
presentation-style {                                        A714
  style-identifier "5 2",                                   4503352032
  presentation-attributes {                                 A30D
    character-attributes {                                  A00B
      first-line-offset 1417,                               97020589
      alignment justified,                                  880103
      line-spacing 300 }}},                                 8702012C
presentation-style {                                        A714
  style-identifier "5 3",                                   4503352033
  presentation-attributes {                                 A30D
    character-attributes {                                  A00B
      first-line-offset 1020,                               970203FC
      alignment justified,                                  880103
      line-spacing 300 }}},                                 8702012C
presentation-style {                                        A714
  style-identifier "5 4",                                   4503352034
  presentation-attributes {                                 A30D
    character-attributes {                                  A00B
      first-line-offset 1417,                               97020589
      alignment justified,                                  880103
      line-spacing 400 }}},                                 87020190
logical-object {                                            A624
  object-type document-logical-root,                        020100
  descriptor-body {                                         311F
    object-identifier "3",                                  410133
    user-visible-name "Letter",                             8E064C6574746572
    subordinates{ "0","1" },                                A006120130120131
    default-value-lists {                                   A70A
      basic-logical-attributes {                            A608
       presentation-attributes {                            A306
        content-architecture-class                          060458020601
       { 2 8 2 6 1 }}}}},                                   
logical-object {                                            A620
  object-type composite-logical,                            020101
  descriptor-body {                                         311B
    object-identifier "3 0",                                4103332030
```

```
      user-visible-name "Header",                          8E06486561646572
      subordinates { "0","1","2","3" }}},                  A00C120130120131120132120133
logical-object {                                           A617
  object-type basic-logical,                               020102
  descriptor-body {                                        3112
    object-identifier "3 0 0",                             41053320302030
    user-visible-name "Date",                              8E0444617465
    content-portions {"0" }}},                             A103120130
logical-object {                                           A61C
  object-type basic-logical,                               020102
  descriptor-body {                                        3117
    object-identifier "3 0 1",                             41053320302031
    user-visible-name "Addressee",                         8E094164647265737373656565
    content-portions {"0" }}},                             A103120130
logical-object {                                           A61F
  object-type basic-logical,                               020102
  descriptor-body {                                        311A
    object-identifier "3 0 2",                             41053320302032
    user-visible-name "Subject",                           8E075375626A656374
    presentation-style "5 0",                              9103352030
    content-portions {"0" }}},                             A103120130
logical-object {                                           A61A
  object-type composite-logical,                           020101
  descriptor-body {                                        3115
    object-identifier "3 0 3",                             41053320302033
    user-visible-name "Summary",                           8E0753756D6D617279
    subordinates {"0" }}},                                 A003120130
logical-object {                                           A62B
  object-type basic-logical,                               020102
  descriptor-body {                                        3126
    object-identifier "3 0 3 0",                           4107332030203320302030
    user-visible-name "Summary-paragraph",                 8E1153756D6D617279

                                                           2D706172616772617068
    presentation-style "5 1",                              9103352031
    content-portions { "0" }}},                            A103120130
logical-object {                                           A627
  object-type composite-logical,                           020101
  descriptor-body {                                        3122
    object-identifier "3 1",                               4103332031
    user-visible-name "Body",                              8E04426F6479
    subordinates { "0","1","2","3","4",                    A015120130120131120132120132120131201
               "5","6" }}},                                120134120135120136
logical-object {                                           A623
  object-type basic-logical,                               020102
  descriptor-body {                                        311E
    object-identifier "3 1 0",                             41053320312030
    user-visible-name "Paragraph A",                       8E0B506172616772617068204 1
    presentation-style "5 2",                              9103352032
    content-portions { "0" }}},                            A103120130
logical-object {                                           A623
  object-type basic-logical,                               020102
  descriptor-body {                                        311E
    object-identifier "3 1 1",                             41053320312031
    user-visible-name "Paragraph B",                       8E0B506172616772617068204 2
    presentation-style "5 2",                              9103352032
    content-portions { "0" }}},                            A103120130
logical-object {                                           A61C
  object-type composite-logical,                           020101
  descriptor-body {                                        3117
    object-identifier "3 1 2",                             41053320322032
    user-visible-name "Figure",                            8E06466967757265
    subordinates { "0","1" }}},                            A006120130120131
logical-object {                                           A624
  object-type basic-logical,                               020102
  descriptor-body {                                        311F
    object-identifier "3 1 2 0",                           4107332031203220 30
    user-visible-name "Drawing",                           8E0744726177696E67
    presentation-attributes {                              A606
```

```
        content-architecture-class              060458020800
                { 2 8 2 8 0 }},
      content-portions { "0" }}},                A103120130
logical-object {                                 A61C
  object-type basic-logical,                     020102
  descriptor-body {                              3117
    object-identifier "3 1 2 1",                 41073320312032322031
    user-visible-name "Caption",                 8E0743617074696F6E
    content-portions { "0" }}},                  A103120130
logical-object {                                 A623
  object-type basic-logical,                     020102
  descriptor-body {                              311E
    object-identifier "3 1 3",                   41053320312033
    user-visible-name "Paragraph C",             8E0B506172616772617068204320432043
    presentation-style "5 2",                    9103352032
    content-portions { "0" }}},                  A103120130
logical-object {                                 A623
  object-type basic-logical,                     020102
  descriptor-body {                              311E
    object-identifier "3 1 4",                   41053320312034
    user-visible-name "Paragraph D",             8E0B5061726167726170682044
    presentation-style "5 2",                    9103352032
    content-portions { "0" }}},                  A103120130
logical-object {                                 A61E
  object-type basic-logical,                     020102
  descriptor-body {                              3119
    object-identifier "3 1 5",                   41053320312035
    user-visible-name "Ending",                  8E06456E64696E67
    presentation-style "5 3",                    9103352033
    content-portions { "0" }}},                  A103120130
logical-object {                                 A628
  object-type composite-logical,                 020101
  descriptor-body {                              3123
    object-identifier "3 1 6",                   41053320312036
    user-visible-name "Signature and Name",      8E125369676E617475726520
                                                       616E64204E616D65
    subordinates { "0","1" }}},                  A006120130120131
logical-object {                                 A626
  object-type basic-logical,                     020102
  descriptor-body {                              3121
    object-identifier "3 1 6 0",                 41073320312036362030
    user-visible-name "Signature",               8E095369676E6174757265
    presentation-attributes {                    A606
      content-architecture-class                 060458020701
        { 2 8 2 7 1 }},
      content-portions { "0" }}},                A103120130
logical-object {                                 A61E
  object-type basic-logical,                     020102
  descriptor-body {                              3119
    object-identifier "3 1 6 1",                 41073320312036362031
    user-visible-name "Name",                    8E044E616D65
    presentation-style "5 0",                    9103352030
    content-portions { "0" }}},                  A103120130
content-portion {                                A321
  content-portion-attributes {                   3109
    content-identifier-logical "3 0 0 0" },      8407332030302030302030
  content-information { "CESSON, 26
                JUNE 1985" }},                    0414434553534F4E2C .............. 31393835
content-portion {                                A32C
  content-portion-attributes {                   3109
    content-identifier-logical "3 0 1 0" },      8407332030302031302030
  content-information { "To members
        of ISO/TC97/SC18/WG3" }},                 041F546F206D656D62657273..
content-portion {                                A3LL
  content-portion-attributes {                   3109
    content-identifier-logical "3 0 2 0" },      8407332030302032302030
  content-information { "SUBJECT: PROPOSED
        EXAMPLE TO CLARIFY THE                    04LL5456424A4543553A..
```

```
                    DOCUMENT ARCHITECTURE
                    MODEL" }},                                  ............................................. 4D4F44454C
content-portion {                                               A3LL
  content-portion-attributes {                                  310B
    content-identifier-logical "3 0 3 0 0" },                   84093320302033203022030
    content-information { /*Unformatted string of               04LL53554D4D415259.............................
            SUMMARY-*/ }},
content-portion {                                               A3LL
  content-portion-attributes {                                  3109
    content-identifier-logical "3 1 0 0" },                     840733203120302030
    content-information { /* Unformatted string of
            A's */ }},                                          04LL414141.................................
content-portion {                                               A3LL
  content-portion-attributes {                                  3109
    content-identifier-logical "3 1 1 0" },                     840733203120312030
    content-information { /* Unformatted string of
            B's */ }},                                          04LL4242424242.......................................
content-portion {                                               A3LL
  content-portion-attributes {                                  310B
    content-identifier-logical "3 1 2 0 0" },                   84093320312032203022030
    content-information { /* Ordered set of                     04LL...............................................
            geometric-graphics
            content elements for
            the diagram */ }},
content-portion {                                               A3LL
  content-portion-attributes {                                  310B
    content-identifier-logical "3 1 2 1 0" },                   84093320312032203122030
    content-information { /* Unformatted string                 04LL63617074696F6E .............................
            for the caption */ }},                              ......................................................
content-portion {                                               A3LL
  content-portion-attributes {                                  3109
    content-identifier-logical "3 1 3 0" },                     840733203120332030
    content-information { /* Unformatted string of
            C's */ }},                                          04LL4343434343......................................
content-portion {                                               A3LL
  content-portion-attributes {                                  3109
    content-identifier-logical "3 1 4 0" },                     840733203120342030
    content-information { /* Unformatted                        04LL44444444..........................................
            string of D's */ }},
content-portion {                                               A3LL
  content-portion-attributes {                                  3109
    content-identifier-logical "3 1 5 0" },                     840733203120352030
    content-information { /* Unformatted string                 04LL464F524D414C20
            for Ending */ }},                                   454E44494E47 ..........................................
content-portion {                                               A3LL
  content-portion-attributes {                                  3111
    content-identifier-logical "3 1 6 0 0",                     84093320312036203022030
    raster-gr-coding-attributes {                               A204
      number-of-pels-per-line 1117 }},                          8002045D
    content-information { /* Array of                           04LLZZZZZZZZZZZZZ ...............................
            raster-graphics                                     ......................................................
            content elements for                                ......................................................
            the signature */ }},                                ......................................................
content-portion {                                               A3LL
  content-portion-attributes {                                  310B
    content-identifier-logical "3 1 6 1 0" },                   84093320312036203122030
    content-information { "Miss Aude HEA Document               04LL4D697373 ..........................................
            Architect" }}                                       ......................................................
```

D.3   Example 3: Sample document from Annex B of ITU-T Rec. T.412 | ISO/IEC 8613-2; Generic layout, generic logical and specific logical structures

```
document-profile {                                              A07B
  generic-layout-structure "1",                                 800131
  generic-logical-structure "1",                                840131
  presentation-styles "1",                                      860131
  layout-styles "1",                                            870131
  specific-logical-structure "1",                               850131
```

```
document-characteristics {                                      A26A
  document-architecture-class
          processable,                                          810101
  content-architecture-classes {                                A512
    { 2 8 2 6 1 },                                              060458020601
    { 2 8 2 7 0 },                                              060458020700
    { 2 8 2 8 0 }},                                             060458020800
  interchange-format-class if-a,                                860100
  oda-version {                                                 A84E
    standard-or-recommendation                                  43424954552D54205265632E2054
      "ITU-T Rec. T.410 Series (1993) | ISO/IEC 8613 : 1994;    2E34313020536572696573202831
      version 2.00",                                            39393329207C2049534F2F494943
                                                                2038363133203A20313939343B20
                                                                76657273696F6E20322E3030
      publication-date "19920501" }}},                          4408313939323035303031
layout-object-class {                                           A122
  object-type document-layout-root,                             020100
  descriptor-body {                                             311D
    object-class-identifier "0",                                410130
    user-visible-name "Letter",                                 8E064C6574746572
    generator-for-subordinates {                                A010
     sequence-construction                                      A00E
      required-construction-factor                              A005
       object-class-identifier "0 0",                           4103302030
      repetitive-construction-factor                            A205
       object-class-identifier "0 1" }}},                       4103302031
layout-object-class {                                           A14D
  object-type page,                                             020102
  descriptor-body {                                             3148
    object-class-identifier "0 0",                              4103302030
    user-visible-name "Header",                                 8E06486561646572
    dimensions {                                                A408
        horizontal fixed 9920,                                  800226C0
        vertical fixed 14030},                                  800236CE
    generator-for-subordinates {                                A02F
     sequence-construction                                      A02D
      required-construction-factor                              A007
       object-class-identifier "0 0 0",                         41053020302030
      required-construction-factor                              A007
       object-class-identifier "0 0 1",                         41053020302031
      required-construction-factor                              A007
       object-class-identifier "0 0 2",                         41053020302032
      required-construction-factor                              A007
       object-class-identifier "0 0 3",                         41053020302033
      required-construction-factor                              A007
       object-class-identifier
                "0 0 4" }}},                                    41053020302034
layout-object-class {                                           A12F
  object-type frame,                                            020103
  descriptor-body {                                             312A
    object-class-identifier "0 0 0",                            41053020302030
    position {
        fixed-position {                                        A308
            horizontal 710,                                     800202C6
            vertical 730 }},                                    800202DA
    dimensions {                                                A408
        horizontal fixed 3685,                                  80020E65
        vertical fixed 2495 },                                  800209BF
    generator-for-subordinates {                                A00D
     single-term-construction                                   A30B
      required-construction-factor                              A009
       object-class-identifier
                "0 0 0 0" }}},                                  410730203020302030
layout-object-class {                                           A121
  object-type block,                                            020104
  descriptor-body {                                             311C
    object-class-identifier "0 0 0 0",                          410730203020302030
    user-visible-name "Logo",                                   8E044C6F676F
```

```
        presentation-attributes {                                    A606
            content-architecture-class
            { 2 8 2 7 0 }},                                          060458020700
        content-portions { "0" }}},                                  A103120130
layout-object-class {                                                A126
  object-type frame,                                                 020103
  descriptor-body {                                                  3121
    object-class-identifier "0 0 1",                                 41053020302031
    user-visible-name "Date",                                        8E0444617465
    position {
        fixed-position {                                            A308
            horizontal 5045,                                         800213B5
            vertical 565 }},                                         80020235
      dimensions {                                                   A408
        horizontal fixed 3970,                                       80020F82
        vertical fixed 1615 }}},                                     8002064F
layout-object-class {                                                A12B
  object-type frame,                                                 020103
  descriptor-body {                                                  3126
    object-class-identifier "0 0 2",                                 41053020302032
    user-visible-name "Addressee",                                   8E09416464726573736565
    position {
        fixed-position {                                            A308
            horizontal 1105,                                         80020451
            vertical 4310 }},                                        800210D6
      dimensions {                                                   A408
        horizontal fixed 5395,                                       80021513
        vertical fixed 1415 }}},                                     80020587
layout-object-class {                                                A129
  object-type frame,                                                 020103
  descriptor-body {                                                  3124
    object-class-identifier "0 0 3",                                 41053020302033
    user-visible-name "Subject",                                     8E075375626A656374
    position {
        fixed-position {                                            A308
            horizontal 1105,                                         80020451
            vertical 6660 }},                                        80021A04
      dimensions {                                                   A408
        horizontal fixed 7200,                                       80021C20
        vertical fixed 1785 }}},                                     800206F9
layout-object-class {                                                A129
  object-type frame,                                                 020103
  descriptor-body {                                                  3124
    object-class-identifier "0 0 4",                                 41053020302034
    user-visible-name "Summary",                                     8E0753756D6D617279
    position {
        fixed-position {                                            A308
            horizontal 2180,                                         80020884
            vertical 9695 }},                                        800225DF
      dimensions {                                                   A408
        horizontal fixed 6290,                                       80021892
        vertical fixed 3570 }}},                                     80020DF2
layout-object-class {                                                A127
  object-type page,                                                  020102
  descriptor-body {                                                  3122
    object-class-identifier "0 1",                                   4103302031
    user-visible-name "Body",                                        8E04426F6479
    dimensions {                                                     A408
        horizontal fixed 9920,                                       800226C0
        vertical fixed 14030 },                                      800236CE
    generator-for-subordinates {                                     A00B
    single-term-construction                                         A309
      required-construction-factor                                   A007
      object-class-identifier
                "0 1 0" }}},                                         41053020312030
layout-object-class {                                                A126
  object-type frame,                                                 020103
  descriptor-body {                                                  3121
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      object-class-identifier "0 1 0",                           41053020312030
      user-visible-name "Body",                                  8E04426F6479
      position {
          fixed-position {                                       A308
                horizontal 565,                                  80020235
                vertical 565 }},                                 80020235
          dimensions {                                           A408
              horizontal fixed 8815,                             8002226F
              vertical fixed 12870 }}},                          80023246
logical-object-class {                                           A522
  object-type document-logical-root,                            020100
  descriptor-body {                                              311D
    object-class-identifier "2",                                 410132
    user-visible-name "Letter",                                  8E064C6574746572
    generator-for-subordinates {                                 A010
     sequence-construction                                       A00E
      required-construction-factor                               A005
      object-class-identifier "2 0",                             4103322030
      required-construction-factor                               A005
      object-class-identifier
              "2 1" }}},                                         4103322031
logical-object-class {                                           A53A
  object-type composite-logical,                                 020101
  descriptor-body {                                              3135
    object-class-identifier "2 0",                               4103322030
    user-visible-name "Header",                                  8E06486561646572
    generator-for-subordinates {                                 A026
     sequence-construction                                       A024
      required-construction-factor                               A007
      object-class-identifier "2 0 0",                           41053220302030
      required-construction-factor                               A007
      object-class-identifier "2 0 1",                           41053220302031
      required-construction-factor                               A007
      object-class-identifier "2 0 2",                           41053220302032
      required-construction-factor                               A007
      object-class-identifier
              "2 0 3" }}},                                       41053220302033
logical-object-class {                                           A51F
  object-type basic-logical,                                     020102
  descriptor-body {                                              311A
    object-class-identifier "2 0 0",                             41053220302030
    user-visible-name "Date",                                    8E0444617465
    layout-style "4 0",                                          9303342030
    presentation-attributes {                                    A606
      content-architecture-class                                 060458020601
              { 2 8 2 6 1 }}}},
logical-object-class {                                           A524
  object-type basic-logical,                                     020102
  descriptor-body {                                              311F
    object-class-identifier "2 0 1",                             41053220302031
    user-visible-name "Addressee",                               8E094164647265737365
    layout-style "4 1",                                          9303342031
    presentation-attributes {                                    A606
      content-architecture-class                                 060458020601
              { 2 8 2 6 1 }}}},
logical-object-class {                                           A527
  object-type basic-logical,                                     020102
  descriptor-body {                                              3122
    object-class-identifier "2 0 2",                             41053220302032
    user-visible-name "Subject",                                 8E075375626A656374
    layout-style "4 2",                                          9303342032
    presentation-style "5 0",                                    9103352030
    presentation-attributes {                                    A606
      content-architecture-class                                 060458020601
              { 2 8 2 6 1 }}}},
logical-object-class {                                           A529
  object-type composite-logical,                                 020101
  descriptor-body {                                              3124
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object-class-identifier "2 0 3",	**41053220302033**
user-visible-name "Summary",	**8E0753756D6D617279**
layout-style "4 3",	**9303342033**
generator-for-subordinates {	**A00D**
single-term-construction	**A30B**
repetitive-construction-factor	**A309**
object-class-identifier	
"2 0 3 1" }}},	**410732203020332031**
logical-object-class {	**A533**
object-type basic-logical,	**020102**
descriptor-body {	**312E**
object-class-identifier "2 0 3 1",	**410732203020332031**
user-visible-name "Summary-paragraph",	**8E1153756D6D6172792D70617261**
	6772617068
layout-style "4 4",	**9303342034**
presentation-style "5 1",	**9103352031**
presentation-attributes {	**A606**
content-architecture-class	**060458020601**
{ 2 8 2 6 1 }}}},	
logical-object-class {	**A541**
object-type composite-logical,	**020101**
descriptor-body {	**313C**
object-class-identifier "2 1",	**4103322031**
user-visible-name "Body",	**8E04426F6479**
layout-style "4 5",	**9303342035**
generator-for-subordinates {	**A02A**
sequence-construction	**A028**
repetitive-construction-factor	**A214**
choice-construction	**A212**
required-construction-factor	**A007**
object-class-identifier	
"2 1 0",	**41053220312030**
required-construction-factor	**A007**
object-class-identifier	
"2 1 1",	**41053220312031**
required-construction-factor	**A007**
object-class-identifier	
"2 1 2",	**41053220312032**
required-construction-factor	**A007**
object-class-identifier	
"2 1 3" }}},	**41053220312033**
logical-object-class {	**A533**
object-type composite-logical,	**020101**
descriptor-body {	**312E**
object-class-identifier "2 1 0",	**41053220312030**
user-visible-name "Figure",	**8E06466967757265**
layout-style "4 6",	**9303342036**
generator-for-subordinates {	**A018**
sequence-construction	**A016**
required-construction-factor	**A009**
object-class-identifier	
"2 1 0 0",	**410732203120302030**
required-construction-factor	**A009**
object-class-identifier	
"2 1 0 1" }}},	**410732203120302031**
logical-object-class {	**A524**
object-type basic-logical,	**020102**
descriptor-body {	**311F**
object-class-identifier "2 1 0 0",	**410732203120302030**
user-visible-name "Drawing",	**8E0744726177696E67**
presentation-attributes {	**A606**
content-architecture-class	**060458020800**
{ 2 8 2 8 0 }},	
layout-style "4 7" }},	**9303342037**
logical-object-class {	**A524**
object-type basic-logical,	**020102**
descriptor-body {	**311F**
object-class-identifier "2 1 0 1",	**410732203120302031**

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        user-visible-name "Caption",                   8E0743617074696F6E
        layout-style "4 8",                             9303342038
        presentation-attributes {                       A606
            content-architecture-class                  060458020601
        { 2 8 2 6 1 }}}},
logical-object-class {                                  A52E
  object-type basic-logical,                            020102
  descriptor-body {                                     3129
    object-class-identifier "2 1 1",                    41053220312031
    user-visible-name "Body-paragraph",                 8E0E426F64792D706172616772 61
                                                                              7068
    layout-style "4 9",                                 9303342039
    presentation-style "5 3",                           9103352033
    presentation-attributes {                           A606
        content-architecture-class                      060458020601
    { 2 8 2 6 1 }}}},
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  object-type basic-logical,                            020102
  descriptor-body {                                     3127
    object-class-identifier "2 1 2",                    41053220312032
    user-visible-name "Ending",                         8E06456E64696E67
    layout-style "4 10",                                930434203130
    presentation-style "5 4",                           9103352034
    content-portions { "0" },                           A103120130
    presentation-attributes {                           A606
        content-architecture-class                      060458020601
    { 2 8 2 6 1 }}}},
logical-object-class {                                  A53A
  object-type composite-logical,                        020101
  descriptor-body {                                     3135
    object-class-identifier "2 1 3",                    41053220312033
    user-visible-name "Signature-and-Name",             8E125369676E61747572652D616E
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    generator-for-subordinates {                        A018
      sequence-construction                             A016
       required-construction-factor                     A009
        object-class-identifier
                "2 1 3 0",                               410732203120332030
       required-construction-factor                     A009
        object-class-identifier
                "2 1 3 1" }}},                           410732203120332031
logical-object-class {                                  A527
  object-type basic-logical,                            020102
  descriptor-body {                                     3122
    object-class-identifier "2 1 3 0",                  410732203120332030
    user-visible-name "Signature",                      8E095369676E6174757265
    presentation-attributes {                           A606
        content-architecture-class                      060458020701
    { 2 8 2 7 1 }},
    layout-style "4 11" }},                             930434203131
logical-object-class {                                  A527
  object-type basic-logical,                            020101
  descriptor-body {                                     3122
    object-class-identifier "2 1 3 1",                  410732203120332031
    user-visible-name "Name",                           8E044E616D65
    layout-style "4 12",                                930434203132
    presentation-style "5 0",                           9103352030
    presentation-attributes {                           A606
        content-architecture-class                      060458020601
    { 2 8 2 6 1 }}}},
content-portion {                                       A3LL
  content-portion-attributes {                          3111
    content-identifier-layout "0 0 0 0 0",              4007302030203020302030
    raster-gr-coding-attributes {                       A204
       number-of-pels-per-line 737 }},                  800202E1
  content-information { /* Array of
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                content elements for                    ..........................................
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the logo */ }},	....
content-portion {	**A3LL**
content-portion-attributes {	**3109**
content-identifier-logical "2 1 2 0" },	**840732203120322030**
content-information { /* Unformatted string	**04LL......................................**
for ending */ }},	....
presentation-style {	**A70D**
style-identifier "5 0",	**4503352030**
presentation-attributes {	**A306**
character-attributes {	**A004**
line-spacing 300 }}},	**8702012C**
presentation-style {	**A710**
style-identifier "5 1",	**4503352031**
presentation-attributes {	**A309**
character-attributes {	**A007**
first-line-offset 1417,	**97020589**
alignment justified }}},	**880103**
presentation-style {	**A714**
style-identifier "5 3",	**4503352033**
presentation-attributes {	**A30D**
character-attributes {	**A00B**
first-line-offset 1417,	**97020589**
alignment justified,	**880103**
line-spacing 300 }}},	**8702012C**
presentation-style {	**A714**
style-identifier "5 4",	**4503352034**
presentation-attributes {	**A30D**
character-attributes {	**A00B**
first-line-offset 1020,	**970203FC**
alignment justified,	**880103**
line-spacing 300 }}},	**8702012C**
layout-style {	**A818**
style-identifier "4 0",	**4503342030**
layout-directives {	**A411**
layout-object-class "0 0 1",	**8B053020302031**
offset {	**A408**
trailing 710,	**820202C6**
right-hand 395 }}},	**8002018B**
layout-style {	**A80E**
style-identifier "4 1",	**4503342031**
layout-directives {	**A407**
layout-object-class "0 0 2" }},	**8B053020302032**
layout-style {	**A80E**
style-identifier "4 2",	**4503342032**
layout-directives {	**A407**
layout-object-class "0 0 3" }},	**8B053020302033**
layout-style {	**A80E**
style-identifier "4 3",	**4503342033**
layout-directives {	**A407**
layout-object-class "0 0 4" }},	**8B053020302034**
layout-style {	**A80D**
style-identifier "4 4",	**4503342034**
layout-directives {	**A406**
offset {	**A404**
left-hand 705 }}},	**810202C1**
layout-style {	**A80C**
style-identifier "4 5",	**4503342035**
layout-directives {	**A405**
new-layout-object {	
to-layout-object-class "0 1" }}},	**8703302031**
layout-style {	**A80E**
style-identifier "4 6",	**4503342036**
layout-directives {	**A407**
indivisibility {	
to-layout-object-class "0 1 0" }}},	**80053020312030**
layout-style {	**A817**
style-identifier "4 7",	**4503342037**
layout-directives {	**A410**

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      offset {                                              A408
        right-hand 1615,                                    8002064F
        left-hand 2155 },                                   8102086B
      separation {                                          A304
        trailing 905 }}},                                   81020389
  layout-style {                                            A817
    style-identifier "4 8",                                 4503342038
    layout-directives {                                     A410
      offset {                                              A408
        right-hand 1985,                                    800207C1
        left-hand 2860 },                                   81020B2C
      separation {                                          A304
        trailing 200 }}},                                   810200C8
  layout-style {                                            A81F
    style-identifier "4 9",                                 4503342039
    layout-directives {                                     A418
      offset {                                              A410
        trailing 540,                                       8202021C
        leading 280,                                        83020118
        right-hand 540,                                     8002021C
        left-hand 340 },                                    81020154
      separation {                                          A304
        trailing 880 }}},                                   81020370
  layout-style {                                            A818
    style-identifier "4 10",                                450434203130
    layout-directives {                                     A410
      offset {                                              A408
        right-hand 1420,                                    8002058C
        left-hand 535 },                                    81020217
      separation {                                          A304
        trailing 880 }}},                                   81020370
  layout-style {                                            A818
    style-identifier "4 11",                                450434203131
    layout-directives {                                     A410
      offset {                                              A408
        right-hand 2695,                                    80020A87
        left-hand 535 },                                    81020217
      separation {                                          A304
        trailing 765 }}},                                   810202FD
  layout-style {                                            A812
    style-identifier "4 12",                                450434203132
    layout-directives {                                     A40A
      offset {                                              A408
        right-hand 5385,                                    80021509
        left-hand 910 }}},                                  8102038E
  logical-object {                                          A61B
    object-type document-logical-root,                      020100
    descriptor-body {                                       3116
      object-identifier "3",                                410133
      object-class "2",                                     820132
      user-visible-name "Letter",                           8E064C6574746572
      subordinates{ "0","1" }}},                            A006120130120131
  logical-object {                                          A625
    object-type composite-logical,                          020101
    descriptor-body {                                       3120
      object-identifier "3 0",                              4103332030
      object-class "2 0",                                   8203322030
      user-visible-name "Header",                           8E06486561646572
      subordinates {"0","1","2","3" }}},                    A00C120130120131120132120133
  logical-object {                                          A61E
    object-type basic-logical,                              020102
    descriptor-body {                                       3119
      object-identifier "3 0 0",                            41053320302030
      object-class "2 0 0",                                 82053220302030
      user-visible-name "Date",                             8E0444617465
      content-portions { "0" }}},                           A103120130
  logical-object {                                          A623
    object-type basic-logical,                              020102
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  descriptor-body {                                        311E
    object-identifier "3 0 1",                             41053320302031
    object-class "2 0 1",                                  82053220302031
    user-visible-name "Addressee",                         8E094164647265737365
    content-portions { "0" }}},                            A103120130
logical-object {                                           A621
  object-type basic-logical,                               020102
  descriptor-body {                                        311C
    object-identifier "3 0 2",                             41053320302032
    object-class "2 0 2",                                  82053220302032
    user-visible-name "Subject",                           8E075375626A656374
    content-portions { "0" }}},                            A103120130
logical-object {                                           A621
  object-type composite-logical,                           020101
  descriptor-body {                                        311C
    object-identifier "3 0 3",                             41053320302033
    object-class "2 0 3",                                  82053220302033
    user-visible-name "Summary",                           8E0753756D6D617279
    subordinates { "0" }}},                                A003120130
logical-object {                                           A62F
  object-type basic-logical,                               020102
  descriptor-body {                                        312A
    object-identifier "3 0 3 0",                           410733203020332030
    object-class "2 0 3 1",                                820732203020332031
    user-visible-name "Summary-paragraph",                 8E1153756D6D617279
                                                           2D7061726167726170
    content-portions { "0" }}},                            A103120130
logical-object {                                           A62C
  object-type composite-logical,                           020101
  descriptor-body {                                        3127
    object-identifier "3 1",                               4103332031
    object-class "2 1",                                    8203322031
    user-visible-name "Body",                              8E04426F6479
    subordinates { "0","1","2","3","4",
                   "5","6" }}},                            A01512013012013112013212013
                                                               3120134120135120136
logical-object {                                           A625
  object-type basic-logical,                               020102
  descriptor-body {                                        3120
    object-identifier "3 1 0",                             41053320312030
    object-class "2 1 1",                                  82053220312031
    user-visible-name "Paragraph A",                       8E0B506172616772617068 2041
  content-portions { "0" }}},                              A103120130
logical-object {                                           A62D
  object-type basic-logical,                               020102
  descriptor-body {                                        3128
    object-identifier "3 1 1",                             41053320312031
    object-class "2 1 1",                                  82053220312031
    user-visible-name "Paragraph B",                       8E0B506172616772617068 2042
    presentation-attributes {                              A606
        character-attributes {                             A004
            line-spacing 400 }},                           87020190
    content-portions { "0" }}},                            A103120130
logical-object {                                           A623
  object-type composite-logical,                           020101
  descriptor-body {                                        311E
    object-identifier "3 1 2",                             41053320312032
    object-class "2 1 0",                                  82053220312030
    user-visible-name "Figure",                            8E064669677572 65
    subordinates { "0","1" }}},                            A006120130120131
logical-object {                                           A625
  object-type basic-logical,                               020102
  descriptor-body {                                        3120
    object-identifier "3 1 2 0",                           410733203120322030
    object-class "2 1 0 0",                                820732203120302030
    user-visible-name "Drawing",                           8E0744726177696E67
    content-portions { "0" }}},                            A103120130
logical-object {                                           A625
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    object-type basic-logical,                              020102
    descriptor-body {                                       3120
      object-identifier "3 1 2 1",                          410733203120322031
      object-class "2 1 0 1",                               820732203120302031
      user-visible-name "Caption",                          8E0743617074696F6E
      content-portions { "0" }}},                           A103120130
logical-object {                                            A625
  object-type basic-logical,                                020102
  descriptor-body {                                         3120
    object-identifier "3 1 3",                              41053320312033
    object-class "2 1 1",                                   82053220312031
    user-visible-name "Paragraph C",                        8E0B5061726167726170682043
    content-portions { "0" }}},                             A103120130
logical-object {                                            A625
  object-type basic-logical,                                020102
  descriptor-body {                                         3120
    object-identifier "3 1 4",                              41053320312034
    object-class "2 1 1",                                   82053220312031
    user-visible-name "Paragraph D",                        8E0B5061726167726170682044
    content-portions { "0" }}},                             A103120130
logical-object {                                            A61B
  object-type basic-logical,                                020102
  descriptor-body {                                         3116
    object-identifier "3 1 5",                              41053320312035
    object-class "2 1 2",                                   82053220312032
    user-visible-name "Ending" }},                          8E06456E64696E67
logical-object {                                            A62F
  object-type composite-logical,                            020101
  descriptor-body {                                         312A
    object-identifier "3 1 6",                              41053320312036
    object-class "2 1 3",                                   82053220312033
    user-visible-name "Signature and Name",                8E125369676E617475726520
                                                                    616E64204E616D65
    subordinates { "0","1" }}},                             A006120130120131
logical-object {                                            A627
  object-type basic-logical,                                020102
  descriptor-body {                                         3122
    object-identifier "3 1 6 0",                            410733203120362030
    object-class "2 1 3 0",                                 820732203120332030
    user-visible-name "Signature",                          8E095369676E6174757265
    content-portions { "0" }}},                             A103120130
logical-object {                                            A622
  object-type basic-logical,                                020102
  descriptor-body {                                         311D
    object-identifier "3 1 6 1",                            410733203120362031
    object-class "2 1 3 1",                                 820732203120332031
    user-visible-name "Name",                               8E044E616D65
    content-portions { "0" }}},                             A103120130
content-portion {                                           A321
  content-portion-attributes {                              3109
    content-identifier-logical "3 0 0 0" },                 840733203020302030
  content-information { "CESSON, 26 JUNE 1985" }},          0414434553534F4E2C ...............31393835
content-portion {                                          A32C
  content-portion-attributes {                              3109
    content-identifier-logical "3 0 1 0" },                 840733203020312030
  content-information { "To members of ISO/TC97             041F546F206D656D62657273..
          /SC18/WG3" }},                                     ..4733
content-portion {                                          A3LL
  content-portion-attributes {                              3109
    content-identifier-logical "3 0 2 0" },                 840733203020322030
  content-information { "SUBJECT: PROPOSED
      EXAMPLE TO CLARIFY THE DOCUMENT                       04LL5456424A4543553A..
      ARCHITECTURE MODEL" }},                               ............................................ 4D4F44454C
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  content-portion-attributes {                              310B
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            of SUMMARY-*/ }},
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    content-identifier-logical "3 1 0 0" },                    840733203120302030
  content-information { /* Unformatted string of
                 A's */ }},                                     04LL414141...............................................
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  content-portion-attributes {                                 3109
    content-identifier-logical "3 1 1 0" },                    840733203120312030
  content-information { /* Unformatted string
                 of B's */ }},                                 04LL4242424242........................................
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  content-portion-attributes {                                 310B
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  content-information { /* Ordered set of
          geometric-graphics content                           04LL..........................................................
          elements for the diagram */ }},                      ...............................................................
content-portion {                                              A3LL
  content-portion-attributes {                                 310B
    content-identifier-logical "3 1 2 1 0" },                  8409332031203220312030
  content-information { /* Unformatted string
                 for the caption */ }},                        04LL63617074696F6E ............................
content-portion {                                              A3LL
  content-portion-attributes {                                 3109
    content-identifier-logical "3 1 3 0" },                    840733203120332030
  content-information { /* Unformatted string of
                 C's */ }},                                     04LL4343434343.......................................
content-portion {                                              A3LL
  content-portion-attributes {                                 3109
    content-identifier-logical "3 1 4 0" },                    840733203120342030
  content-information { /* Unformatted string of
                 D's */ }},                                     04LL44444444..........................................
content-portion {                                              A3LL
  content-portion-attributes {                                 3111
    content-identifier-logical "3 1 6 0 0",                    8409332031203620302030
    raster-gr-coding-attributes {                              A204
      number-of-pels-per-line 1117 }},                         8002045D
  content-information { /* Array of
       raster-graphics content elements                        04LLZZZZZZZZZZZZ ..............................
       for the signature */ }},                                ...............................................................
content-portion {                                              A3LL
  content-portion-attributes {                                 310B
    content-identifier-logical "3 1 6 1 0" },                  8409332031203620312030
  content-information { "Miss Aude HEA Document                 04LL4D697373 ..........................................
                 Architect" }}                                 ...............................................................
```

D.4   Example 4:   Sample document from Annex B of ITU-T Rec. T.412 | ISO/IEC 8613-2; Specific layout structure only

```
layout-object {                                                A21E
  object-type document-layout-root,                            020100
  descriptor-body {                                            3119
    object-identifier "1",                                     410131
    object-class "0",                                          820130
    user-visible-name "Letter",                                8E064C6574746572
    subordinates { "0","1","2" }}},                            A009120130120131120132
layout-object {                                                A228
  object-type page,                                            020102
  descriptor-body {                                            3123
    object-identifier "1 0",                                   4103312030
    object-class "0 0",                                        8203302030
    user-visible-name "Header",                                8E06486561646572
    subordinates { "0","1","2","3","4" }}},                    A00F1201301201311201321201333
                                                                          120134
layout-object {                                                A218
  object-type frame,                                           020103
  descriptor-body {                                            3113
    object-identifier "1 0 0",                                 41053120302030
```

object-class "0 0 0",	82053020302030
subordinates { "0" }}},	A003120130
layout-object {	A22A
object-type block,	020104
descriptor-body {	3125
object-identifier "1 0 0 0",	410731203020302030
object-class "0 0 0 0",	820730203020302030
user-visible-name "Logo",	8E044C6F676F
presentation-attributes {	A60B
content-architecture-class	060458020700
{ 2 8 2 7 0 },	
raster-graphics-attributes {	A103
pel-transmission-density p2 }}}},	820105
layout-object {	A21E
object-type frame,	020103
descriptor-body {	3119
object-identifier "1 0 1",	41053120302031
object-class "0 0 1",	82053020302031
user-visible-name "Date",	8E0444617465
subordinates { "0" }}},	A003120130
layout-object {	A22F
object-type block,	020104
descriptor-body {	312A
object-identifier "1 0 1 0",	410731203020312030
position {	A308
horizontal 395,	8002018B
vertical 710 },	800202C6
dimensions {	A408
horizontal 3060,	80020BF4
vertical fixed 540 },	8002021C
content-portions { "0" },	A103120130
presentation-attributes {	A606
content-architecture-class	060458020602
{ 2 8 2 6 2 }}}},	
layout-object {	A223
object-type frame,	020103
descriptor-body {	311E
object-identifier "1 0 2",	41053120302032
object-class "0 0 2",	82053020302032
user-visible-name "Addressee",	8E09416464726573736565
subordinates { "0" }}},	A003120130
layout-object {	A225
object-type block,	020104
descriptor-body {	3120

```
    object-identifier "1 0 2 0",                    410731203020322030
    dimensions {                                    A408
        horizontal 4505,                            80021199
        vertical fixed 540 },                       8002021C
    content-portions{ "0" },                        A103120130
    presentation-attributes {                       A606
        content-architecture-class                  060458020602
    { 2 8 2 6 2 }}}},
layout-object {                                      A221
  object-type frame,                                020103
  descriptor-body {                                 311C
    object-identifier "1 0 3",                      41053120302033
    object-class "0 0 3",                           82053020302033
    user-visible-name "Subject",                    8E075375626A656374
    subordinates { "0" }}},                         A003120130
layout-object {                                     A22A
  object-type block,                                020104
  descriptor-body {                                 3125
    object-identifier "1 0 3 0",                    410731203020332030
    dimensions {                                    A408
        horizontal 7200,                            80021C20
        vertical fixed 905 },                       80020389
    presentation-style "5 0",                       9103352030
    content-portions { "0" },                       A103120130
    presentation-attributes {                       A606
        content-architecture-class                  060458020602
    { 2 8 2 6 2 }}}},
layout-object {                                     A221
  object-type frame,                                020103
  descriptor-body {                                 311C
    object-identifier "1 0 4",                      41053120302034
    object-class "0 0 4",                           82053020302034
    user-visible-name "Summary",                    8E0753756D6D617279
    subordinates { "0" }}},                         A003120130
layout-object {                                     A22A
  object-type block,                                020104
  descriptor-body {                                 3125
    object-identifier "1 0 4 0",                    410731203020342030
    dimensions {                                    A408
        horizontal 5585,                            800215D1
        vertical fixed 2325 },                      80020915
    presentation-style "5 1",                       9103352031
    content-portions { "0" },                       A103120130
    presentation-attributes {                       A606
        content-architecture-class                  060458020602
    { 2 8 2 6 2 }}}},
layout-object {                                     A21A
  object-type page,                                 020102
  descriptor-body {                                 3115
    object-identifier "1 1",                        4103312031
    object-class "0 1",                             8203302031
    user-visible-name "Body",                       8E04426F6479
    subordinates { "0" }}},                         A003120130
layout-object {                                     A22A
  object-type frame,                                020103
  descriptor-body {                                 3125
    object-identifier "1 1 0",                      41053120312030
    object-class "0 1 0",                           82053020312030
    user-visible-name "Body",                       8E04426F6479
    subordinates { "0","1","2","3","4" }}},         A00F120130120131120132120
                                                        133120134
layout-object {                                     A234
  object-type block,                                020104
  descriptor-body {                                 312F
    object-identifier "1 1 0 0",                    410731203120302030
    position {                                      A308
        horizontal 540,                             8002021C
        vertical 540 },                             8002021C
    dimensions {                                    A408
        horizontal 7935,                            80021EFF
```

vertical fixed 1785 },	800206F9
presentation-style "5 3",	9103352033
content-portions { "0" },	A103120130
presentation-attributes {	A606
content-architecture-class	060458020602
{ 2 8 2 6 2 }}}},	
layout-object {	A23A
object-type block,	020104
descriptor-body {	3135
object-identifier "1 1 0 1",	410731203120302031
position {	A308
horizontal 540,	8002021C
vertical 3205 },	80020C85
dimensions {	A408
horizontal 7935,	80021EFF
vertical fixed 1785 },	800206F9
presentation-style "5 3",	9103352033
content-portions { "0" },	A103120130
presentation-attributes {	A60C
character-attributes {	A004
line-spacing 400 },	87020190
content-architecture-class	060458020602
{ 2 8 2 6 2 }}}},	
layout-object {	A22F
object-type block,	020104
descriptor-body {	312A
object-identifier "1 1 0 2",	410731203120302032
position {	A308
horizontal 1615,	8002064F
vertical 6460 },	8002193C
dimensions {	A408
horizontal 5045,	800213B5
vertical fixed 4140 },	8002102C
presentation-attributes {	A606
content-architecture-class	060458020800
{ 2 8 2 8 0 }},	
content-portions { "0" }}},	A103120130
layout-object {	A22F
object-type block,	020104
descriptor-body {	312A
object-identifier "1 1 0 3",	410731203120302033
position {	A308
horizontal 1985,	800207C1
vertical 10235 },	800227FB
dimensions {	A408
horizontal 3970,	80020F82
vertical fixed 370 },	80020172
content-portions { "0" },	A103120130
presentation-attributes {	A606
content-architecture-class	060458020602
{ 2 8 2 6 2 }}}},	
layout-object {	A234
object-type block,	020104
descriptor-body {	312F
object-identifier "1 1 0 4",	410731203120302034
position {	A308
horizontal 540,	8002021C
vertical 11485 },	80022CDD
dimensions {	A408
horizontal 7935,	80021EFF
vertical fixed 1075 },	80020433
presentation-style "5 3",	9103352033
content-portions { "0" },	A103120130
presentation-attributes {	A606
content-architecture-class	060458020602
{ 2 8 2 6 2 }}}},	
layout-object {	A21A
object-type page,	020102

```
  descriptor-body {                                          3115
    object-identifier "1 2",                                 4103312032
    object-class "0 1",                                      8203302031
    user-visible-name "Body",                                8E04426F6479
    subordinates { "0" }}},                                  A003120130
layout-object {                                              A22A
  object-type frame,                                         020103
  descriptor-body {                                          3125
    object-identifier "1 2 0",                               41053120322030
    object-class "0 1 0",                                    82053020312030
    user-visible-name "Body",                                8E04426F6479
    subordinates { "0","1","2","3","4" }}},                  A00F120130120131120132120133
                                                                            120134

layout-object {                                              A234
  object-type block,                                         020104
  descriptor-body {                                          312F
    object-identifier "1 2 0 0",                             410731203220302030
    position {                                               A308
        horizontal 540,                                      8002021C
        vertical 540 },                                      8002021C
    dimensions {                                             A408
        horizontal 7935,                                     80021EFF
        vertical fixed 1275 },                               800204FB
    presentation-style "5 3",                                9103352033
    content-portions { "0" },                                A103120130
    presentation-attributes {                                A606
        content-architecture-class                           060458020602
        { 2 8 2 6 2 }}}},
layout-object {                                              A234
  object-type block,                                         020104
  descriptor-body {                                          312F
    object-identifier "1 2 0 1",                             410731203220302031
    position {                                               A308
        horizontal 540,                                      8002021C
        vertical 2695 },                                     80020A87
    dimensions {                                             A408
        horizontal 7935,                                     80021EFF
        vertical fixed 1615 },                               8002064F
    presentation-style "5 3",                                9103352033
    content-portions { "0" },                                A103120130
    presentation-attributes {                                A606
        content-architecture-class                           060458020602
        { 2 8 2 6 2 }}}},
layout-object {                                              A234
  object-type block,                                         020104
  descriptor-body {                                          312F
    object-identifier "1 2 0 2",                             410731203220302032
    position {                                               A308
        horizontal 1820,                                     8002071C
        vertical 5190 },                                     80021446
    dimensions {                                             A408
        horizontal 6860,                                     80021ACC
        vertical fixed 2155 },                               8002086B
    presentation-style "5 4",                                9103352034
    content-portions { "0" },                                A103120130
    presentation-attributes {                                A606
        content-architecture-class                           060458020602
        { 2 8 2 6 2 }}}},
layout-object {                                              A22F
  object-type block,                                         020104
  descriptor-body {                                          312A
    object-identifier "1 2 0 3",                             410731203220302033
    position {                                               A308
        horizontal 2695,                                     80020A87
        vertical 8110 },                                     80021FAE
    dimensions {                                             A408
        horizontal 5585,                                     800215D1
        vertical fixed 2495 },                               800209BF
```

```
    presentation-attributes {                           A606
        content-architecture-class                      060458020700
            { 2 8 2 7 0 }},
        content-portions { "0" }}},                      A103120130
layout-object {                                          A234
  object-type block,                                     020104
  descriptor-body {                                      312F
    object-identifier "1 2 0 4",                         410731203220302034
    position {                                           A308
        horizontal 5385,                                 80021509
        vertical 10605 },                                8002296D
    dimensions {                                         A408
        horizontal 2520,                                 800209D8
        vertical fixed 905 },                            80020389
    presentation-style "5 0",                            9103352030
    content-portions { "0" },                            A103120130
    presentation-attributes {                            A606
        content-architecture-class                       060458020602
            { 2 8 2 6 2 }}}},
content-portion {                                        A32C
  content-portion-attributes {                           3114
    content-identifier-layout "1 0 1 0 0",               4009312030203120302030
    content-identifier-logical "3 0 0 0" },              840733203020302030
  content-information { "CESSON, 26 JUNE 1985" }},        0414434553534F4E2C..
                                                          ..31393835
content-portion {                                        A337
  content-portion-attributes {                           3114
    content-identifier-layout "1 0 2 0 0",               4009312030203220302030
    content-identifier-logical "3 0 1 0" },              840733203020312030
  content-information { "To members of ISO/               041F546F206D656D6265727273..
        TC97/SC18/WG3" }},                                ..574733
content-portion {                                        A3LL
  content-portion-attributes {                           3114
    content-identifier-layout "1 0 3 0 0",               4009312030203320302030
    content-identifier-logical "3 0 2 0" },              840733203020322030
  content-information { "SUBJECT: PROPOSED                04LL5456424A4543553A..
        EXAMPLE TO CLARIFY                                ..4D4F44454C
        THE DOCUMENT <SOS>\n<ST>
        ARCHITECTURE MODEL" }},

content-portion {                                        A3LL
  content-portion-attributes {                           3116
    content-identifier-layout "1 0 4 0 0",               4009312030203420302030
    content-identifier-logical "3 0 3 0 0" },            840933203020333020302030
  content-information { /* Formatted processable string of 04LL53554D4D415259............................
        SUMMARY- */ }},
content-portion {                                        A3LL
  content-portion-attributes {                           3114
    content-identifier-layout "1 1 0 0 0",               4009312031203020302030
    content-identifier-logical "3 1 0 0" },              840733203120302030
  content-information { /* Formatted processable string of 04LL414141............................................
        A's */ }},
content-portion {                                        A3LL
  content-portion-attributes {                           3114
    content-identifier-layout "1 1 0 1 0",               4009312031203020312030
    content-identifier-logical "3 1 1 0" },              840733203120312030
  content-information { /* Formatted processable string of 04LL424242............................................
        B's */ }},
content-portion {                                        A3LL
  content-portion-attributes {                           3116
    content-identifier-layout "1 1 0 2 0",               4009312031203020322030
    content-identifier-logical "3 1 2 0 0" },            840933203120322030203 0
  content-information { /* Ordered set of                04LL............................................
        geometric-graphics
        content elements
        for the diagram */ }},
content-portion {                                        A3LL
  content-portion-attributes {                           3116
    content-identifier-layout "1 1 0 3 0",               4009312031203020332030
```

```
    content-identifier-logical "3 1 2 1 0" },                   8409332031203220312030
    content-information { /* Formatted processable string for    04LL63617074696F6E..
            the caption */ }},
content-portion {                                               A3LL
  content-portion-attributes {                                  3114
    content-identifier-layout "1 1 0 4 0",                      4009312031203020342030
    content-identifier-logical "3 1 3 0" },                     840733203120332030
  content-information { /* Formatted processable string          04LL434343...............................................
            of C's */ }},
content-portion {                                               A3LL
  content-portion-attributes {                                  3114
    content-identifier-layout "1 2 0 0 0",                      4009312032203020302030
    content-identifier-logical "3 1 3 1" } ,                    840733203120332031
  content-information { /* Formatted processable string          04LL434343...............................................
            of C's */ }},
content-portion {                                               A3LL
  content-portion-attributes {                                  3114
    content-identifier-layout "1 2 0 1 0",                      4009312032203020312030
    content-identifier-logical "3 1 4 0" },                     840733203120342030
  content-information { /* Formatted processable string          04LL444444...............................................
            of D's */ }},
content-portion {                                               A3LL
  content-portion-attributes {                                  310B
    content-identifier-layout "1 2 0 2 0" },                    4009312032203020322030
  content-information { /* Formatted processable string          04LL454E44494E47 ...................................
            of ENDING */ }},
content-portion {                                               A3LL
  content-portion-attributes {                                  311C
    content-identifier-layout "1 2 0 3 0",                      4009312032203020332030
    content-identifier-logical "3 1 6 0 0" },                   8409332031203620302030
    raster-gr-coding-attributes {                               A204
      number-of-pels-per-line 1117 },                           8002045D
  content-information { /* Array of                              04LL............................................................
            raster-graphics
            content elements for
            the signature */ }},
content-portion {                                               A3LL
  content-portion-attributes {                                  3116
    content-identifier-layout "1 2 0 4 0",                      4009312032203020342030
    content-identifier-logical "3 1 6 1 0" },                   8409332031203620312030
  content-information { "Miss Aude HEA <SOS>\n<ST>              04LL4D697373 ...........................................
            Document Architect" }}
```

D.5 Example 5: Sample document profile from Annex C of ITU-T Rec. T.414 | ISO/IEC 8613-4; Document profile only

```
document-profile {                                             A082LLLL
 generic-layout-structure "1",                                 800131
 specific-layout-structure "1",                                810131
 specific-logical-structure "1",                               850131
 resource-document                                             AA41
  descriptive-reference "Finance Master,
    Widget Inc.,4511 McKenzie,                                 433F46696E616E636520
    Atlanta, Georgia, USA.",                                   4D61737465722C576964
                                                               67657420496E632E2C34
                                                               353131204D634B656E7A
                                                               69652C41746C616E7461
                                                               2C2047656F726769612C
                                                               205553412E
```

```
document-characteristics {                          A2LL
 document-application-profile {   },                84LL.........................................
 doc-app-profile-defaults {                         AA0F
  document-architecture-defaults {                  A00D
   page-dimensions {                                A208
    horizontal 10200,                               800227D8
    vertical 13200 },                               80023390
   transparency opaque (1) }},                       830101
  document-architecture-class                       810102
   formatted-processable (2),
  content-architecture-classes {                    A506060458020602
   { 2 8 2 6 2 }},
  interchange-format-class if-a (0),                860100
  oda-version {                                     A84E
   standard-or-recommendation                       43424954552D54205265632E2054
   "ITU-T Rec. T.410 Series (1993) | ISO/IEC 8613 : 1994;   2E34313020536572696573202831
    version 2.00",                                  39393329207C2049534F2F494943
                                                    2038363133203A20313939343B20
                                                    76657273696F6E20322E3030
   publication-date "19920501" },                   44083139393230353031
 non-basic-doc-characteristics {                    A222
  page-dimensions {                                 A20A
   { horizontal 13200,                              300880023390
    vertical 10200 }},                              800227D8
  medium-types {                                    A80F
   {nominal-page-size {                             300D3008
    horizontal 10200,                               800227D8
    vertical 13200 },                               80023390
   side-of-sheet recto (1) }},                      020101
  protections {                                     B703
   protected (1) }},                                020101
 additional-doc-characteristics {                   A9LL
  unit-scaling { 12, 10 },                          A30602010C02010A
  fonts-list {                                      A2LL
   { font-identifier 0,                             31LL020100
   font-reference {    }},
                                                    30LL.........................................
   {font-identifier 1,                              31LL020101
   font-reference {    }}}},
                                                    30LL.........................................
                                                    .........................................
document-management-attributes {                    A382034F
 document-description {                             A781E9
  title "May finance report",                       80124D61792066696E61
                                                    6E6365207265706F7274
  subject "May results",                            810B4D61792072657375
                                                    6C7473
  document-reference
   descriptive-reference
   "May financial prelim."                          A51743154D6179206669
                                                    6E616E6369616C207072
                                                    656C696D2E
  document-type "Report",                           82065265706F7274
  abstract "The current figures show               83795468652063757272
       an improvement in return                    656E7420666967757265
       on assets but still show                    732073686F7720616E20
       an undercapitalization of                   696D70726F76656D656E
       production capacity.",                       7420696E207265747572
                                                    6E206F6E206173736574
                                                    7320627574207374696C
                                                    6C2073686F7720616E20
                                                    756E64657263
                                                    61706974616C697A6174
                                                    696F6E206F662070726F
                                                    64756374696F6E206361
                                                    7061636974792E
  keywords {                                        A42A
```

```
  "Finance", "Financial",                      430746696E616E6365
  "May", "Return on assets" }}                 430846696E616369616C
                                               43034D6179
                                               431052657475726E206F
                                               6E20617373657473

 dates-and-times {                             A048
  document-date-and-time "19880605",           80083139383830363035
  creation-date-and-time                       810F3139383830353233
    "19880523T162957",                         54313632393537
  local-filing-date-and-time                   A211
    { "19880605T115103" },                     440F3139383830363035
                                               54313135313033

  expiry-date-and-time "1989",                 830431393839
  purge-date-and-time "19891231",              85083139383931323331
  release-date-and-time "19880605" },          86083139383830363035
 originators {                                 A18195
  organizations {                              A022
    "Widget Inc., Finance and Control" },      43205769646765742049
                                               6E632E2C2046696E616E
                                               636520616E6420436F6E
                                               74726F6C

  preparers {                                  A1193117
   {personal-name {                            A015
    surname "Maltby",                          80064D616C746279
    givenname "Reginald",                      8108526567696E616C64
    initials "P" }}},                          820150
  owners {                                     A2353133
   { organization                              81315769646765742049
    "Widget Inc., 4511 McKenzie,               6E632E2C203435313120
                                               4D634B656E7A69652C20
    Atlanta, Georgia, USA." }},                41746C616E74612C4765
                                               6F726769612C20555341
                                               2E
  authors {                                    A31D311B
   { organization                              81194465776579
    "Dewey, Cheatam & Howe CPA" }}},           2C204368656174616D20
                                               2620486F7765
                                               20435041

 other-user-information {                      A2819B
  copyright {                                  A01A3118
    copyright-information { "Widget Inc." },    A00E
                                               430C5769646765742049
                                               6E632E2C

    copyright-dates { "1988" }},               A106440431393838
  status "May final report",                   81104D61792066696E61
                                               6C207265706F7274

  distribution-list {                          A350
   {personal-name {                            310CA00A
    surname "Marks",                           80054D61726B73
    initials "D" }},                           820144
   { personal-name {                           3115A00A
    surname "Bucks",                           80054275636B73
    initials "B" },                            820142
    organization "Finance" },                  810746696E616E6365
   { personal-name {                           311CA012
    surname "Pencil",                          800650656E63696C
    givenname "James",                         81054A616D6573
    initials "K" },                            82014B
    organization "Audits" },                   8106417564697473
   { personal-name {                           310BA009
    surname "Duck",                            80044475636B
    initials "D" }}},                          820144
  additional-information                       A519
    "Signature receipt req'd" },               43175369676E617472
                                               6520726563656970720
                                               7265712764

 external-references {                         A350
  references-to-other-documents {              A03B
    descriptive-reference                      4314417072696C206669
```

```
    "April finance report",                    6E616E6365207265706F
                                                7274
  descriptive-reference                        430B4D61792062616C61
    "May balance",                             6E6365
  descriptive-reference                        43164D6179206163636F
    "May accounting prelim." },                756E74696E6720707265
                                               6C696D2E
  superceded-documents {                       A111
  descriptive-reference                        430F4D61792066696E61
    "May financial A" }},                      6E6369616C2041
local-file-references {                        A43B
  { file-name "mayfin",                        311C
                                               80066D617966696E
  location "financial_previous" },             811266696E616E636961
                                               6C5F70726576696F7573
  { file-name "mayfin",                        311B
                                               80066D617966696E
  location "financial_current" }},             811166696E616E636961
                                               6C5F63757272656E74
content-attributes {                           A516
  document-size 40447,                         8103009DFF
  number-of-pages 16,                          820110
  languages { "US English" }},                 A40C
                                               430A555320456E676C69
                                               7368
security information {                         A63A
  authorization {
    organization "Widget Inc., Finance" },     84145769646765742049
                                               6E632E2C2046696E616E
                                               6365
  security-classification                      8111436F6D70616E7920
    "Company Financial",                       46696E616E6369616C
  access-rights "Finance Group" }}}            A20F
                                               430D46696E616E636520
                                               47726F7570
```

Annex E

Open Document Language (ODL)
(This annex forms an integral part of this International Standard)

This annex is applicable to ISO/IEC 8613-5 only.

NOTE – To maintain correspondence in clause numbering between ITU-T Recommendation T.415 and ISO/IEC 8613-5, this portion of the Open Document Language (ODL) is specified in a normative annex rather than in the body of this Specification.

E.1   Introduction

This annex specifies a standardized SGML representation of ODA documents, known as the Open Document Language (ODL). ODL is an SGML application conforming to ISO 8879.

This annex also includes rules for using the SGML Document Interchange Format (SDIF) for ODA/ODL documents.

The definitions of ISO 8879 apply to this annex.

NOTES

1   ODL applies SGML to the representation of ODA documents. The specification of ODL focuses on areas that require significant choices to be made: it does not attempt to restate the normal rules of either SGML or ODA for "business as usual". Therefore, if an item is not discussed explicitly:

a)   On issues of semantics, normal ODA rules apply (e.g. allowable attribute values).

b)   On issues of syntax, normal SGML rules apply (e.g. formulation of generic identifiers). Frequently, these rules allow wide latitude to an implementation with no adverse effect on interchange.

For example, SGML requires object class identifiers (element type names, or "generic identifiers (GIs)") to be unique to an element type and to conform to certain syntactic rules. An ODL implementation could, therefore, generate GIs sequentially (G1, G2, ..., Gn). E.2.2.6, however, recommends that GIs be based on ("normally derived from") user-visible names. The preferred "derivation" obviously would be to use the user-visible name "as is" as the GI, but where this is not possible (none specified, not unique, or non-compliance with syntax), an implementation would generate a different name. (Note that there is no constraint on the user-visible name itself; only on the GI.)

2   SGML applications are classified as "structure-controlled" if they operate on the structure that the markup describes, or "markup-sensitive" if they operate on the markup itself. The ODA layout process is a structure-controlled application, while editing an ODA document or converting it from one interchange format to another are markup-sensitive.

The ODL specification defines the precise representation of all ODA processing semantics, thereby permitting "round trips" between ODIF and ODL that will yield the same processing fidelity for structure-controlled applications as interchange with a single format. However, several non-semantic ODA attributes that are used only in markup-sensitive applications are represented using a single SGML construct called a "comment". The means by which these kinds of information are distinguished from one another in ODL is left to the implementation (e.g. both user-visible names and user-readable comments are representable as SGML comments, but an implementation could distinguish between the two by a convention such as beginning the comment with **"URC:"** or **"UVN:"**).

3   For both ODIF and ODL, the base notation parser (ASN.1 or SGML) must be supplemented by ODA-specific parsers. For example, an ODIF parser must validate and resolve cross-references to ODA object identifiers, a function that is an intrinsic part of an SGML parser. An ODL parser, however, will need to segregate components of an attribute value with constructed parameters, which is done intrinsically by ASN.1. In some cases, both ODIF and ODL parsers will need to accomplish the same task, such as resolving defaulted attribute values. (A system that supported both could probably do such tasks with common code.)

4   In both ODIF and SDIF, content portions are normally represented in the ASN.1 data stream as distinct structure components, corresponding, in the case of SDIF, to data entities. In the case of character content, this technique avoids the problem – inherent in all character-based parsing – of data characters that could confuse the parsers. ODL/SDIF can, therefore, represent multiple character sets and control characters to the same extent as ODIF (and with the same efficiency, since both use ASN.1 to demark content portions). (The way in which an implementation treats separate entities within its own environment is not constrained by any standard.)

ODL, however, like other properly-designed SGML applications, also offers the technique of including character content in the same entity as the markup. This technique can be employed for those content portions in which none of the characters conflict with the concrete syntax chosen by the implementation. ISO 8879 contains an extensive discussion of this subject, along with two "multicode" concrete syntax definitions intended for use in multiple character set environments.

E.2   Fundamentals

E.2.1   Basic objects and their content

In ODA, a basic object can have the attribute "content portions" and cannot have the attribute "subordinates". In the ODL representation of ODA, all content portions occur in "data elements".

A data element is an element that is declared either to be empty, or to contain only data. An application should normally define at least one data element type for each content architecture class in use.

NOTE – Definitions for "generic" data elements are given in E.10.2.1 and E.10.2.2. Specialized data element types could also be defined. For example, see the element declaration for **"logo"** in F.1.2.2.

In the layout structure, a data element is itself a basic object. In the logical structure, however, a data element is the sole subelement of a basic object. Attributes of a basic object that are dependent on the content architecture (such as presentation attributes) are represented as attributes of its data element.

A content model for a basic logical object normally offers a choice of all possible data element types (and therefore content architecture classes), as in:

<!ELEMENT blo O O (cf | cfp | cp | gfp | rf | rfp) >

An instance of a basic logical object, however, can contain only a single data element.

E.2.2 ODL names

ODL names are used as generic identifiers of element types, in attribute values, and in the construction of certain data content notation and attribute names.

NOTE – In some SGML concrete syntaxes, including the reference concrete syntax, case distinctions in names other than entity names are not significant. The names defined in ODL are unique even in such syntaxes.

E.2.2.1 Logical object type names

The ODL names for the logical object types are the short form human-readable names defined in A.2.5 of ITU-T Rec. T.412 | ISO/IEC 8613-2:

DLOR	–	–	document	logical	root
CLO	–	–	composite	logical	object
BLO	–– basic logical object				

E.2.2.2 Layout object type names

The ODL names for the layout object types are the short form human-readable names defined in A.2.5 of ITU-T Rec. T.412 | ISO/IEC 8613-2, with two exceptions noted below:

DLAR	–		–	document	layout		root
PAGES	–	–	page	set	(Exception:	equivalent	to PAGE_SET)
PAGE	–		–		page		(composite)
BPAGE	–	–	page	(basic)	(Exception:	see	Note.)
FRAME	–			–			frame
BLOCK	–– block						

NOTE – For syntactic convenience, an object of the type 'composite or basic page' is given the ODL object type name **PAGE** when it is a composite page and the ODL object type name **BPAGE** when it is a basic page. This technique allows composite and basic pages to be represented in ODL as distinct element types, with the appropriate attributes defined for each.

E.2.2.3 Content architecture class names

ODL names for content architecture classes are defined in the Specifications in ISO/IEC 8613 where the SGML representations of the content-related attributes are defined.

Those defined at present are:

cf	–	–	character	formatted	content	architecture	
cfp	–	–	character	formatted	processable	content	architecture
cp	–	–	character	processable	content	architecture	
gfp	–	–	geometric	graphics	formatted	processable	content architecture
rf	–	–	raster	graphics	formatted	content	architecture
rfp	–– raster graphics formatted processable content architecture						

E.2.2.4 Data element type names

The ODL names for data element types are the same as the ODL names for the content architecture classes. All are permitted in the logical structure; those with "formatted" in the name are also permitted in the layout structure.

E.2.2.5 Data content notation names

In ODL, content architectures are represented by an SGML construct called a "data content notation". It is necessary to declare each notation that is used in a document (see E.10).

An ODL notation name is constructed by prefixing **"ODA"** to the ODL content architecture class name. To allow for future changes in ODA, the prefix **"ODA"** in notation names and parameter entity names is reserved.

E.2.2.6 SGML generic identifier (GI)

An element's generic identifier is normally derived from the ODA user-visible name for an object class description.

> NOTE – The word "derived" is used to denote that normal SGML rules must be followed. This means that the generic identifier must be a unique name for its class and it must conform to the concrete syntax. If the user-visible name satisfies these requirements then it can be used as specified. If not, then some implementation-specific derivation must be accomplished to satisfy the SGML rules. This will not affect processing since the GIs carry no semantics and are used merely to establish linkage. If the user-visible name must be preserved for other purposes, an SGML comment and convention can be used. For example **"<!––UVN: user-visible name––>"** where **"UVN: "** is the convention.

Where no object class description exists (for example, when there is no generic part), the ODL name for the object type (see E.2.2.1 and E.2.2.2) is used instead.

A generic identifier cannot be the same as an ODL object type name, unless the element is of that object type and no other elements are of that object type. In the layout structure, such elements must have a fixed object type attribute whose value is the object type name.

A generic identifier cannot be the same as an ODL data element type (content architecture class) name, unless the element is a data element of that type (see E.2.2.4).

A generic identifier cannot be **"null"**, in any combination of uppercase and/or lowercase characters.

E.2.2.7 SGML unique identifier (ID)

In ODL, an object identifier is represented symbolically by an SGML construct called a "unique identifier", or "ID". A symbol is assigned only if there is a need to reference the object.

> NOTE – This technique is practical because the attribute "subordinates", which conceptually requires a reference to every object, is implied in ODL by the position of the subordinate objects.

An ODL unique identifier cannot be **"null"**, in any combination of uppercase and/or lowercase characters.

E.2.2.8 Default value list attribute names

Each default value list that can be specified for an element is represented in ODL by an individual attribute. The attribute names are constructed by prefixing the letters **"dv"** to the ODL name for an object type or content architecture class.

The presently recognized default value list attribute names are:

```
dvclo      –                 –              composite       logical       object
dvblo      –                 –              basic           logical       object
dvpages    –                 –                      page                  set
dvpage     –                 –                      page             (composite)
dvbpage    –                 –                      page               (basic)
dvframe    –                          –                                  frame
dvblock    –                          –                                  block
dvcf       –          –       character       formatted       content    architecture
dvcfp      –       –      character      formatted    processable    content    architecture
dvcp       –          –       character       processable       content    architecture
dvgfp      –     –    geometric    graphics    formatted    processable    content    architecture
dvrf       –       –      raster       graphics      formatted         content    architecture
dvrfp      –– raster graphics formatted processable content architecture
```

E.2.3 Content

> NOTE – In most SGML applications, the content information (data) of an element with character content normally occurs between its start- and end-tags. The data is either recognized as such because the element's content is declared to be data and has no markup within it, or because the element has mixed content and the parser distinguishes the data from any nested subelement tags or other markup. In ODL, however, even though nested subelements cannot occur, character content is normally declared to be **#PCDATA** in order to permit entity references and markup declarations. Geometric and raster graphics content are **NDATA** entities.

The content information attribute of a content portion is represented in ODL as the content of a data element. The other attributes of a content portion are represented as attributes of the data element.

For character content architectures, the data can occur either in the normal content, or in one or more data entities that are referenced from the ODL attribute **"content"** that is defined for the data element. The normal content is declared to be **#PCDATA**, so that it can contain references to other content portions, and so that the start-tag can be minimized when only one data element type can occur.

Geometric and untiled raster graphics content, which cannot be parsed for markup, is always stored in separate data entities. The entities are referenced by the ODL attribute **"content"** on the data element's start-tag. Tiled raster graphics content contains one or more data elements, one for each tile, but no tile data. Therefore, tiled raster graphics content can

be parsed for markup. Tile content, which cannot be parsed for markup, is always stored in separate data entities. The entities are referenced by the ODL attribute **"content"** on the tile data element's start-tag.

Generic content is discussed in E.4.2.2.

E.2.4   Linking the logical and layout structures

In order to permit the automatic generation of a specific layout structure, the generic logical structure must be linked to the styles and other attributes that govern the layout process. In ODL, this is accomplished by an explicit **LINKTYPE** declaration. The declaration encompasses other SGML declarations (just as a document type declaration does). In particular, it contains one or more **LINK** set declarations, which associate the ODA logical object class, layout style, presentation style, and layout object class.

> NOTE – The following example illustrates two link sets, named **"#INITIAL"** and **"set1"**. Consider the last line, which is the link rule for **"logobj3"** in the link set named **"set1"**. It has four parameters: the logical object class, the layout style directives, the layout object class, and the presentation style attributes. In SGML, they are called the source element type, link attribute specification, result element type, and result attribute specification, respectively.

```
<!LINK    #INITIAL
          dlor                                              dlar
          logobj1    [sep="450 00 00"]                      #IMPLIED
          logobj2    #USELINK set1 [newlay=page]            #IMPLIED
          logobj3    [blkalign=c]                           layobj2                        >
<!LINK    set1
          logobj3    [blkalign=l]                           layobj2  [trans=o] >
```

> The optional **USELINK** parameter in line 4 identifies the link set that will be current for the specified logical object class, except when overridden by the link set associated with a subordinate object. A link set called **"#INITIAL"** must always be present, and is the current link set at the start of the document. In the example, **#INITIAL** is the current link set for all of the logical structure, except within **logobj2** and its subordinates, where **set1** is current.

E.2.5   Attributes

Attribute definitions must be associated with the corresponding element definition (object class description) for all potential attributes of an object. Except, however, that an attribute need not be defined if the attribute is not specified for the object class concerned, or for any object derived from it.

If the attribute definition's default value is to be overridden for a particular specific object, the attribute must be specified in the start-tag of the element, or in a link or result attribute specification list. Parameter-wise defaulting is achieved by defining entities for each parameter.

> NOTE – Conventions for such defaulting can be established by a document application profile.

E.3   Representation of attribute values

The representations of the ODA attributes are presented in the form of SGML public text. In this form they can be referenced from a document rather than included within it.

The semantics of the attribute values are specified in ITU-T Rec. T.412 | ISO/IEC 8613-2. The representation of attribute values is as specified in ITU-T Rec. T.412 | ISO/IEC 8613-2, except where a different representation is specified in the public text or elsewhere in this annex.

The default values specified in the public text are those defined in ITU-T Rec. T.412 | ISO/IEC 8613-2. If a different default value is wanted for an element (such as a non-standard default value specified in the document profile or in an object class description), the public text should not be referenced; instead, the definitions should be duplicated with the required changes made in the default values.

Attribute values are sequences of one or more parameters, separated by SGML separator characters. The description of the attribute in ITU-T Rec. T.412 | ISO/IEC 8613-2 determines the number of parameters, and whether any can be omitted. An omitted parameter is represented by a keyword consisting of two zeros: **00**.

A parameter is either constructed, or is one of a number of primitive types: string, keyword, integer, expression, or identifier. String and expression parameters are delimited, and can contain separator characters. Other parameters are not delimited and cannot contain separator characters.

> NOTE – Most attribute values consist of a single parameter.

E.3.1   Constructed parameters

In ITU-T Rec. T.412 | ISO/IEC 8613-2, a parameter is a constructed parameter if one or more of its permissible values is a group of two or more sub-parameters. The description of the attribute in ITU-T Rec. T.412 | ISO/IEC 8613-2 determines the number of sub-parameters, and whether any can be omitted. If more than one sub-parameter is present,

they are separated from one another by commas. Successive commas denote an omitted sub-parameter, but they are required only if a succeeding sub-parameter is present.

> NOTE – For an example of a constructed parameter, see the attribute **"position"** in the public text.

E.3.2 String parameters

A string parameter could contain characters not permitted in an SGML name token, and it is therefore delimited by SGML **LIT** or **LITA** delimiters.

E.3.3 Keyword parameters

Possible keyword values are defined in ITU-T Rec. T.412 | ISO/IEC 8613-2 for some parameters, and by this annex for others.

Lowercase letters in keyword parameters are treated as though they were uppercase.

For certain parameters whose permissible values constitute a set of keywords, fixed numeric values, or both keywords and fixed numeric values, the value is represented by choosing from a set of substitute keywords. These parameters are documented in comments in the public text, in the form:

> **parameter name: keyword keyword ...**

with the keywords appearing in the same order as the permissible values that they represent appear within ITU-T Rec. T.412 | ISO/IEC 8613-2. For attributes that have but one parameter, the attribute name is the parameter name.

> NOTE – For example:
>
> **‒‒ side of sheet: R V U ‒‒**

means that in the "side of sheet" parameter of the attribute "medium type", a value of **"r"** represents 'recto', a value of **"v"** represents 'verso', and so on.

E.3.4 Integer parameters

An integer is represented by a sequence of digits. If preceded by a hyphen, it represents a negative integer.

Parameters whose permissible values constitute an enumerated set of quantities of degrees or SMUs are represented by the integer quantities alone, without the word "degrees" or "SMU".

E.3.5 Real parameters

A real number is represented as defined for the value notation of ASN.1 in CCITT Rec. X.208 | ISO/IEC 8824.

> NOTE – A value without a fractional part will be regarded as an integer.

E.3.6 Expression parameters

Expression parameters use the ODA human-readable expression notation defined in normative Annex A of ITU-T Rec. T.412 | ISO/IEC 8613-2. Its application to ODL is specified in this subclause.

> NOTE – Construction expressions are discussed in E.4.2.1.

E.3.6.1 Delimiters

The hexadecimal form of a string literal is represented in functional notation to minimize potential conflicts with SGML delimiters:

> **H(hexadecimal string)**

> NOTE – When the reference delimiter set is used, attribute values containing ODA string expressions should normally be delimited with **LITA** delimiters, as the ODA expression notation uses **LIT** delimiters for string literals.

E.3.6.2 Names and identifiers

An object class identifier is represented by the ODL generic identifier (element type).

An object type is represented by its ODL name.

> NOTE 1 – ODL naming rules prevent conflicts between GIs and ODL object type names.

An object identifier is represented by an SGML unique identifier.

> NOTE 2 – An element must have an **ID** attribute specified on its start-tag in order for there to be an object identifier to reference.

A binding name is represented by an SGML name derived from it.

> NOTE 3 – It cannot be confused with any other ODL name because it can only occur as the second argument of a binding reference.

E.3.6.3 String literals

A string literal in an expression parameter may be contained in a general entity that is referenced from the expression by means of an ODL function called **"E"**:

E(general entity name)

NOTE – The **E** function may be used for string literals that contain non-SGML characters.

E.3.7 Parameters requiring names or identifiers

Object types, object class identifiers, and object identifiers, are represented as specified in E.3.6.2.

When a unique identifier occurs in a context in which a generic identifier or object type name could also occur, the unique identifier is represented as the argument to an **"ID"** function to distinguish it.

Example – **ID(myid)**

A null name or identifier is represented by the keyword **"null"**.

E.3.8 Special SGML constructs

Some ODA attributes are represented by SGML constructs other than the SGML attribute syntax. Their representation is described for each such attribute individually.

E.3.9 Alternative descriptions

Alternative descriptions are represented in ODL using marked sections. For this purpose, a primary subtree and each of its alternative subtrees are each enclosed in a marked section and are placed in the document in the order of decreasing preference. A document is interchanged with the primary subtree marked **INCLUDED** and the alternative subtrees marked **IGNORED**. This may be changed by the recipient if required. To facilitate ignoring primary descriptions and including alternative descriptions, conventional use of entities allows for avoiding having to change the external keywords. The names of the entities to choose an appropriate alternative can be derived from the attribute **"switch"** in the "alternative feature set" in the document profile.

E.3.10 Protected parts

E.3.10.1 Enciphered parts

In ODL a single enciphered part is always contained in an entity that contains only that enciphered part. An enciphered part identifier is represented in ODL by the entity name of the entity containing the enciphered part.

The particular kind of enciphered part description is determined unambiguously by the content in which the enciphered part ID occurs.

NOTE – A user may wish to identify the particular kind of enciphered part description by placing a comment in the entity declarations for the enciphered part entity.

E.3.10.2 Sealed parts

A sealed document body part has its normal (not enciphered) structure. A sealed document body part is identified by the presence of the attribute "sealed" (see E.4.5.6.2) on the element.

A sealed document profile is represented by a list of the names of the document profile attributes that are sealed. This list is the value of the ODL attribute **"sealatts"** of a **sealedpr** element.

NOTES

1   Preservation of constituents and content seals is possible only if a normalized encoding of the sealed constituents and content is produced. This makes authentication encoding dependent, i.e. the encoding of sealed constituents and content can not be modified in any manner without invalidating seals and losing authentication. This further means that the original encoding of a sealed constituent or content portion, either ASN.1 binary or ODL character encoding, must be preserved.

2   As it is customary for SGML applications to preserve the SGML forms, in this case the ODL form, of the encoded document, no additional rules for preserving the authenticity of sealed document parts are required. The authenticity is preserved by transmitting the original SGML form of the sealed document parts to the intended recipient(s). It is possible to facilitate the processing of sealed documents by placing the sealed document parts in entities.

E.4   Shared attributes

E.4.1   Identification attributes

E.4.1.1   Object type

E.4.1.1.1 Logical objects

The attribute "object type" is not specified for logical objects, as it is implied by the content model:

    a)   if the content is declared to be a data element or a choice of data elements, the object is a basic logical object;

    b)   if the element is the document element, the object is the document logical root;

    c)   in all other cases, the object is a composite logical object.

E.4.1.1.2 Layout objects

The attribute "object type" is declared as follows:

       objtype NAME #FIXED ODLname

where **"ODLname"** is the ODL name for the object type, as described above.

    NOTE – The attribute "object type" must be defined for a layout object class even if the object type name is used as its generic identifier.

E.4.1.2   Object identifier

The attribute "object identifier" is represented symbolically by an SGML "unique identifier" attribute, as follows:

       id ID #IMPLIED

It need be defined and specified only for elements that are actually referenced.

E.4.1.3   Object class identifier

The attribute "object class identifier" is the "element type" in an element definition.

E.4.2   Construction attributes

E.4.2.1   Generator for subordinates

The semantics of the attribute "generator for subordinates" are represented in ODL by the SGML content model syntax.

    NOTE – The content model syntax differs only in notational constructs from the human-readable construction expression in Annex A of ITU-T Rec. T.412 | ISO/IEC 8613-2.

An ambiguous generator for subordinates must be made unambiguous by means of "intermediate elements", as described in ISO 8879. An intermediate element has no semantic effect. It is distinguished from other elements in the following manner:

    1)   In the logical DTD, the following attribute is defined for it:

       ignore NAME #FIXED ignore

    2)   In the layout DTD, the attribute "object type" is defined for it as follows:

       objtype NAME #FIXED ignore

E.4.2.2   Content generator and generic content information

E.4.2.2.1 Layout structure

In the layout structure, the attribute "content generator" is declared for data elements as follows:

       congen CDATA #FIXED 'string expression'

and the attribute "content information" is declared as:

       coninfo ENTITIES #FIXED 'entity names'

E.4.2.2.2 Link attribute definition

In a link attribute definition, the attribute "content generator" is declared as follows:

       congen CDATA 'string expression'

The attribute "content information" is not declared as such; instead, its value is assigned to the attribute **"congen"**, and the ODL attribute **"gentype"** is set to **"CONINFO"** to indicate this. The latter attribute is declared as:

> **gentype NAME "CONGEN"**

If the attribute "content generator" is specified at the same time, it is specified as the value of the ODL attribute "ignored content generator":

> **icongen CDATA #IMPLIED**

The ODL attribute **"congen"** can have semantic significance only when the instance of the source data element has no data and the ODL attribute **"content"** is not specified. In such cases, the attribute will cause generation of content data for the result data element when the value of the ODL attribute "use content generator" is **"YES"** (the default). To prevent content generation, the attribute "use content generator" should be specified as **"NO"**.

The link attribute "use content generator" is declared as:

> **ucongen CDATA yes**

E.4.3   Relationship attributes

E.4.3.1   Object class

The attribute "object class" is an element's generic identifier, which is specified on its tags.

E.4.3.2   Subordinates

The attribute "subordinates" is not specified as such. Elements that occur between the start- and end-tags of another element are that element's subordinates (sub-elements). The order of appearance of the sub-elements defines the sequential order among them.

E.4.3.3   Content portions

All content portions occur in data elements. Non-character content is always stored in data entities and is referenced by specifying the entity names as the value of a content attribute of the data element, as follows:

> **content ENTITIES #REQUIRED**

Non-character data elements are declared to have **EMPTY** normal content.

For character content, the content portions normally occur between the start- and end-tags of the data element. They are declared to be **#PCDATA** and can contain references to character data entities. The declaration

> **content ENTITIES #CONREF**

allows the data for a given element to occur in separate entities, depending upon whether a value is specified for the attribute. When a content attribute value is specified, the normal content of that instance of the element must be empty.

Generic content is discussed in E.4.2.2.

E.4.3.4   Resource

This attribute is declared as:

> **resource CDATA #FIXED "table key"**

E.4.3.5   Presentation style

See E.8.1.

E.4.4   Content architecture class attributes: content architecture class

The attribute "content architecture class" is declared for data elements as:

> **conarch NAME #FIXED ODLarch**

where **"ODLarch"** is the ODL name for a content architecture class (see E.2.2.3).

> NOTE – When an ODA/ODL document is converted to ODIF, the attribute "content architecture class" would be coded in ODIF using either the object identifier representation or the integer representation, as appropriate.

E.4.5 Miscellaneous attributes

E.4.5.1 User-readable comments

These are represented by SGML comment declarations.

E.4.5.2 Application comments

An application comment is the text of an entity whose name is specified as the value of an attribute that is declared as follows:

> **appcmnt ENTITY #IMPLIED**

E.4.5.3 User-visible name

This attribute is represented either by the element's generic identifier or unique identifier, or by an associated comment.

> NOTE – If the user-visible name contains other than SGML parsable character data, it must appear in a comment.

E.4.5.4 Bindings

Each binding is represented as an SGML attribute that is declared as:

> **binding–name CDATA #IMPLIED**

or

> **binding–name CDATA 'binding–value'**

and specified in the form

> **binding–name = 'binding–value'**

where

> **"binding–name"** is an SGML name derived from the ODA binding name; and
> **"binding–value"** is an expression, represented as specified in E.3.6.

E.4.5.5 Default value lists

Default value lists are represented by one or more of the following attributes:

> **ODLdvnm ENTITY #IMPLIED**

where **"ODLdvnm"** is replaced by an ODL name for a default value list (see E.2.2.8).

The value of each attribute is the name of a data entity whose value conforms to the syntax of an attribute specification list.

Default value list attributes can be defined for elements in the source and result document types, and as link attributes. A default value list that is a link attribute must contain a link attribute specification list.

> NOTE – In ODL, the attributes "presentation style" and "layout style" are represented as attribute specification lists in link rules (see E.7 and E.8). Default value lists for these attributes consist of similarly-formed attribute specification lists.

E.4.5.6 Security attributes

Security attributes are represented by one or more of the following ODL attributes.

E.4.5.6.1 Enciphered

```
enciph      CDATA      #IMPLIED      –      –      enciphered      –      –
    –– encsub:    (ENCNONE    |    ENCALL    |    ENCPART)    ENCNONE    –    –
    –– encsubid:  sequence       of       IDREF       #IMPLIED       –       –
    –– encppid:   ENTITY #IMPLIED ––
```

E.4.5.6.2 Sealed

```
sealed      CDATA      #IMPLIED      –      –      sealed      –      –
    –– sealstat:   (SEALED      |      UNSEALED)      UNSEALED      –      –
    –– sealids:    sequence of IDREF #IMPLIED ––
```

E.5   Layout attributes

E.5.1   Property, formatting, and imaging attributes

This subclause defines a public entity set whose entities contain standard definitions of ODA layout attributes. When the public entity is referenced in a document type definition, the individual entities can be referenced as needed in attribute definition lists.

```
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      1994
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      defined in ISO 8879, provided this notice is included in all copies.
––>
<! –– Public entity set. Typical invocation:
<!ENTITY      % layatt PUBLIC "ISO/IEC 8613-5:1994//ENTITIES
                          ODA Layout Attributes//EN">
              %layatt;
––>
                    <! –– Property Attributes ––>
<!ENTITY      % ODApos     –– position ––
                "pos           CDATA '0 0'"
                –– fixed or variable: implied by number of parameters ––
                –– horizontal position: integer ––
                –– vertical position: integer ––
                –– offset: (integer,integer,integer,integer) ––
                –– separation: (integer,integer,integer) ––
                –– alignment: R C L ––
                –– fill order: N R ––>
<!ENTITY      % ODAdim     –– dimensions ––
                "dim           CDATA #IMPLIED"
                –– fixed dimension: integer ––
                –– variable page height: (V,integer) ––
                –– rule a: (A,(integer,integer)) ––
                –– rule b: (B,(integer,integer)) ––
                –– maximum size: M ––>
<!ENTITY      % ODAbor     –– border ––
                "border       CDATA #IMPLIED
                bordspid     IDREF #IMPLIED"
                –– border sub-structured as ––
                   –– null: N ––
                –– border line width: integer ––
                –– border line type: S DA DO DD DDD I ––
                –– border free space width: integer ––
                –– border line colour: choice of ––
                   –– implementation defined: IMPLDEF ––
                   –– colour expression: a colour expression as defined in E.5.3.1 ––
                –– bordspid: a reference to a colour space id ––>

                    <! –– Formatting Attributes ––>
<!ENTITY      % ODAbal     –– balance ––
                "balance     CDATA null">
<!ENTITY      % ODApath    –– layout path: 0 90 180 270 ––
                "laypath      NUMBER 270">
<!ENTITY      % ODAsrce    –– logical source ––
                "logsrce      NAME #IMPLIED">
<!ENTITY      % ODAperm    –– permitted category names ––
                "permcat    NAMES null" >
<!ENTITY      % ODAlct     –– layout stream categories ––
                "laycat       NAMES null" >
<!ENTITY      % ODAlsct    –– layout stream sub-categories ––
                "layscat     NAMES null" >

                    <! –– Imaging Attributes ––>
<!ENTITY      % ODAiord    –– imaging order ––
                "imagord     IDREFS #IMPLIED" >
<!ENTITY      % ODAtran    –– transparency: T O ––
                "trans        NAME t" >
<!ENTITY      % ODAcol     –– colour: COLMEDIA COLOURED ––
```

```
                    "colour       NAME colmedia" >
<!ENTITY     % ODAppos     –– page position: integer integer ––
                    "ppos         NUMBERS #IMPLIED">
<!ENTITY     % ODAmed      –– medium type ––
                    "medium       NMTOKENS '9920,14030 u unspec'
                    medspid       IDREF #IMPLIED"
                  –– medium sub-structured as ––
                     –– nominal page size: (integer,integer) ––
                     –– side of sheet: R V U ––
                     –– colour of medium: choice of ––
                        –– unspecified colour: UNSPEC ––
                        –– specified colour: a colour expression as defined in E.5.3.1 ––
                  –– medspid: a reference to a colour space id ––>


                    <! –– Colour Attributes ––>
<!ENTITY     % ODAclay     –– colour of layout object ––
                    "clay         CDATA #IMPLIED
                    clayspid      IDREF #IMPLIED"
                     –– clay: a colour expression as defined in E.5.3.1 ––
                     –– clayspid: a reference to a colour space id ––>
<!ENTITY     % ODAobct     –– object colour table ––
                    "obct         CDATA #IMPLIED
                    obctspid      IDREF #IMPLIED"
                     –– obct: a colour table as defined in E.5.3.2 ––
                     –– obctspid: a reference to a colour space id ––>
<!ENTITY     % ODAbcol     –– content background colour ––
                    "bcol         CDATA #IMPLIED
                    bcolspid      IDREF #IMPLIED"
                   –– bcol sub-structured as ––
                     –– choice of ––
                       –– transparent: TRANSPAR ––
                       –– colour expression: a colour expression as defined in E.5.3.1 ––
                   –– bcolspid: a reference to a colour space id ––>
<!ENTITY     % ODAfcol     –– content foreground colour ––
                    "fcol         CDATA #IMPLIED
                    fcolspid      IDREF #IMPLIED"
                   –– fcol sub-structured as ––
                     –– choice of ––
                       –– transparent: TRANSPAR ––
                       –– implementation defined: IMPLDEF ––
                       –– colour expression: a colour expression as defined in E.5.3.1 ––
                   –– fcolspid: a reference to a colour space id ––>
<!ENTITY     % ODAcnct     –– content colour table ––
                    "cnct         CDATA #IMPLIED
                    cnctspid      IDREF #IMPLIED"
                     –– cnct: a colour table as defined in E.5.3.2 ––
                     –– cnctspid: a reference to a colour space id ––>
```

E.5.2   Presentation attributes

The presentation attributes are described in the Specifications in ISO/IEC 8613 in which content architectures are specified.

Presentation attributes can be defined and specified only for data elements. The syntactically allowable set of attributes depends on the data element type (that is, on the data element's content architecture class).

Layout presentation attributes are applicable to formatted (**F**) and formatted processable (**FP**) architecture classes. They are known in ODL as "format attributes" and are specified as attributes of a data element in the layout structure.

> NOTE – Although they are also syntactically valid in a result attribute specification, they are ignored by the layout process.

Logical presentation attributes are applicable to unformatted processable (**P**) and **FP** architecture classes. They are known in ODL as "format directives" and are specified as link attributes.

ODA also defines "shared" attributes that apply to all three categories of architecture class. They are known in ODL as "format attribute-directives" and are specified for the various content architecture classes as follows:

    a)   **P**: result attribute specifications in link rules (that is, in presentation styles).

    b)   **F**: like format attributes (that is, in data element start-tags in the layout structure).

c) **FP**: both of the above, with the link rules being recognized for the layout process and the layout structure start-tags for the imaging process.

When a result attribute must be specified and the layout object class is either a composite layout object or is unspecified, a subordinate link set must be defined. The result attributes are then specified in an entry in the subordinate link set in which the source element type is specified as **#IMPLIED**, and the result element type is the generic identifier of the basic layout object whose content architecture class is that to which the result attributes apply.

NOTE – See how **"para"** is handled in the example in F.1.2.3.

E.5.3 Colour

E.5.3.1 Colour expressions

A colour expression is represented as **CDATA** and is substructured as follows:

```
——           —        colour       expression:       sequence      of       —      —
     —     —       colour     access     mode:     DIR     IND     —      —
              —          —          choice          of          —          —
          —     —     direct    colour    expression:    sequence     of    —   —
        —   —    colour    specification:   (real,    real,    real    [,    real])    —    —
              —     —     colour     tolerance:     choice     of     —    —
              —     —    specified    tolerance:    sequence    of    —    —
                   —     —     tolerance     value:     real     —     —
               —     —     tolerance     space:     LUV     LAB     —     —
               —     —     unspecified     tolerance:     INFINITE     —     —
     —— indexed colour expression: integer ——
```

For each element and attribute which has a colour expression as (part of) its value, a referencing attribute must be declared with a value type of **IDREF**. This referencing attribute may be used to identify a colour space for direct colour expressions. In the case of a direct colour expression, any value specified for the referencing attribute must refer to the unique object identifier of a colour space in the profile. When no value for the referencing attribute is present, the default colour space is used. In the case of an indexed colour expression, the colour space is found through the applicable colour table.

E.5.3.2 Colour tables

A colour table is represented as **CDATA** and is substructured as follows:

```
—           —          colour        table:        sequence        of        —        —
     —   —    colour    table    entries:    sequence    of    triples    of    the    form    —    —
              —          —          index:          integer          —          —
          —     —     colour     coordinates:     (real,     real,     real     [,     real])     —     —
              —     —     colour     tolerance:     choice     of     —     —
              —     —     unspecified     tolerance:     INFINITE     —     —
          —     —     specified     tolerance:     sequence     of     —     —
                   —     —     tolerance     value:     real     —     —
     —— tolerance space: LUV LAB ——
```

For each element and attribute which has a colour table as its value, a referencing attribute must be declared with a value type of **IDREF**. This referencing attribute may be used to identify a colour space for the colour table. Any value specified for the referencing attribute must refer to the unique object identifier of a colour space in the profile. When no value for the referencing attribute is present, the default colour space is used.

E.6 Logical attributes

E.6.1 Protection

The attribute "protection" is defined as:

protect NAME unprot —— protection: PROTECT UNPROT ——

E.6.2 Layout style

See E.7.1.

E.7 Layout style attributes

Layout directive attributes are specified as "link attributes" in the link rule for the logical object class.

E.7.1   Layout style identifier

Layout styles are represented by entities, conventions for which can be defined in a document application profile. The entity name is the layout style identifier. (See the example in F.1.2.3.)

E.7.2   Layout object class

The layout object class attribute is represented by specifying the generic identifier of the layout object class as the result element type in the link rule. If the logical object does not have a known layout object class, the keyword **"#IMPLIED"** should be specified in the link rule instead.

E.7.3   Layout category

A layout category name is represented by an SGML name. In situations where another type of name could also occur, a layout category name is represented as the argument to a **"CAT"** function, to distinguish it.

>   *Example* – **CAT(mycat)**

A layout category name cannot be **"null"**, in any combination of uppercase and/or lowercase characters.

E.7.4   Logical stream category

A logical stream category name is represented by an SGML name. In situations where another type of name could also occur, a logical stream category name is represented as the argument to an **"LCAT"** function, to distinguish it.

>   *Example* – **LCAT(mylcat)**

A logical stream category name cannot be **"null"**, in any combination of uppercase and/or lowercase characters.

E.7.5   Logical stream sub-category

A logical stream sub-category name is represented by an SGML name. In situations where another type of name could also occur, a logical stream sub-category name is represented as the argument to an **"LSCAT"** function, to distinguish it.

>   *Example* – **LSCAT(mylscat)**

A logical stream sub-category name cannot be **"null"**, in any combination of uppercase and/or lowercase characters.

E.7.6   Other layout directive attributes

This subclause includes public entities containing attribute definitions for the layout directives. The entities can be referenced directly within an attribute definition list declaration.

E.7.6.1   Layout directives for basic and composite logical objects

```
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––>
<! –– Public text entity. Typical invocation:
<!ENTITY      % ldir–bc PUBLIC "ISO/IEC 8613-5:1994//TEXT
                       Layout Directives: Basic and Composite//EN">
<!ATTLIST     clo %ldir–bc; >
––>
                       –– layout object class is not an attribute: see E.7.2 ––
                       –– 'object type page' is represented by 'PAGE' ––
              indiv      CDATA      null –– indivisibility ––
              logcat     NAME       null –– logical stream category ––
              logscat    NAME       null –– logical stream sub-category ––
              frange     CDATA      null –– floatability range ––
              newlay     CDATA      null –– new layout object ––
              samelay    CDATA      null –– same layout object ––
              synchr     CDATA      null –– synchronization ––
              appcmnt    ENTITY     #IMPLIED –– application comments ––
              derived    NMTOKENS   #IMPLIED –– source of derived style ––
```

E.7.6.2   Layout directives for basic logical objects

```
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```

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```
-->
<! -- Public text entity. Typical invocation:
<!ENTITY        % ldir-b PUBLIC "ISO/IEC 8613-5:1994//TEXT
                            Layout Directives: Basic//EN">
<!ATTLIST       blo %ldir-b; %ldir-bc;>
-->
                blkalign    NAME        r          -- block alignment: R L C N --
                concat      NAME        n          -- concatenation: C N --
                fillord     NAME        n          -- fill order: N R --
                category    NAME        null       -- layout category --
                offset      NUMBERS     "0 0 0 0"  -- offset: four integers --
                sep         NUMBERS     "0 0 0"    -- separation: three integers --
```

E.7.7   Derived layout styles

If a style is derived from another, it shall include the following attribute:

derived = 'link-set-name link-rule-number'

where **"link-set-name"** is the name of a link set, and **"link-rule-number"** is a number expressing the position of a link rule within the link set that contains the source of the derived style. (Numbering of link rules within a link set begins at one.)

The attribute "derived from" shall be declared in the same way as other style attributes, as follows:

derived NMTOKENS #IMPLIED -- source of derived style --

E.8   Presentation style attributes

E.8.1   Presentation style identifier

Presentation styles are represented by entities, conventions for which can be defined in a document application profile. The entity name is the presentation style identifier. (See the example in F.1.2.3.)

E.8.2   Other presentation style attributes

Layout attributes that have been defined for a result element are syntactically valid as result attributes in link rules. However, only the attributes "border", "transparency", and "colour" (see E.5.1) are semantically valid during the layout process, and only when they are attributes of blocks.

E.8.3   Derived presentation styles

Derived presentation styles are represented in the same way as derived layout styles (see E.7.7).

E.9   Content portion attributes

E.9.1   Identification attributes: content identifier

Content (data) is normally identified by the fact that it occurs between the start-tag and end-tag of a data element. The document type specification on the start-tag or tags that introduce the data indicates whether it is part of the logical or layout structure, or both.

When data is stored in a separate entity, its name serves as the content identifier.

E.9.2   Common coding attributes: type of coding

The attribute "type of coding" is defined as an attribute of a data content notation, in the form:

codetype NAME (default)

where the default and permissible values are defined in the Specifications in ISO/IEC 8613 that deal with content architectures, or in document application profiles.

The attribute is specified on the entity declarations of entities containing content portions that conform to the notation.

E.9.3   Content information attributes

E.9.3.1   Content information

The content information attribute is discussed in E.2.3.

E.9.3.2   Alternative representation

The attribute "alternative representation" is defined as follows for data elements whose content portions could have alternative representations:

altreps ENTITIES #IMPLIED

The value of this attribute is a list of names of data entities that contain the alternative representations of the corresponding content portions.

If there is no alternative representation for one or more content portions, the reserved entity name **"NONE"** should occupy its position in the list. An entity used for an alternative representation cannot be named **"NONE"**.

E.9.4   Coding attributes

The representation of these attributes is defined in the Specifications in ISO/IEC 8613 that deal with content architectures.

The attributes are defined as attributes of a data content notation, and are specified on the entity declarations of entities containing content portions that conform to the notation.

E.10   Data content notations

E.10.1   Notation declarations for content architectures

ODL notation declarations for data content notations representing the content architecture classes are included in the parts of ISO/IEC 8613 where the content-related attributes are defined.

E.10.2   Content-related public text

The following SGML public text contains notation declarations for existing ODA content architecture classes, element and attribute list declarations for the corresponding data element types, entity declarations for presentation attribute definitions, and entity declarations for lists of data element GIs and default value lists derived from them.

E.10.2.1 Logical structure

```
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——>
<! —— Public text entity. Typical invocation:
<!ENTITY      % ODAdlg PUBLIC "ISO/IEC 8613-5:1994//TEXT
                        ODA Data Elements: Logical//EN">
              %ODAdlg;
——>
<!ENTITY      % r-p-c PUBLIC "ISO/IEC 8613-7:1993//TEXT
                        Raster Coding Attributes//EN">

<!NOTATION    ODAcf PUBLIC "ISO/IEC 8613-6:1993//NOTATION
              Character formatted content architecture//EN">
<!NOTATION    ODAcfp PUBLIC "ISO/IEC 8613-6:1993//NOTATION
              Character formatted processable content architecture//EN">
<!NOTATION    ODAcp PUBLIC "ISO/IEC 8613-6:1993//NOTATION
              Character processable content architecture//EN">
<!NOTATION    ODAgfp PUBLIC "ISO/IEC 8613-8:1993//NOTATION
              Geometric graphics formatted processable content architecture//EN">
<!NOTATION    ODArf PUBLIC "ISO/IEC 8613-7:1993//NOTATION
              Raster graphics formatted content architecture//EN">
<!NOTATION    ODArfp PUBLIC "ISO/IEC 8613-7:1993//NOTATION
              Raster graphics formatted processable content architecture//EN" >
<!ATTLIST     NOTATION (ODArfp) %r-p-c; >
<!ELEMENT  cf   o  o        (#PCDATA)                        —— formatted character content —— >
<!ATTLIST  cf   conarch    NAME      #FIXED cf        —— content architecture class ——
```

```
                    id            ID              #IMPLIED           —— object identifier ——
                    content       ENTITIES        #CONREF            —— content portions ——
                    altreps       ENTITIES        #IMPLIED           —— alternative representations ——
                    appcmnt       ENTITY          #IMPLIED           —— application comments ——
                    enciph        CDATA           #IMPLIED           —— enciphered ——
                    sealed        CDATA           #IMPLIED           —— sealed —— >
<!ELEMENT   cfp     o o           (#PCDATA)                          —— fp character content——>
<!ATTLIST   cfp     conarch       NAME            #FIXED cfp         —— content architecture class ——
                    id            ID              #IMPLIED           —— object identifier ——
                    content       ENTITIES        #CONREF            —— content portions ——
                    altreps       ENTITIES        #IMPLIED           —— alternative representations ——
                    appcmnt       ENTITY          #IMPLIED           —— application comments ——
                    enciph        CDATA           #IMPLIED           —— enciphered ——
                    sealed        CDATA           #IMPLIED           —— sealed —— >
<!ELEMENT   cp      o o           (#PCDATA)                          —— processable character content —— >
<!ATTLIST   cp      conarch       NAME            #FIXED cp          —— content architecture class ——
                    id            ID              #IMPLIED           —— object identifier ——
                    content       ENTITIES        #CONREF            —— content portions ——
                    altreps       ENTITIES        #IMPLIED           —— alternative representations ——
                    appcmnt       ENTITY          #IMPLIED           —— application comments ——
                    enciph        CDATA           #IMPLIED           —— enciphered ——
                    sealed        CDATA           #IMPLIED           —— sealed —— >
<!ELEMENT   gfp     — o           EMPTY                              —— fp geometric content——>
<!ATTLIST   gfp     conarch       NAME            #FIXED gfp         —— content architecture class ——
                    id            ID              #IMPLIED           —— object identifier ——
                    content       ENTITIES        #REQUIRED          —— content portions ——
                    altreps       ENTITIES        #IMPLIED           —— alternative representations ——
                    appcmnt       ENTITY          #IMPLIED           —— application comments ——
                    enciph        CDATA           #IMPLIED           —— enciphered ——
                    sealed        CDATA           #IMPLIED           —— sealed —— >
<!ELEMENT   rf      — o           EMPTY                              —— formatted raster content —— >
<!ATTLIST   rf      conarch       NAME            #FIXED rf          —— content architecture class ——
                    id            ID              #IMPLIED           —— object identifier ——
                    content       ENTITIES        #REQUIRED          —— content portions ——
                    altreps       ENTITIES        #IMPLIED           —— alternative representations ——
                    appcmnt       ENTITY          #IMPLIED           —— application comments ——
                    enciph        CDATA           #IMPLIED           —— enciphered ——
                    sealed        CDATA           #IMPLIED           —— sealed —— >
<!ELEMENT   rfp     — o           (tile*)                            —— fp raster content ——>
<!ATTLIST   rfp     conarch       NAME            #FIXED rfp         —— content architecture class ——
                    id            ID              #IMPLIED           —— object identifier ——
                    content       ENTITIES        #CONREF            —— content portions ——
                    altreps       ENTITIES        #IMPLIED           —— alternative representations ——
                    appcmnt       ENTITY          #IMPLIED           —— application comments ——
                    enciph        CDATA           #IMPLIED           —— enciphered ——
                    sealed        CDATA           #IMPLIED           —— sealed —— >
<!ELEMENT   tile    — o           EMPTY                              —— fp raster content tile —— >
<!ATTLIST   tile    content       ENTITIES        #REQUIRED          —— tile content portions —— >

<!ENTITY    % ODAdelg "cf | cp | cfp | gfp | rf | rfp"              —— logical data element types —— >
```

E.10.2.2 Layout structure

```
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——>
<! —— Public text entity. Typical invocation:
<!ENTITY    % ODAdly PUBLIC "ISO/IEC 8613-5:1994//TEXT
                      ODA Data Elements: Layout//EN">
            %ODAdly;
——>
<!ENTITY    % c-p-a          PUBLIC "ISO/IEC 8613-6:1993//TEXT
                             Character Presentation Format Attributes//EN">
<!ENTITY    % c-p-ad         PUBLIC "ISO/IEC 8613-6:1993//TEXT
                             Character Presentation Format Attribute-Directives//EN" >
<!ENTITY    % g-p-ad         PUBLIC "ISO/IEC 8613-8:1993//TEXT
                             Geometric Presentation Format Attribute-Directives//EN" >
```

```
<!ENTITY      % r-p-a         PUBLIC "ISO/IEC 8613-7:1993//TEXT
                              Raster Presentation Format Attributes//EN">
<!ENTITY      % r-p-ad        PUBLIC "ISO/IEC 8613-7:1993//TEXT
                              Raster Presentation Format Attribute-Directives//EN" >
<!ENTITY      % r-p-c         PUBLIC "ISO/IEC 8613-7:1993//TEXT
                              Raster Coding Attributes//EN">


<!NOTATION  ODAcf            PUBLIC "ISO/IEC 8613-6:1993//NOTATION
                             Character formatted content architecture//EN">
<!NOTATION  ODAcfp           PUBLIC "ISO/IEC 8613-6:1993//NOTATION
                             Character formatted processable content architecture//EN">
<!NOTATION  ODAgfp           PUBLIC "ISO/IEC 8613-8:1993//NOTATION
                             Geometric graphics formatted processable content architecture//EN" >
<!NOTATION  ODArf            PUBLIC "ISO/IEC 8613-7:1993//NOTATION
                             Raster graphics formatted content architecture//EN">
<!NOTATION  ODArfp           PUBLIC "ISO/IEC 8613-7:1993//NOTATION
                             Raster graphics formatted processable content architecture//EN" >
<!ATTLIST   NOTATION (ODArf | ODArfp) %r-p-c; >

<!ENTITY    % layatt         PUBLIC "ISO/IEC 8613-5:1993//ENTITIES
                                ODA Layout Attributes//EN">
            %layatt;

<!ELEMENT   cf   o o         (#PCDATA)                  —— formatted character content —— >
<!ATTLIST   cf               %c-p-a;      %c-p-ad;      —— presentation attributes ——
                 conarch     NAME         #FIXED cf     —— content architecture class ——
                 content     ENTITIES     #CONREF       —— content portions ——
                 altreps     ENTITIES     #IMPLIED      —— alternative representations ——
                 id          ID           #IMPLIED      —— object identifier ——
                 objtype     NAME         #FIXED block  —— object type ——
                 appcmnt     ENTITY       #IMPLIED      —— application comments ——
        %ODApos;     %ODAdim;  %ODAbor;  %ODAtran;      %ODAcol; —— layout attributes ——
        %ODAclay;    %ODAobct; %ODAbcol; %ODAfcol;      %ODAcnct; —— colour attributes ——
                     %ODAlct;                           —— layout stream categories ——
                     %ODAlsct;                          —— layout stream sub-categories ——
                 enciph      CDATA        #IMPLIED      —— enciphered ——
                 sealed      CDATA        #IMPLIED      —— sealed —— >
<!ELEMENT   cfp  o o         (#PCDATA)                  —— fp character content ——>
<!ATTLIST   cfp              %c-p-a;      %c-p-ad;      —— presentation attributes ——
                 conarch     NAME         #FIXED cfp    —— content architecture class ——
                 content     ENTITIES     #CONREF       —— content portions ——
                 altreps     ENTITIES     #IMPLIED      —— alternative representations ——
                 id          ID           #IMPLIED      —— object identifier ——
                 objtype     NAME         #FIXED block  —— object type ——
                 appcmnt     ENTITY       #IMPLIED      —— application comments ——
        %ODApos;     %ODAdim;  %ODAbor;  %ODAtran;      %ODAcol; —— layout attributes ——
        %ODAclay;    %ODAobct; %ODAbcol; %ODAfcol;      %ODAcnct; —— colour attributes ——
                     %ODAlct;                           —— layout stream categories ——
                     %ODAlsct;                          —— layout stream sub-categories ——
                 enciph      CDATA        #IMPLIED      —— enciphered ——
                 sealed      CDATA        #IMPLIED      —— sealed —— >
<!ELEMENT   gfp  – o         EMPTY                      —— fp geometric content—— >
<!ATTLIST   gfp              %g-p-ad;                   —— presentation attributes ——
                 conarch     NAME         #FIXED gfp    —— content architecture class ——
                 content     ENTITIES     #REQUIRED     —— content portions ——
                 altreps     ENTITIES     #IMPLIED      —— alternative representations ——
                 id          ID           #IMPLIED      —— object identifier ——
                 objtype     NAME         #FIXED block  —— object type ——
                 appcmnt     ENTITY       #IMPLIED      —— application comments ——
        %ODApos;     %ODAdim;  %ODAbor;  %ODAtran;      %ODAcol; —— layout attributes ——
        %ODAclay;    %ODAobct; %ODAbcol; %ODAfcol;      %ODAcnct; —— colour attributes ——
                     %ODAlct;                           —— layout stream categories ——
                     %ODAlsct;                          —— layout stream sub-categories ——
                 enciph      CDATA        #IMPLIED      —— enciphered ——
                 sealed      CDATA        #IMPLIED      —— sealed —— >
<!ELEMENT   rf   – o         EMPTY                      —— formatted raster content—— >
<!ATTLIST   rf               %r-p-a;      %r-p-ad;      —— presentation attributes ——
                 conarch     NAME         #FIXED rf     —— content architecture class ——
```

```
                content      ENTITIES    #REQUIRED        –– content portions ––
                altreps      ENTITIES    #IMPLIED         –– alternative representations ––
                id           ID          #IMPLIED         –– object identifier ––
                objtype      NAME        #FIXED block     –– object type ––
                appcmnt      ENTITY      #IMPLIED         –– application comments ––
        %ODApos;   %ODAdim;   %ODAbor;   %ODAtran;        %ODAcol; –– layout attributes––
        %ODAclay;  %ODAobct;  %ODAbcol;  %ODAfcol;        %ODAcnct; –– colour attributes ––
                %ODAlct;                                  –– layout stream categories ––
                %ODAlsct;                                 –– layout stream sub-categories ––
                enciph       CDATA       #IMPLIED         –– enciphered ––
                sealed       CDATA       #IMPLIED         –– sealed –– >
<!ELEMENT    rfp    – o    (tile*)                        –– fp raster content ––>
<!ATTLIST    rfp            %r-p-a;       %r-p-ad;         –– presentation attributes ––
                conarch      NAME        #FIXED rfp       –– content architecture class ––
                content      ENTITIES    #CONREF          –– content portions ––
                altreps      ENTITIES    #IMPLIED         –– alternative representations ––
                id           ID          #IMPLIED         –– object identifier ––
                objtype      NAME        #FIXED block     –– object type ––
                appcmnt      ENTITY      #IMPLIED         –– application comments ––
        %ODApos;   %ODAdim;   %ODAbor;   %ODAtran;        %ODAcol; –– layout attributes ––
        %ODAclay;  %ODAobct;  %ODAbcol;  %ODAfcol;        %ODAcnct; –– colour attributes ––
                %ODAlct;                                  –– layout stream categories ––
                %ODAlsct;                                 –– layout stream sub-categories ––
                enciph       CDATA       #IMPLIED         –– enciphered ––
                sealed       CDATA       #IMPLIED         –– sealed –– >
<!ELEMENT  tile  – o    EMPTY                             –– fp raster content tile –– >
<!ATTLIST  tile  content   ENTITIES    #REQUIRED          –– tile content portions –– >

<!ENTITY      % ODAdely "cf | cfp | gfp | rf | rfp" –– layout data element types– –>
<!ENTITY      % ODAdvly –– default value lists for layout data element types ––
              "dvcf  ENTITY #IMPLIED dvcfp ENTITY #IMPLIED
               dvgfp ENTITY #IMPLIED dvrf  ENTITY #IMPLIED dvrfp ENTITY #IMPLIED">
```

E.11   SGML document type declaration and document type definition

E.11.1   Generic and specific parts present

For both logical and layout structures, when either or both generic parts, and at least one corresponding specific part, are present, the usual form of SGML document type declaration is used. The document type name is the generic identifier of the element that represents the root object.

If there are objects in the specific part that have no object class attribute, the generic part is said to be "partially present". The ODL object type names of such objects are used as their generic identifiers, and a standard element definition for the object type (see E.11.3) is included in the document type definition.

E.11.2   Generic parts only

When either or both generic parts are present, and no specific parts, a document type declaration in the following form is used:

```
<!DOCTYPE                              generic                                    [
  <!ELEMENT generic  o                 o          (logical?,      layout?)>
  <!ELEMENT logical  –                            o              CDATA>
  <!ELEMENT layout   –                            o              CDATA>
]>
```

E.11.3   Specific parts only

When either or both specific parts are present, and no generic parts, the ODL names for the object types are used as the generic identifiers. One or both of the two following public document type definitions are used, corresponding to the specific parts that are present.

E.11.3.1 Document type definition for specific logical structure

```
<! –– Public document type definition. Typical invocation:
<! DOCTYPE dlor PUBLIC "ISO/IEC 8613-5:1994//DTD ODA Logical Structure//EN" [
]>
––>
<!ENTITY      % ODAdlg PUBLIC "ISO/IEC 8613-5:1993//TEXT
                        ODA Data Elements: Logical//EN">
              %ODAdlg;


<!ELEMENT    dlor    o  o  (clo | blo)+        –– document logical root ––>
<!ELEMENT    clo     –  –  (clo | blo)+        –– composite logical object ––>
<!ELEMENT    blo     –  o  (%ODAdelg;)         –– basic logical object ––>
<!ATTLIST    (dlor | clo)
                     dvclo      ENTITY   #IMPLIED     –– default value list ––
                     dvblo      ENTITY   #IMPLIED     –– default value list ––
                     id         ID       #IMPLIED     –– object identifier ––
                     protect    NAME     unprot       –– protection: PROTECT UNPROT ––
                     enciph     CDATA    #IMPLIED     –– enciphered ––
                     sealed     CDATA    #IMPLIED     –– sealed ––>
<!ATTLIST    blo     id         ID       #IMPLIED     –– object identifier ––
                     protect    NAME     unprot       –– protection: PROTECT UNPROT ––
                     enciph     CDATA    #IMPLIED     –– enciphered ––
                     sealed     CDATA    #IMPLIED     –– sealed ––>
```

E.11.3.2 Document type definition for specific layout structure

```
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     1994
     Permission to copy in any form is granted for use with conforming SGML systems and applications as
     defined in ISO 8879, provided this notice is included in all copies.
––>
<! –– Public document type definition. Typical invocation:
<!DOCTYPE dlar PUBLIC "ISO/IEC 8613-5:1994//DTD ODA Layout Structure//EN" [
]>
––>
<!ENTITY      % ODAdly PUBLIC "ISO/IEC 8613-5:1993//TEXT
                        ODA Data Elements: Layout//EN">
              %ODAdly;


<!ELEMENT    dlar    o  o  ((pages | page)+ | bpage+)      –– document layout root ––>
<!ELEMENT    pages   –  –  (pages | page)+                –– page set ––>
<!ELEMENT    page    –  o  (frame+ | (%ODAdely;)+)        –– page (composite) ––>
<!ELEMENT    frame   –  –  (frame+ | (%ODAdely;)+)        –– frame ––>
<!ELEMENT    bpage   –  o  (%ODAdely;)                    –– basic page ––>
<!ENTITY      % layatt PUBLIC "ISO/IEC 8613-5:1993//ENTITIES
                        ODA Layout Attributes//EN">
              %layatt;
<!ATTLIST    dlar    objtype    NAME     #FIXED dlar     –– object type ––
                     id         ID       #IMPLIED        –– object identifier ––
                     dvpages    ENTITY   #IMPLIED        –– default value list ––
                     dvpage     ENTITY   #IMPLIED        –– default value list ––
                     dvframe    ENTITY   #IMPLIED        –– default value list ––
                     dvblock    ENTITY   #IMPLIED        –– default value list ––
                     dvbpage    ENTITY   #IMPLIED        –– default value list ––
                     %ODAdvly;                           –– data elements: default value lists ––
                     %ODAbal;                            –– balance ––
                     enciph     CDATA    #IMPLIED        –– enciphered ––
                     sealed     CDATA    #IMPLIED        –– sealed ––>
<!ATTLIST    pages   objtype    NAME     #FIXED pages    –– object type ––
                     id         ID       #IMPLIED        –– object identifier ––
                     dvpages    ENTITY   #IMPLIED        –– default value list ––
                     dvpage     ENTITY   #IMPLIED        –– default value list ––
                     dvframe    ENTITY   #IMPLIED        –– default value list ––
                     dvblock    ENTITY   #IMPLIED        –– default value list ––
                     %ODAdvly;                           –– data elements: default value lists ––
                     %ODAbal;                            –– balance ––
                     %ODAlct;                            –– layout stream categories ––
                     %ODAlsct;                           –– layout stream sub-categories ––
                     enciph     CDATA    #IMPLIED        –– enciphered ––
                     sealed     CDATA    #IMPLIED        –– sealed ––>
<!ATTLIST    bpage   objtype    NAME     #FIXED bpage    –– object type ––
```

		id	ID	#IMPLIED	–– object identifier ––
		%ODAdvly;			–– data elements: default value lists ––
		%ODAdim;			–– dimensions ––
		%ODAlct;			–– layout stream categories ––
		%ODAlsct;			–– layout stream sub-categories ––
		%ODAtran;			–– transparency ––
		%ODAcol;			–– colour ––
		%ODAppos;			–– page position ––
		%ODAmed;			–– medium type ––
		%ODAbcol;			–– content background colour ––
		%ODAfcol;			–– content foreground colour ––
		%ODAcnct;			–– content colour table ––
		enciph	CDATA	#IMPLIED	–– enciphered ––
		sealed	CDATA	#IMPLIED	–– sealed ––>
<!ATTLIST	page	objtype	NAME	#FIXED page	–– object type ––
		id	ID	#IMPLIED	–– object identifier ––
		dvframe	ENTITY	#IMPLIED	–– default value list ––
		dvblock	ENTITY	#IMPLIED	–– default value list ––
		%ODAdvly;			–– data elements: default value lists ––
		%ODAdim;			–– dimensions ––
		%ODAbal;			–– balance ––
		%ODAlct;			–– layout stream categories ––
		%ODAlsct;			–– layout stream sub-categories ––
		%ODAiord;			–– imaging order ––
		%ODAtran;			–– transparency ––
		%ODAcol;			–– colour ––
		%ODAppos;			–– page position ––
		%ODAmed;			–– medium type ––
		%ODAclay;			–– colour of layout object ––
		%ODAobct;			–– object colour table ––
		enciph	CDATA	#IMPLIED	–– enciphered ––
		sealed	CDATA	#IMPLIED	–– sealed ––>
<!ATTLIST	frame	objtype	NAME	#FIXED frame	–– object type ––
		id	ID	#IMPLIED	–– object identifier ––
		dvframe	ENTITY	#IMPLIED	–– default value list ––
		dvblock	ENTITY	#IMPLIED	–– default value list ––
		permimp	NAME	y	–– implicit layout category: Y N ––
		%ODAdvly;			–– data elements: default value lists ––
		%ODApos;			–– position ––
		%ODAdim;			–– dimensions ––
		%ODAbor;			–– border ––
		%ODAbal;			–– balance ––
		%ODApath;			–– layout path ––
		%ODAsrce;			–– logical source ––
		%ODAperm;			–– permitted category names ––
		%ODAlct;			–– layout stream categories ––
		%ODAlsct;			–– layout stream sub-categories ––
		%ODAiord;			–– imaging order ––
		%ODAtran;			–– transparency ––
		%ODAcol;			–– colour ––
		%ODAclay;			–– colour of layout object ––
		%ODAobct;			–– object colour table ––
		enciph	CDATA	#IMPLIED	–– enciphered ––
		sealed	CDATA	#IMPLIED	–– sealed ––>

E.11.3.3 Link process definition

```
<!–– Copyright (C) International Organization for Standardization, International Electrotechnical Commission
        1994
        Permission to copy in any form is granted for use with conforming SGML systems and applications as defined in
        ISO 8879, provided this notice is included in all copies.
––>
<! –– Public link process definition. Typical invocation:
<!LINKTYPE ODAlay PUBLIC "ISO/IEC 8613-5:1994//LPD
                ODA Layout Process//EN" [
]>
––>
  <! –– Define ODA layout directives as SGML link attributes ––>
<!ENTITY      % ldir-bc PUBLIC "ISO/IEC 8613-5:1993//TEXT
                Layout Directives: Basic and Composite//EN">
```

```
<!ATTLIST    clo %ldir-bc; >
<!ENTITY     % ldir-b PUBLIC "ISO/IEC 8613-5:1993//TEXT
                  Layout Directives: Basic//EN">
<!ATTLIST    blo %ldir-b; %ldir-bc; >

 <! –– Define logical presentation attributes as SGML link attributes –– >
<!ENTITY     % c-p-d PUBLIC "ISO/IEC 8613-6:1993//TEXT
                  Character Presentation Format Directives//EN">
 <!ATTLIST   (cfp | cp) %c-p-d; >
<!ENTITY     % g-p-d PUBLIC "ISO/IEC 8613-8:1993//TEXT
                  Geometric Presentation Format Directives//EN">
<!ATTLIST    gfp %g-p-d; >
<!ENTITY     % r-p-d PUBLIC "ISO/IEC 8613-7:1993//TEXT
                  Raster Presentation Format Directives//EN">
<!ATTLIST    rfp %r-p-d; >

 <! –– Define ODA default link set ––>

<!LINK       #INITIAL
             dlor    dlar
             gfp     gfp
             rf      rf
             rfp     rfp>
```

E.12   Identification of ODA/ODL documents

The application information parameter (**"APPINFO"**) of the SGML declaration must begin with **"ODL"** in order to identify the document as one that conforms to the ODA architecture and is represented in ODL.

E.13   Use of SDIF with ODA/ODL documents

SDIF shall be used for OSI interchange of ODA documents that are represented in ODL. SDIF should be used for non-OSI interchange of such documents.

When SDIF is used, the ODA document profile shall be represented by the first document descriptor in the SDIF data stream, which shall be given the SDIF name **"DOCPROF"**.

E.14   Document profile

This clause specifies a standardized SGML representation of the ODA document profile defined in ITU-T Rec. T.414 | ISO/IEC 8613-4.

NOTE – Some of the elements in the ODA profile are redundant when ODL is used. They are included in order to simplify conversion between ODL and ODIF; the redundant elements can be omitted if desired.

E.14.1   Representation of profile values

E.14.1.1 Attribute list

The profile contains a number of lists of attribute names and their default values. The names are ODL names that are defined for the attributes in other Specifications in ISO/IEC 8613. Such lists are designated in the profile document type definition (DTD) by a reference to the parameter entity **"m.attl"**.

NOTE – The purpose of the attribute lists is to establish default values that differ from those stated in ITU-T Rec. T.410 Series | ISO/IEC 8613.

An attribute list can optionally have an associated scope, such as an object type or content architecture class. The content of an attribute list is in the same form as an SGML attribute specification list.

Multiple non-basic values that may apply to one attribute (and thus cannot be described within one attribute specification list) are represented by using multiple **scope**/**dvlist** pairs with the same scope.

E.14.1.2 Document reference

The element in the ODL profile representation that contains a reference to a document is termed a "document reference" (**docref**). The element containing the string by which the document described by the profile is referenced is called the "document reference identifier" (**docrefid**). The content of both element types can be an SGML formal public identifier, an ASN.1 object identifier, or a character string.

E.14.1.3 ASN.1 object identifier

A value of an attribute, or content of an element, that is identified in ITU-T Rec. T.414 | ISO/IEC 8613-4 as an "object identifier" is an ASN.1 object identifier. Such a value is represented in the clear text notation that is used for such identifiers in ISO standards. For example, the object identifier for the SDIF abstract syntax would be represented as:

[iso standard 9069 abstract–syntax (1)]

E.14.1.4 Escape sequences

A string parameter that is an escape sequence formulated in accordance with ISO 2022 is represented in the form used for the "public text designating sequence" defined in ISO 8879.

> NOTE – This is the clear text form commonly used in ISO standards.

E.14.2 Public text

```
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      1994
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      defined in ISO 8879, provided this notice is included in all copies.
––>
<! –– Public document type definition. Typical invocation:
<!DOCTYPE profile PUBLIC "ISO/IEC 8613-4:1994//DTD ODA Profile//EN" [
]>
––>
<!ENTITY     % m.attl     "(scope?, dvlist)+" –– model: attribute list ––>
<!ENTITY     % m.date     "(date, time?)" –– model: date and time ––>

<!ELEMENT    profile      – – ((constit?, docchar, docmanag?, docsecat?) | sealedpr)>

                          <! –– Document Constituents ––>
<!ELEMENT    constit      –– presence of document constituents ––
                          – o (extdoc?, resdoc?, resource*) >
<!ATTLIST    constit      present     –– structural and style constituents present ––
                                      NAMES #IMPLIED
                          –– one to ten keywords, where each generic must
                            be partial or normal, but not both:
                            (GENLAY | PGENLAY | FGENLAY)? & (GENLOG | PGENLOG | FGENLOG)? &
                            SPECLAY? & SPECLOG? & PRESSTYL? & LAYSTYL? &
                            SEALPROF? & ENCPROF? & PRENCDP? & POENCDP? ––>
<!ELEMENT    extdoc       –– external document class ––
                          – o (#PCDATA)>
<!ELEMENT    resdoc       –– resource document ––
                          – o (docref)>
<!ELEMENT    resource     –– external identifier of resource ––
                          –– (format determined by document application profile) ––
                          – o (#PCDATA)>
<!ATTLIST    resource     key         –– resource identifier: character string ––
                                      CDATA #REQUIRED >

                          <! –– Document Characteristics ––>
<!ELEMENT    docchar      –– document characteristics ––
                          – o (approf?, appdefs?, ODAver, altfeat?, nonbasic?, fontlist?,
                            colchar?, colspacs?) >
<!ATTLIST    docchar      objects     –– number of objects per page ––
                                      NUMBER #IMPLIED
                          BMUscale    –– unit scaling ––
                                      NUMBERS "1 1"
                          docarch     –– document architecture class ––
                                      (F | FP | P) #REQUIRED
                          conarchs    –– content architecture classes: ODL names ––
                                      CDATA #REQUIRED
                          ifclass     –– interchange format class ––
                                      (A | B | SDIF) #REQUIRED >
<!ELEMENT    approf       –– doc application profile: "GRP4FAX" or object-ID ––
                          – o (#PCDATA)>
<!ELEMENT    appdefs      –– doc application profile defaults: ODA and content ––
                          – o %m.attl;>
<!ELEMENT    ODAver       –– ODA version: Standard or Recommendation name ––
```

```
                              – o (#PCDATA)>
<!ATTLIST    ODAver      ODAdate    –– ODA version date ––
                                    CDATA #REQUIRED >
<!ELEMENT    altfeat     – o (featset*)>
<!ELEMENT    featset     – o (feat*)>
<!ATTLIST    featset     switch     NAME #IMPLIED>
<!ELEMENT    feat        – o (#PCDATA)>
<!ELEMENT    nonbasic    –– non-basic document characteristics ––
                         – o (nbchar?, nbatts?)>
<!ELEMENT    nbchar      –– non-basic character sets ––
                         – o (profchar?, commchar?, altchar?) >
<!ELEMENT    profchar    – o (#PCDATA) –– profile character sets ––>
<!ELEMENT    commchar    – o (#PCDATA) –– comments character sets ––>
<!ELEMENT    altchar     – o (#PCDATA) –– alternative character sets ––>
<!ELEMENT    nbatts      –– non-basic attribute values ––
                         – o %m.attl; –– mode: "ODA" or ODL con arch name –– >
<!ELEMENT    fontlist    – o (fontrole, fontref)+ –– fonts list –– >
<!ELEMENT    fontrole    o o (#PCDATA) –– font identifier: role name –– >
<!ELEMENT    fontref     o o (fattset)+>
<!ATTLIST    fontref     uvn        –– user visible name ––
                                    CDATA #IMPLIED>
<!– – user readable comments are represented as comment declarations – –>
<!ELEMENT    fattset     o o (#PCDATA)        –– font attributes set: SGML name ––
                                              –– of entity conforming to ISO/IEC 9541-2 ––
                                              –– font attributes set – –>
<!ATTLIST    fattset     prec       –– precedence number ––
                                    NUMBER 0>
<!ELEMENT    colchar     –– colour characteristics ––
                         – o (colspacp*)>
<!ATTLIST    colchar     colmodes   (DIRECT | INDEXED | BOTH) #IMPLIED
                                    –– colour modes ––
                         mintoler   NMTOKENS #IMPLIED –– minimum tolerance ––
                                    –– tolerance value: real ––
                                    –– tolerance space: LUV LAB ––
                         maxctlen   NUMBER #IMPLIED
                                    –– maximum number of colour table entries ––
                         maxclut    NUMBER #IMPLIED
                                    –– maximum number of look-up table entries ––
                         maxgrid    NUMBER #IMPLIED
                                    –– maximum cmy(k) grid size ––>
<!ELEMENT    colspacp    –– colour space presence indicator ––
                         – o EMPTY>
<!ATTLIST    colspacp    csptype    (RGB | CMYK | CMY | LUV | LAB) #REQUIRED
                                    –– colour space type ––
                         caltype    (MATR | LUT | MATRLUT) #IMPLIED
                                    –– calibration type ––>
<!ELEMENT    colspacs    –– colour spaces list ––
                         – – (colspace*)>
<!ELEMENT    colspace    –– colour space ––
                         – o (colscal?, calidata?)>
<!ATTLIST    colspace    id         ID #REQUIRED –– colour space id ––
                         csptype    (RGB | CMYK | LUV | LAB) #REQUIRED
                                    –– colour space type ––
                         cspname    CDATA #IMPLIED –– colour space name ––>
<!ELEMENT    colscal     –– colour data scaling ––
                         – o (scaloff, scaloff, scaloff, scaloff?)>
<!ELEMENT    scaloff     –– scale and offset ––
                         – o EMPTY>
<!ATTLIST    scaloff     scale      NMTOKEN #REQUIRED      –– scale: real ––
                         offset     NMTOKEN #REQUIRED      –– offset: real ––>
<!ELEMENT    calidata    –– calibration data ––
                         – o (rgbcal | cmykcal | ciecal)>
<!ELEMENT    ciecal      –– cieluv and cielab calibration ––
                         – o (refwhite)>
<!ELEMENT    refwhite    –– reference white ––
                         – o EMPTY>
<!ATTLIST    refwhite    x          NMTOKEN #REQUIRED –– x-value: real ––
                         y          NMTOKEN #REQUIRED –– y-value: real ––
```

```
                        z              NMTOKEN #REQUIRED —— z-value: real ——>
<!ELEMENT    rgbcal      —— rgb calibration ——
                         — o (refwhite, matrix1?, lut?, matrix2?)>
<!ELEMENT    matrix1     —— calibration matrix ——
                         — o EMPTY>
<!ATTLIST    matrix1     entries    NMTOKENS #REQUIRED
                                    —— exactly nine reals or integers ——>
<!ELEMENT    matrix2     —— calibration matrix ——
                         — o EMPTY>
<!ATTLIST    matrix2     entries    NMTOKENS #REQUIRED
                                    —— exactly nine reals or integers — —>
```

<!— — the entries of both "matrix1" and "matrix2" are in row major order, i.e. with the elements appearing in the data stream in the order a_{11}, a_{12}, a_{13}, a_{21}, a_{22}, a_{23}, a_{31}, a_{32}, a_{33} — —>

```
<!ELEMENT    lut         —— colour look-up table ——
                         — o (ctent*)>
<!ATTLIST    lut         number     NUMBER #IMPLIED —— number of entries ——
                         m          NUMBER #IMPLIED
                         n          NUMBER #IMPLIED>
<!ELEMENT    ctent       —— colour table entry ——
                         — o EMPTY>
<!ATTLIST    ctent       index      NUMBER #REQUIRED
                         r          NMTOKEN #REQUIRED —— r-value: real ——
                         g          NMTOKEN #REQUIRED —— g-value: real ——
                         b          NMTOKEN #REQUIRED —— b-value: real ——>
<!ELEMENT    cmykcal     —— cmyk calibration ——
                         — o (refwhite, comment?, gridspec+)>
<!ELEMENT    comment     —— comment ——
                         — o (#PCDATA)>
<!ELEMENT    gridspec    —— grid specification ——
                         — o (gridloc, gridval)>
<!ELEMENT    gridloc     —— grid location ——
                         — o EMPTY>
<!ATTLIST    gridloc     c          NMTOKEN #REQUIRED —— c-value: real ——
                         m          NMTOKEN #REQUIRED —— m-value: real ——
                         y          NMTOKEN #REQUIRED —— y-value: real ——
                         k          NMTOKEN #IMPLIED —— k-value: real ——>
<!ELEMENT    gridval     —— grid value ——
                         — o EMPTY>
<!ATTLIST    gridval     x          NMTOKEN #REQUIRED —— x-value: real ——
                         y          NMTOKEN #REQUIRED —— y-value: real ——
                         z          NMTOKEN #REQUIRED —— z-value: real ——>


                         <! —— Document Management Attributes ——>
<!ELEMENT    docmanag    —— document management attributes ——
                         — o (descript?, dates?, origin?, userinfo?,
                             extrefs?, localref?, contents?, security?)>
<!ELEMENT    descript    —— document description ——
                         — o (title?, subject?, docrefid?,
                             doctype?, abstract?, keyword*)>
<!ELEMENT    (title, subject, doctype, abstract, keyword)
                         — o (#PCDATA)>
<!ELEMENT    dates       —— dates and times ——
                         — o (document?, creation?, filing?, expiry?,
                             start?, purge?, release?, revhist?)>
<!ELEMENT    (document, creation, filing, expiry, start, purge, release, sealtime)
                         — o %m.date; >
<!ELEMENT    revhist     —— revision history ——
                         — o (revision+) >
<!ELEMENT    revision    o o (revdate?, revisor*, docref?, revcmnts?)>
<!ATTLIST    revision    version    CDATA #IMPLIED >
<!ELEMENT    revdate     — o %m.date; >
<!ELEMENT    revisor     — o (person*, position?, organ?)>
<!ELEMENT    position    — o (#PCDATA)>
<!ELEMENT    revcmnts    — o (#PCDATA) —— user comments ——>
<!ELEMENT    origin      —— originators ——
                         — o (organ*, preparer*, owner*, author*)>
<!ELEMENT    organ       — o (#PCDATA) —— organization ——>
<!ELEMENT    preparer    — o (person?, organ?)>
```

```
<!ELEMENT    owner       – o (person?, organ?)>
<!ELEMENT    author      – o (person?, organ?)>
<!ELEMENT    userinfo    –– other user information ––
                         – o (copyrite*, status?, usercode*,
                            distlist*, addition?)>
<!ELEMENT    copyrite    – o (copyinfo*, copydate*) –– copyright information ––>
<!ELEMENT    (copyinfo | copydate)
                         – o (#PCDATA)
<!ELEMENT    status      – o (#PCDATA)>
<!ELEMENT    usercode    – o (ucentry+) –– user-specific codes ––>
<!ELEMENT    ucentry     – o (#PCDATA) –– entry of user-specific codes –– >
<!ELEMENT    distlist    – o (person?, organ?) –– distribution list ––>
<!ELEMENT    addition    – – ANY  –– additional information ––>
<!ELEMENT    extrefs     –– external references ––
                         – o (other*, previous*)>
<!ELEMENT    other       – o (docref+) –– other documents – ––>
<!ELEMENT    previous    – o (docref+) ––superseded documents – ––>
<!ELEMENT    localref    –– local filing reference ––
                         – o (filename?, location?, comments?)+>
<!ELEMENT    filename    – o (#PCDATA)>
<!ELEMENT    location    – o (#PCDATA)>
<!ELEMENT    comments    – o (#PCDATA)>
<!ELEMENT    contents    – o (language*) –– content attributes ––>
<!ATTLIST    contents    size        NUMBER #IMPLIED –– document size ––
                         pages       NUMBER #IMPLIED –– number of pages – ––>
<!ELEMENT    language    – o (#PCDATA)>
<!ELEMENT    security    – o (authoriz?, class?, access*)>
<!ELEMENT    authoriz    – o (person | organ) –– authorization ––>
<!ELEMENT    class       – o (#PCDATA) –– security classification ––>
<!ELEMENT    access      – o (#PCDATA) –– access rights ––>


             <! –– Document Security Attributes – ––>
<!ELEMENT    docsecat    – o (sealenc?, seclabel?, sealprof?, prsealdp?,
                            posealdp?, encprof?, prencdp?, poencdp?)>
<!ELEMENT    sealenc     –– sealed information encoding: ASN.1 object id ––
                         – o (#PCDATA)>
<!ELEMENT    seclabel    –– ODA security label ––
                         – o EMPTY>
<!ATTLIST    seclabel    info        CDATA #CONREF –– ODA label info ––
                         data        ENTITY #IMPLIED –– ODA label data ––>
<!ELEMENT    sealdata    –– seal data ––
                         – o (sealmetd?, sealinf?, seal)>
<!ELEMENT    sealmetd    –– seal method ––
                         – o (fpmeth?, fpkinf?, sealmeth?, sealkinf?)>
<!ELEMENT    sealinf     –– seal information ––
                         – o (fprint?, sealtime?, person?, seallocn?)>
<!ELEMENT    seal        –– seal ––
                         – o EMPTY>
<!ATTLIST    seal        nseal       NDATA #CONREF>
<!ELEMENT    (fpmeth, sealmeth, encmeth) –– method information ––
                         – o (#PCDATA)>
<!ATTLIST    (fpmeth, sealmeth, encmeth)
                         id          CDATA #IMPLIED –– ASN.1 id ––
                         methinfo    CDATA #CONREF –– descriptive method info ––>
<!ELEMENT    (fpkinf, sealkinf, enckinf) –– key information ––
                         – o ((fpmeth | sealmeth | encmeth)?, addlinf?)>
<!ELEMENT    fprint      –– fingerprint ––
                         – o EMPTY>
<!ATTLIST    fprint      nprint      NDATA #CONREF>
<!ELEMENT    addlinf     –– additional information ––
                         – o EMPTY>
<!ATTLIST    addlinf     descinfo    CDATA #CONREF –– description information ––
                         octstrin    ENTITY #IMPLIED –– octet string ––>
<!ELEMENT    seallocn    –– seal creator ––
                         – o EMPTY>
<!ATTLIST    seallocn    creatid     CDATA #IMPLIED –– unique location ––
                         creatinf    CDATA #CONREF –– descriptive location ––>
<!ELEMENT    sealprof    –– sealed profiles ––
                         – o (sealprfl+)>
```

```
<!ELEMENT    sealprfl       –– one sealed profile ––
                            – o (person*, sealdata)>
<!ATTLIST    sealprfl       ppartid     IDREF #REQUIRED>
<!ELEMENT    (prsealdp, posealdp) –– sealed document parts ––
                            – o (sealid, sealcons, person*, sealdata)+>
<!ELEMENT    sealid         –– seal id ––
                            – o (#PCDATA)>
<!ELEMENT    sealcons       –– sealed constituents ––
                            – o IDREFS #IMPLIED>
<!ELEMENT    (encprof, prencdp, poencdp) –– enciphered profile and document parts ––
                            – o (privrinf*)>
<!ATTLIST    (encprof, prencdp, poencdp)
                            pdpartid    ENTITIES #IMPLIED>
<!ELEMENT    privrinf       –– privileged recipient information ––
                            – o (person*, encmeth?, enckinf?)>


             <! –– Sealed Document Profile ––>
<!ELEMENT    sealedpr       –– sealed document profile descriptor ––
                            – o EMPTY>
<!ATTLIST    sealedpr       id          ID #REQUIRED –– sealed document profile identifier  ––
                            sealatts    CDATA #REQUIRED –– sealed attributes ––>


             <! –– Common elements ––>
<!ELEMENT    scope          ––  scope of list: "ODA", object type, con arch class ––
                            – o (#PCDATA)>
<!ELEMENT    dvlist         ––  list of attribute names and default values ––
                            – o (#PCDATA)>
<!ELEMENT    (date | time) ––  as defined by ISO 8601 ––
                            – o (#PCDATA)>
<!ELEMENT    (docref | docrefid)
                            – o (pubid | asn1id | string)>
<!ELEMENT    (pubid | asn1id | string)
                            – o (#PCDATA)>
<!ELEMENT    person         ––   personal name ––
                            – o (surname, givename?, initials?, genqual?)>
<!ELEMENT    (surname, givename, initials, genqual)
                            – o (#PCDATA)>
```

Annex F

Examples of Open Document Language representations

(This annex does not form an integral part of this International Standard)

This annex is applicable to ISO/IEC 8613-5 only.

This annex illustrates the use of the Open Document Language (ODL) to represent a document and a document profile.

F.1   ODL representation of a document

This clause illustrates the use of ODL to represent the specimen document described in Annex B of ITU-T Rec. T.412 | ISO/IEC 8613-2.

F.1.1 Specific structure examples

An ODL document entity has two parts: a prolog, consisting of markup declarations, and a document instance, representing the specific logical and/or layout structures.

F.1.1.1 Processable form document

In this example, the first declaration (**DOCTYPE**) references the document type definition (DTD) of the logical structure to which the document instance conforms. Within its scope are two entity declarations that allow references to external content portions.

The second document type declaration references the DTD of the layout structure to which the formatted document will conform. There is also a link type declaration that references the link process definition (LPD) for the applicable layout and presentation styles.

```
<!  –  –  Prolog referencing DTD's and LPD, and defining entities  –  –>
<!DOCTYPE letter SYSTEM  "Reference  to  logical  structure  DTD"
[
  <!  –  –  Entity declarations for specific logical content portions  –  –>
  <!ENTITY diagram SYSTEM "Content portion 3 1 2 0 0" NDATA gfp>
  <!ENTITY signatur SYSTEM "Content portion 3 1 6 0 0" NDATA rfp>
]>
<!DOCTYPE l SYSTEM "Reference to layout structure DTD">
<!LINKTYPE ODAlay letter                                    l            [
  <!ENTITY % laylpd SYSTEM "Reference to layout LPD" >  %laylpd;
  <!  –  –  Link rule for exceptional paragraph in the body  –  –>
  <!IDLINK ps2 para #USELINK set 4 #IMPLIED>
  <!LINK set4 #IMPLIED %rca; [calign=j cfloff=1417 clinespc=400]>
]>
<!  –  –  Document instance representing the specific logical structure  –  –>
<!  –  –  Some markup minimization is used, but more is possible  –  –>
<letter>
<date>CESSON,                        26              JUNE                1985
<addresse>To            members           of           ISO/TC97/SC18/WG3
<subject>SUBJECT:      PROPOSED        EXAMPLE      TO      CLARIFY
THE              DOCUMENT              ARCHITECTURE              MODEL
<summary>
<para>/*      Unformatted      string      of      SUMMARY      */
<body>
<para>/*      Unformatted      string      of      A's      */
<para                                              id=ps2>
/*      Unformatted      string      of      B's      */
<figure>
<drawing><gfp                                  content=diagram>
<caption>/*      Unformatted      string      of      caption      */
</figure>
<para>/*      Unformatted      string      of      C's      */
<para>/*      Unformatted      string      of      D's      */
<ending>
<sig–name>
<sig><rfp                                  content=signatur>
<name>Miss        Aude        HEA        Document        Architect
</letter>
```

F.1.1.2 Formatted form document

This example illustrates the result of formatting the document represented in F.1.1.1 to produce a document in final formatted form. Note that paragraph **"C"**, which was a single element in the logical structure, has become two separate blocks in the layout structure.

```
<!DOCTYPE l SYSTEM  "Reference  to  layout  structure  DTD">

<!  –  –  Document instance representing the specific layout structure  –  –>
<!  –  –  Some markup minimization is used, but more is possible  –  –>
<                                      l                                      >
<headerpg>
<logofram><logo                                  content=ourlogo>
<date><cf        pos="395        710"        dim="3060        540">
CESSON,                        26              JUNE                1985
```

```
<addresse><cf                                        dim="4505                              540">
To                         members                        of                      ISO/TC97/SC18/WG3
<subject><cf                          dim="7200                    905"                clinespc=300>
SUBJECT:           PROPOSED              EXAMPLE          TO            CLARIFY
THE                    DOCUMENT                  ARCHITECTURE                MODEL
<summary><cf           dim="5585          2325"              calign=j          cfloff=1417>
/*          Formatted             string           of           SUMMARY          */
<bodypage><bodyfram>
<cf      pos="540      540"    dim="7935      1785"    calign=j    cfloff=1417    clinespc=300>
/*              Formatted              string            of           A's         */
<cf      pos="540      3205"    dim="7935      1785"    calign=j    cfloff=1417    clinespc=400>
/*              Formatted              string            of           B's         */
<gfp         pos="1615        5895"      dim="5045        4140"      content=diagram>
<cf              pos="1985             10235"          dim="3970          370">
/*              Formatted              string          of           caption          */
<cf      pos="540      11485"    dim="7935      1075"    calign=j    cfloff=1417    clinespc=300>
/*              Formatted              string            of           C's         */
<bodypage><bodyfram>
<cf      pos="540      540"    dim="7935      1275"    calign=j    cfloff=1417    clinespc=300>
/*              Formatted              string            of           C's         */
<cf      pos="540      2695"    dim="7935      1615"    calign=j    cfloff=1417    clinespc=300>
/*              Formatted              string            of           D's         */
<cf      pos="1820      5190"    dim="6860      2155"    calign=j    cfloff=1020    clinespc=300>
/*         Formatted        string        of        FORMAL          ENDING          */
<rfp          pos="2695          8110"      dim="5585          2495"        content=signatur>
<cf          pos="5385          10605"        dim="2520          905"        clinespc=300>
Miss                   Aude               HEA              Document             Architect
</ I >
```

F.1.1.3   Formatted processable form document

This example illustrates the result of formatting the document in F.1.1.1 to produce a document in formatted processable form.

The character content data elements differ from those in F.1.1.2 because their content architecture is **"cfp"** rather than **"cf"**. This result was achieved by inserting the following entity declaration in the prolog of F.1.1.1:

<!ENTITY % rca "cfp" —— Result content architecture: cf cfp ——>

This example also differs from F.1.1.1 in a number of respects:

1)   The prolog contains an additional entity declaration, for **"%sca"**, which modifies the logical DTD and the LPD to specify **"cfp"** data elements rather than **"cp"**.

2)   The document instance includes both the logical and the layout structure. Tags for the logical structure contain the document type specification **"(letter)"**, tags for the layout structure contain **"(I)"**, and tags that apply to both structures contain neither.

3)   The data elements are **"cfp"** rather than **"cp"**.

4)   The generic content portion for **"ending"** is no longer referenced, as it is not formatted. Instead, formatted text generated by the layout process occurs within the **"ending"** element.

```
<! —— Prolog referencing DTD's and LPD, and defining entities ——>
<!DOCTYPE   letter      SYSTEM "Reference to logical structure DTD"
[
 <! —— Entity declarations for specific logical content portions ——>
 <!ENTITY       diagram  SYSTEM "Content portion 3 1 2 0 0" NDATA gfp>
 <!ENTITY       signatur  SYSTEM "Content portion 3 1 6 0 0" NDATA rfp>
 <! —— Entity declaration to specify formatted processable content ——>
 <!ENTITY      % sca      "cfp" —— Source content architecture: cp cfp ——>
]>
<!DOCTYPE    I              SYSTEM "Reference to layout structure DTD" [
 <! —— Entity declarations for specific layout content portions ——>
 <!ENTITY       endcfp    CDATA "/* Formatted processable string of ENDING */ " >
]>
<!LINKTYPE   ODAlay    letter I [
 <!ENTITY      % laylpd  SYSTEM "Reference to layout LPD" > %laylpd;
 <! —— Link rule for exceptional paragraph in the body ——>
 <!IDLINK     ps2       para         #USELINK set 4  #IMPLIED>
 <!LINK       set4      #IMPLIED   %rca; [calign=j cfloff=1417 clinespc=400]>
]>
```

```
<! —— Document instance representing specific logical & layout structures —— >
<! —— Some markup minimization is used, but more is possible ——>
<(letter)letter> <( l )l>
<date>         <( l )cfp pos="395 710" dim="3060 540">
CESSON, 26 JUNE 1985
<addresse>     <( l )cfp dim="4505 540">
To members of ISO/TC97/SC18/WG3
<subject>      <( l )cfp dim="7200 905" clinespc=300>
SUBJECT: PROPOSED EXAMPLE TO CLARIFY THE DOCUMENT ARCHITECTURE MODEL
<summary>
<( l )cfp dim="5585 2325" calign=j cfloff=1417>
/* Formatted processable string of SUMMARY */
<(letter)body>
<( l )bodypage>
<(letter)para>
<( l )cfp pos="540 540" dim="7935 1785" calign=j cfloff=1417 clinespc=300 >
/* Formatted processable string of A's */
<(letter)para id=ps2>
<( l )cfp pos="540 3205" dim="7935 1785" calign=j cfloff=1417 clinespc=400 >
/* Formatted processable string of B's */
<(letter)figure>
<(letter)gfp content=diagram>
<( l )gfp pos="1615 5895" dim="5045 4140" content=diagram>
<(letter)caption>
<( l )cfp pos="1985 10235" dim="3970 370">
/* Formatted processable string of caption */
</(letter)figure>
<(letter)para>
<( l )cfp pos="540 11485" dim="7935 1075" calign=j cfloff=1417 clinespc=300 >
/* Formatted processable string of C's */
<( l )bodypage>
<( l )cfp pos="540 540" dim="7935 1275" calign=j cfloff=1417 clinespc=300 >
/* Formatted processable string of C's */
<(letter)para>
<( l )cfp pos="540 2695" dim="7935 1615" calign=j cfloff=1417 clinespc=300 >
/* Formatted processable string of D's */
<(letter)ending>
<( l )cfp pos="1820 5190" dim="6860 2155" calign=j cfloff=1020 clinespc=300
   content=endcfp>
<(letter)sig—name>
<(letter)rfp content=signatur>
<( l )rfp pos="2695 8110" dim="5585 2495" content=signatur>
<(letter)name><( l )cfp pos="5385 10605" dim="2520 905" clinespc=300>
Miss Aude HEA Document Architect
</( l )l></(letter)letter>
```

F.1.2   Generic structure

This subclause contains the document type definitions and link process definition that were referenced by the specific structure examples.

F.1.2.1   Generic logical structure

This subclause contains the document type definition (DTD) that represents the generic logical structure to which the specific logical structure conforms. The DTD could be included with the document, or (as shown in F.1.1) referenced from a document type declaration.

The entity declaration for **"% sca"** allows documents conforming to this DTD to contain either processable or formatted processable character content portions.

```
<!  —   —   Document   Type   Definition   for   Generic   Logical   Structure   —   —>

<!  —   —   External   reference   to   declarations   for   data   elements   —   —>
<!ENTITY   %   ODAdlg   PUBLIC   "ISO/IEC   8613-5:1994//TEXT
                           ODA   Data   Elements:   Logical//EN">

           %ODAdlg;

<!  —   —   Switch,   settable   in   document   instance,   to   choose   "cp"   or   "cfp"   —   —>
```

```
<!ENTITY    %    sca    "cp"    –    –    Source    content    architecture:    cp    cfp    –    –>

<!    –    –    Element    and    attribute    declarations    for    remaining    elements    –    –    >
<!ELEMENT    letter    o o    (header,                                                                body)>
<!ELEMENT    header    o o    (date,                    addresse,                subject,            summary)>
<!ELEMENT    summary    o o    (para+)>
<!ELEMENT    body    –    o    ((para            |            figure)+,            ending,        sig-name)>
<!ELEMENT    figure    –    o    (drawing,caption)>
<!ELEMENT    drawing    o o    (gfp)>
<!ELEMENT    ending    –    o    (%sca;)>
<!ELEMENT    sig-name    –    o    (sig,name)>
<!ELEMENT    sig    o o    (rfp)>
<!ELEMENT    (date    |    addresse    |    subject    |    para    |    caption    |    name)
            –    o    (%sca;)>
```

F.1.2.2 Generic layout structure

This subclause contains the document type definition (DTD) that represents the generic layout structure to which the formatted document generated by the layout process conforms. The DTD could be included with the processable form document, or (as shown in F.1.1) referenced from a document type declaration.

```
<!    –    –    Document    Type    Definition    for    Generic    Layout    Structure    –    –>

<!    –    –    External    reference    to    declarations    for    data    elements    –    –>
<!ENTITY    %        ODAdly        PUBLIC        "ISO/IEC            8613-5:1994//TEXT
                            ODA    Data    Elements:    Layout//EN">
        %ODAdly;

<!    –    –    Entity    declarations    for    generic    content    portions    –    –>
<!ENTITY    ourlogo    NDATA        "/*    Image    of    our    LOGO    */">

<!    –    –    Element    and    attribute    declarations    for    remaining    elements    –    –>
<!ELEMENT    l        – –    (headerpg,                                          bodypage+)>
<!ATTLIST    l            objtype    NAME    #FIXED                            dlar>
<!ELEMENT    headerpg    o o    (logofram,            date,        addresse,        subject,        summary)>
<!ATTLIST    headerpg        objtype    NAME    #FIXED page    –    –    object    type    –    –
                        dim    CDATA    "9920 14030"    –    –    dimensions    –    –>
<!ELEMENT    logofram    o o    (logo)>
<!ATTLIST    logofram        objtype    NAME    #FIXED frame    –    –    object    type    –    –
                        pos    CDATA    "710 730"    –    –    position    –    –
                        dim    CDATA    "3685 2495"    –    –    dimensions    –    –>
<!ELEMENT    logo    o o    EMPTY>
<!ATTLIST    logo        objtype    NAME    #FIXED block    –    –    object    type    –    –
                    conarch    NAME    #FIXED rf    –    –    content    arch    –    –
                    content    ENTITIES ourlogo    –    –    content    info    –    –>
<!ELEMENT    (date        |        addresse        |        subject        |        summary)
            –    o    (cf                            |                            cfp)>
<!ATTLIST    date        objtype    NAME    #FIXED frame    –    –    object    type    –    –
                    pos    CDATA    "5045 565"    –    –    position    –    –
                    dim    CDATA    "3970 1615"    –    –    dimensions    –    –>
<!ATTLIST    addresse        objtype    NAME    #FIXED frame    –    –    object    type    –    –
                    pos    CDATA    "1105 4310"    –    –    position    –    –
                    dim    CDATA    "5395 1415"    –    –    dimensions    –    –>
<!ATTLIST    subject        objtype    NAME    #FIXED frame    –    –    object    type    –    –
                    pos    CDATA    "1105 6660"    –    –    position    –    –
                    dim    CDATA    "7200 1785"    –    –    dimensions    –    –>
<!ATTLIST    summary        objtype    NAME    #FIXED frame    –    –    object    type    –    –
                    pos    CDATA    "2180 9695"    –    –    position    –    –
                    dim    CDATA    "6290 3570"    –    –    dimensions    –    –>
<!ELEMENT    bodypage    –    o    (bodyfram)>
<!ATTLIST    bodypage        objtype    NAME    #FIXED page    –    –    object    type    –    –
                        dim    CDATA    "9920 14030"    –    –    dimensions    –    –>
<!ELEMENT    bodyfram    o o    (%ODAdely;)+>
<!ATTLIST    bodyfram        objtype    NAME    #FIXED frame    –    –    object    type    –    –
                        pos    CDATA    "565 565"    –    –    position    –    –
                        dim    CDATA    "8815 12870"    –– dimensions ––>
```

F.1.2.3 Layout and presentation styles

This subclause contains the link process definition (LPD) that represents the layout and presentation attributes that govern the generation of the formatted document by the layout process. The LPD could be included with the processable form document, or (as shown in F.1.1) referenced from a link type declaration.

```
<! –– Link process definition specifying the layout and presentation styles, and the layout object class.
–->


<! –– External references to attribute definitions for layout directives ––>
<!ENTITY      % ldir-bc    PUBLIC "ISO/IEC 8613-5:1994//TEXT
                           Layout Directives: Basic and Composite//EN">
<!ENTITY      % ldir-b     PUBLIC "ISO/IEC 8613-5:1994//TEXT
                           Layout Directives: Basic//EN">


<! –– Entity declarations for generic content portions ––>
<!ENTITY      endcp        CDATA "/* Unformatted string of ENDING */">


<! –– Switch, settable in document instance, to choose "cf" or "cfp" ––>
<!ENTITY      % rca        "cf" –– Result content architecture: cf cfp ––>


<! –– Link attribute definitions for ODA layout directives ––>
<!ATTLIST     (letter | header | summary | body | figure | sig–name) %ldir–bc; >
<!ATTLIST     (date | addresse | subject | drawing |
              caption | para | ending | sig | name) %ldir–b; %ldir–bc;>


<! ––Parameter entities for layout styles ––>
<!ENTITY      % ls0        "[offset='00 710 00 395']" >
<!ENTITY      % ls4        "[offset='00 00 705 00']" >
<!ENTITY      % ls5        "[newlay='bodypage']" >
<!ENTITY      % ls6        "[indiv= 'bodyfram']" >
<!ENTITY      % ls7        "[offset='00 00 2155 1615' sep='00 905 00']" >
<!ENTITY      % ls8        "[offset='00 00 2860 1985' sep='00 200 00']" >
<!ENTITY      % ls9        "[offset='280 540 340 540' sep='00 880 00']" >
<!ENTITY      % ls10       "[offset='00 00 535 1420'  sep='00 880 00']" >
<!ENTITY      % ls11       "[offset='00 00 535 2695'  sep='00 765 00']" >
<!ENTITY      % ls12       "[offset='00 00 910 5385']" >


<! –– Parameter entities for presentation styles ––>
<!ENTITY      % ps0        "[clinespc=300]" >
<!ENTITY      % ps1        "[calign=j cfloff=1417]" >
<!ENTITY      % ps3        "[calign=j cfloff=1417 clinespc=300]" >
<!ENTITY      % ps4        "[calign=j cfloff=1020 clinespc=300]" >


<! –– Link set that will be active at start of document ––>
<!LINK #INITIAL
              letter                                    l
              header                                    headerpg
              body        #USELINK set1     %ls5;       #IMPLIED
              date                          %ls0;       date
              addresse                                  addresse
              subject     #USELINK set2                 subject
              summary     #USELINK set3                 summary
>
<! –– Link set that will be active within the body –– >
<!LINK set1   para        #USELINK set5     %ls9;       #IMPLIED
              figure                        %ls6;       #IMPLIED
              drawing                       %ls7;       #IMPLIED
              caption                       %ls8;       #IMPLIED
              ending      #USELINK set6     %ls10;      #IMPLIED
              signatur                      %ls11;      #IMPLIED
              name        #USELINK set7     %ls12;      #IMPLIED
>
<! –– Link set that will be active within the subject ––>
<!LINK set2   %sca;                                     %rca;       %ps0; >
<! –– Link set that will be active within the summary ––>
<!LINK set3   para                          %ls4;       #IMPLIED
              %sca;                                     %rca;       %ps1; >
<! –– Link set for normal paragraphs in the body ––>
<!LINK set5   #IMPLIED                                  %rca;       %ps3; >
```

```
<! —— Link set that will be active within the ending ——>
<!LINK set6    %sca; [congen=E(endcp) gentype=coninfo] #IMPLIED
               #IMPLIED                                  %rca;      %ps4; >
<! – – Link set that will be active within the name – – >
<!LINK set7    %sca;                                     %rca;      %ps0; >
```

F.2   ODL representation of a document profile

This clause illustrates the use of ODL to represent the example of a document profile described in Annex C of ITU-T Rec. T.414 | ISO/IEC 8613-4. Some markup minimization was used, but considerably more is possible.

```
<!DOCTYPE   profile    PUBLIC "ISO/IEC 8613-4:1993//DTD ODA Profile//EN" [
 <!ENTITY    optima    SYSTEM "Font Attribute Set conforming to ISO/IEC 9541-2">
 <!ENTITY    optimait  SYSTEM "Font Attribute Set conforming to ISO/IEC 9541-2">
]>
<profile>
        <! —— Document Constituents —— >
<constit present='pgenlay speclay speclog'>
<resdoc>
<string>Finance Master,
Widget Inc.,
4511 McKenzie,
Atlanta, Georgia, USA.
        <! —— Document Characteristics —— >
<docchar BMUscale="12 10" fp conarchs="cfp" sdif>
<approf>[TOP 5.5]
<appdefs>
<scope>ODA
<dvlist>dim="10200 13200" trans=o
<ODAver ODAdate="19920501">
ITU-T Rec. T.410 Series (1993) | ISO/IEC 8613 : 1994; version 2.00
        <! —— Non-basic Document Characteristics —— >
<nonbasic>
<nbatts>
<scope>page
<dvlist>dim="13200 10200"
<scope>oda
<divlist>medium="10200,13200 r" protect=protect
<fontlist>
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Finance and Control
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Atlanta, Georgia, USA.
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Annex G

Use of the Distinguished or Canonical Encoding type

(This annex does not form an integral part of this Recommendation | International Standard)

G.1   The problem to be solved

The Distinguished and Canonical Encoding Rules have been provided to assist in the provision of integrity security mechanisms using authenticators for material to be transferred.

The concept of an authenticator is well understood, and involves taking the bit pattern to be transferred, applying some form of hashing function to it to reduce it to a few octets, encrypting those octets to authenticate the authenticator, then transmitting the authenticator with the original material (the original material being sent in clear). On receipt, the authenticator is recalculated from the received clear text and compared with the received authenticator. If they are equal, the text was not tampered with, otherwise it was.

This simple concept becomes more difficult when the OSI model, and particularly the presentation layer, is in use.

Two problems arise, one of which is a question of modeling and so-called layer independence, and the second of which relates to the use of application layer relays, such as are used in the ITU-T Rec. X.400 Series | ISO/IEC 10021.

On the modeling issue, the hash function and the encryption algorithm are part of the application's operation, but the application has no knowledge or control of the actual encoding which the presentation layer will use. Similarly on receipt, decoding, and hence destruction of the bit string on receipt, is a presentation layer matter. There are four solutions that have been proposed to overcome this problem:

      a)   rule out of order the use of the actual octets produced by presentation layer for use in the authenticator (the current philosophy being adopted by presentation and ULA experts);

b) put the hashing and authenticator mechanisms into the presentation layer itself (this solution was rejected as part of the broad question of putting support for encryption into ASN.1; at the time of rejection, the reason was that work in security was still immature, and that one did not want to prejudice the eventual result);

c) model a complex interaction with the presentation layer where, on transmission, a value is presented for encoding, the encoding is produced and returned to the application layer which calculates the authenticator, then the whole is transmitted; on receipt, as well as producing the abstract value, the received encodings are passed to the application layer for authenticator checking (this model was rejected by the ULA group);

d) do the entire encoding in the application layer, and make no use of presentation services for transfer syntax negotiation (this is really a rejection of the OSI reference model, and would not be acceptable as a wide-spread solution).

It might be argued that failure to agree on a model to describe an apparently simple and workable process (produce the encoding, then the authenticator, and transmit both, check against the authenticator on receipt) is not something which should be accepted as a long-term position. Such a remark would have strong validity if it were not for the second problem of application relays, and if there were no other workable solution. (This annex is outlining an alternative solution which is used in ITU-T Rec. X.509 | ISO/IEC 9594-8 and is considered to be free from modeling and relay-system problems and workable.)

The second problem is that, if an application relay is in place, the transfer syntax used for the second transmission may be different from that agreed for the first (for example, use of packed encoding rules on one of them, and Basic Encoding Rules on the other). This would defeat the authenticator, unless the authenticator was opened up and recalculated at the relay, which would imply security exchanges with the relay, whereas what is required is end-to-end security.

NOTE – There have been suggestions that one might want to flag a presentation context as "do not decode/re-encode at application relays", but this also provides modeling and other problems.

Thus we are led to try to work with a model in which the presentation layer (together with any intervening application relays) provides for the transfer of the abstract syntax and semantics of the information, but makes no guarantees that the actual bit pattern encoding (the transfer syntax) will be retained end-to-end.

The challenge is therefore to provide an authenticator mechanism that can operate on the abstract data type, rather than on the transmitted bit string.

The Directories group were the first to attempt to produce a solution to this problem, and it is their model that is described below.

G.2   The approach to a solution

The following text describes first a conceptual model of what is being done, followed by an implementation optimization that eliminates the double encoding/decoding implied in the conceptual model.

The conceptual model works as follows:

a) The sender, in the application layer, converts the abstract syntax value into a bit string using the Distinguished or Canonical Encoding Rules, and produces the authenticator from that bit string, which is added to the abstract syntax value, and both values are transmitted using normal presentation layer mechanisms, and any transfer syntax. Conceptually, the sender is encoding twice — once for the authenticator (using the Distinguished or Canonical Encoding Rules) in the application layer, and once for the actual transfer (using the negotiated transfer syntax) in the presentation layer.

NOTE – The important property of the bit string produced by the Distinguished and Canonical Encoding Rules is that it is in one-to-one correspondence with the abstract value. Thus end-to-end transfer without loss of information at the abstract syntax level is equivalent to end-to-end transfer of the bit string on which the authenticator is based.

b) The receiver will decode the received bit string in the presentation layer, using the negotiated transfer syntax (which may differ from that used by the sender if an application relay is in place), and will pass the abstract value to the application. In the application layer, the abstract value is re-encoded using the Distinguished or Canonical Encoding Rules to produce the bit string to be authenticated.

Thus conceptually, we encode twice at the sending end, and decode once and then encode at the receiving end. Implementors may choose to actually do this if the code supporting presentation layer operation is from a supplier different from that producing the code to support the application. How significant an overhead this would be is not clear at this stage. Where an integrated implementation is used, however, there is the option of the optimization described below. It should also be noted that the Distinguished and Canonical Encoding Rules are no harder to apply than the Basic Encoding Rules except in relation to the use of **SET OF**. If a large **SET OF** is to be processed, the implementation

may need to invoke a disk-based sorting routine. Application designers should be aware of this, and try to use **SEQUENCE OF** instead of **SET OF** when use of the Distinguished or Canonical Encoding Rules is envisaged.

G.3   The implementation optimization

The OSI model and protocol standards specify required behaviour; they do not, in any way, seek to constrain the architecture and structure of actual implementation code. Thus an implementor can produce the desired effect in whatever way he chooses.

It is assumed that the use of indefinite length is more suitable for an ODA document, i.e. the use of the Canonical Encoding Rules rather than the Distinguished Encoding Rules.

At the sending end, the bit string which is produced (conceptually in the application layer) can be kept, and used to provide the encoding that is conceptually performed in the presentation layer. This is suitable for sending if the negotiated transfer syntax is either the ASN.1 Basic Encoding Rules or the ASN.1 Canonical (or Distinguished) Encoding Rules. If it is neither of these, then double encoding is necessary.

Similarly at the receiving end, the received bit string can be retained (for any transfer syntax), and the implementation can use this to check the authenticator. If it matches, end of problem; if it does not match, then it may be a transfer syntax problem, and recoding from the abstract value is necessary to determine whether there was tampering or not.

In order to maximize the chances of not having to do double encoding/decoding, systems using this mechanism would be advised to try to negotiate a transfer syntax of Canonical (or Distinguished) Encoding Rules (using the appropriate ASN.1 object identifier) as their first preference, falling back onto Basic Encoding Rules (first preference) or Packed or some other encoding rules (second preference).

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