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TECHNICAL CORRIGENDUM 2

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Information technology — Open Document Architecture (ODA) and Interchange Format: Open Document Interchange Format

TECHNICAL CORRIGENDUM 2

Technologies de l'information — Architecture de document ouverte (ODA) et format de transfert: Format ouvert de transfert de documents

RECTIFICATIF TECHNIQUE 2

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INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

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

TECHNICAL CORRIGENDUM 2

1) Subclause 7.14

After the text:

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

add the following lines:

```
--  for CIELUV,   x-value = L*,
--                y-value = u*, and
--                z-value = v*;
--  for CIELAB,   x-value = L*,
--                y-value = a*, and
--                z-value = b*
```

2) Subclause E.1

Delete the last two sentences in Note 2: However, several non-semantic ODA attributes ... beginning the comment with **"URC:"** or **"UVN:"**).

3) Subclause E.2.2.6

Delete the last three sentences in the Note: If not, then some implementation-specific derivation ... where **"UVN:"** is the convention.

4) Subclause E.4.5.1

Replace the current text by:

E.4.5.1 User-readable comments

This attribute is declared as:

```
urcmnt  CDATA  #IMPLIED
```

5) Subclause E.4.5.3

Replace the current text by:

E.4.5.3 User-visible name

The user-visible name for an object class is normally represented as the generic identifier of the objects that are instances of the class (see E.2.2.6). The user-visible name for an object is normally represented as the unique identifier of the object (see E.2.2.7).

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When this is not the case, the user-visible name may be specified as the value of an attribute that is declared as follows:

```
uvnm    CDATA  #IMPLIED
```

The ODL attribute **"uvnm"** may also be used for specifying the user-visible name for a style.

6) Subclause E.4.5.4

Add the following text at the end of the subclause:

Thus, a binding name is normally represented as an attribute name that is not the same as any attribute name defined in this annex. When this is not the case, the mapping between binding names and their corresponding attribute names may be specified as the value of an attribute that is declared as follows:

```
bindname        NAMES     #IMPLIED
```

The attribute value consists of pairs of attribute names and entity names, where the entity text contains the binding name that corresponds to the attribute name.

7) Subclause E.7.6.1

Replace the line:

```
appcmnt         ENTITY    #IMPLIED    -- application comments --
```

by:

```
urcmnt          CDATA     #IMPLIED    -- user-readable comments --
appcmnt         ENTITY    #IMPLIED    -- application comments --
uvnm            CDATA     #IMPLIED    -- user-visible name --
```

8) Subclause E.10.2.2

Replace each of the 5 occurrences of the line:

```
appcmnt         ENTITY    #IMPLIED    -- application comments --
```

by:

```
bindname        NAMES     #IMPLIED    -- binding names --
urcmnt          CDATA     #IMPLIED    -- user-readable comments --
appcmnt         ENTITY    #IMPLIED    -- application comments --
uvnm            CDATA     #IMPLIED    -- user-visible name --
```

9) Subclause E.11.3.1

Replace each of the 2 occurrences of the line:

```
protect         NAME      unprot      -- protection: PROTECT UNPROT --
```

by:

```
bindname        NAMES     #IMPLIED    -- binding names --
urcmnt          CDATA     #IMPLIED    -- user-readable comments --
uvnm            CDATA     #IMPLIED    -- user-visible name --
protect         NAME      unprot      -- protection: PROTECT UNPROT --
```

10) Subclause E.11.3.2

Replace each of the 5 occurrences of the line:

```
id              ID        #IMPLIED    -- object identifier --
```

by:

```
id              ID        #IMPLIED    -- object identifier --
bindname        NAMES     #IMPLIED    -- binding names --
urcmnt          CDATA     #IMPLIED    -- user-readable comments --
uvnm            CDATA     #IMPLIED    -- user-visible name --
```


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INTERNATIONAL STANDARD ISO/IEC 8613-5:1994
TECHNICAL CORRIGENDUM 1

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Information technology — Open Document Architecture (ODA) and Interchange Format: Open Document Interchange Format

TECHNICAL CORRIGENDUM 1

Technologies de l'information — Architecture de document ouverte (ODA) et format de transfert: Format ouvert de transfert de documents

RECTIFICATIF TECHNIQUE 1

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INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

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

TECHNICAL CORRIGENDUM 1

1) Subclause 7.7

In the definition for **Additional-Doc-Characteristics**, *replace:*

```
colour-spaces-list                [1] IMPLICIT Colour-Spaces-List OPTIONAL }
```

by:

```
colour-spaces-list                [1] IMPLICIT Colour-Spaces-List OPTIONAL,
assured-reproduction-areas        [5] IMPLICIT Assured-Reproduction-Areas OPTIONAL }
```

After the definition for **Font-Reference**, *add:*

```
Assured-Reproduction-Areas ::= SET OF SET {
    nominal-page-size             [0] IMPLICIT Measure-Pair,
    assured-reproduction-area     [1] SET {
        position                      [0] IMPLICIT Measure-Pair,
        dimensions                    [1] IMPLICIT Measure-Pair } }
```

2) Subclause 7.15

In the definition for **Document-Profile-Attribute-Names**, *insert* **assured-reproduction-areas (86),** *between* **colour-spaces-list (45),** *and* **title (46),**.

3) Subclause E.14.2

Under **<! -- Document Characteristics -->**, *replace:*

```
<!ELEMENT docchar -- document characteristics --
                  - o (approf?, appdefs?, ODAver, altfeat?, nonbasic?, fontlist?,
                       colchar?, colspacs?) >
```

by:

```
<!ELEMENT docchar -- document characteristics --
                  - o (approf?, appdefs?, ODAver, altfeat?, nonbasic?, fontlist?,
                       assrep*, colchar?, colspacs?) >
```

After the attribute list declaration for **fattset**, *insert:*

```
<!ELEMENT assrep   -- assured reproduction areas --
                   - o EMPTY>
<!ATTLIST assrep   assrsize  NUMBERS  #REQUIRED  -- pair of numbers --
                   assrarea  NUMBERS  #REQUIRED  -- 2 pairs of numbers -->
```


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INTERNATIONAL STANDARD

ISO/IEC 8613-5

Second edition
1994-12-15

Information technology — Open Document Architecture (ODA) and Interchange Format: Open Document Interchange Format

Technologies de l'information — Architecture des documents ouverts (ODA) et format d'échange: Format d'échange des documents ouverts

Reference number
ISO/IEC 8613-5:1994(E)

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 8613-5 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology,* Subcommittee SC 18, *Document processing and related communication,* in collaboration with ITU-T. The identical text is published as ITU-T Rec. T.415.

This second edition cancels and replaces the first edition (ISO 8613-5:1989), which has been technically revised.

ISO/IEC 8613 consists of the following parts, under the general title *Information technology — Open Document Architecture (ODA) and Interchange Format*:

- *Part 1: Introduction and general principles*
- *Part 2: Document structures*
- *Part 3: Abstract interface for the manipulation of ODA documents*
- *Part 4: Document profile*
- *Part 5: Open Document Interchange Format*
- *Part 6: Character content architectures*
- *Part 7: Raster graphics content architectures*
- *Part 8: Geometric graphics content architectures*
- *Part 9: Audio content architectures*
- *Part 10: Formal specifications*
- *Part 11: Tabular structures and tabular layout*
- *Part 12: Identification of document fragments*
- *Part 13: Spreadsheet*
- *Part 14: Temporal relationships and non-linear structures*

Annex E forms an integral part of this part of ISO/IEC 8613. Annexes A, B, C, D, F and G are for information only.

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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.

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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.

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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 processing – Text and office systems – 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.

---

1) Presently at the stage of draft.

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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.

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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;

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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.

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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.

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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
```


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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,
```


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```
    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,
```


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```
    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 }
```


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```
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 }
```


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```
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 }
```


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```
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
```


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```
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
```


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```
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}
```


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```
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
```


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```
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,
```


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```
  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;
```


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```
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,
```


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```
  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
```


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```
  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 },
```


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```
  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 }
```


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```
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 }
```


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```
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
```


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```
    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 }
```


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```
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 }
```


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```
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
```


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```
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
```


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Annex A

Coded representation

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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.

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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.

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Annex B

Application class tag assignments

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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

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Annex C

Summary of object identifiers

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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)
{2800}	Identifies External data type	7.1
{28155}	Identifies Module **Interchange-Data-Elements**	7.6
{28156}	Identifies Module **Document-Profile-Descriptor**	7.7
{28157}	Identifies Module **Identifiers-and-Expressions**	7.8
{28158}	Identifies Module **Layout-Descriptors**	7.9
{28159}	Identifies Module **Logical-Descriptors**	7.10
{281510}	Identifies Module **Style-Descriptors**	7.11
{281511}	Identifies Module **Default-Value-Lists**	7.12
{281512}	Identifies Module **Text-Units**	7.13
{281513}	Identifies Module **Protected-Part-Descriptors**	7.15
{281514}	Identifies Module **Colour-Attributes**	7.14

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Annex D

Examples

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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",	**39393329207C2049534F2F494543**
	2038363133203A20313939343B20
	76657273696F6E20322E3030
publication-date "19920501" }}},	**4408313939230353031**
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**

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```
    object-identifier "1 0",                          4103312030
    user-visible-name "Header Page",                  8E0B48656164657220506167
                                                                        65
    dimensions {                                      A408
        horizontal 9920,                              800226C0
        vertical fixed 14030 },                       800236CE
    subordinates {                                    A00F
    "0","1","2","3","4" }}},                          12013012013112013212013 3
                                                                      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",              400731203020302030
    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" },            400731203020312030
  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",                    8E09416464726573736565
    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" },            400731203020322030
  content-information { "To members of ISO/           041F546F206D656D626572
            TC97/SC18/WG3" }},                        73....574733
```


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```
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",                     8E0B426F647920506167652031
    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
```


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```
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
```


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```
  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",                   8E0B426F647920506167652032
    dimensions {                                       A408
        horizontal 9920,                               800226C0
        vertical fixed 14030 },                        800236CE
    subordinates { "0","1","2","3","4" }}},            A00F120130120131120132120133
                                                                              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
```


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```
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
```


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```
content-portion {                                   A3LL
  content-portion-attributes {                      3109
    content-identifier-layout "1 2 4 0" },          40073120322034 2030
  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;  2E343130205365726965732028 31
        version 2.00",                              39393329207C2049534F2F494543
                                                    2038363133203A20313939343B20
                                                    76657273696F6E20322E3030
      publication-date "19920501" }}} ,             44083139393230353031
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
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```
        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",                          8E094164647265737365 65
    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",                            410733203020332030
    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",                     A01512013012013112013212 01
                   "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
```


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```
  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",                       410733203120322030
    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",                       410733203120322031
    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",                   8E0B5061726167726170682043
    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",                       410733203120362030
    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",                       410733203120362031
    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" },            840733203020302030
  content-information { "CESSON, 26
                  JUNE 1985" }},                       0414434553534F4E2C .....31393835
```


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```
content-portion {                                   A32C
  content-portion-attributes {                      3109
    content-identifier-logical "3 0 1 0" },         840733203020312030
  content-information { "To members
        of ISO/TC97/SC18/WG3" }},                   041F546F206D656D62657273..
content-portion {                                   A3LL
  content-portion-attributes {                      3109
    content-identifier-logical "3 0 2 0" },         840733203020322030
  content-information { "SUBJECT: PROPOSED          04LL5456424A4543553A..
        EXAMPLE TO CLARIFY THE
        DOCUMENT ARCHITECTURE
        MODEL" }},                                  ..... 4D4F44454C
content-portion {                                   A3LL
  content-portion-attributes {                      310B
    content-identifier-logical "3 0 3 0 0" },       840933203020332030 2030
  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" },       840933203120322030 2030
  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" },       840933203120322031 2030
  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",         840933203120362030 2030
    raster-gr-coding-attributes {                   A204
      number-of-pels-per-line 1117 }},              8002045D
  content-information { /* Array of                04LLZZZZZZZZZZZZ .....
        raster-graphics                             .....
        content elements for                        .....
        the signature */ }},                        .....
content-portion {                                   A3LL
  content-portion-attributes {                      310B
    content-identifier-logical "3 1 6 1 0" },       840933203120362031 2030
  content-information { "Miss Aude HEA Document     04LL4D697373 .....
        Architect" }}                               .....
```


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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",                                                39393329207C2049534F2F494543
                                                                      2038363133203A20313939343B20
                                                                      76657273696F6E20322E3030
      publication-date "19920501" }}},                                4408313939323035303 1
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
```


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```
    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
```


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```
    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
    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 65
    layout-style "4 1",                                 9303342031
    presentation-attributes {                           A606
      content-architecture-class                        060458020601
                { 2 8 2 6 1 }}}},
```


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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
    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
```


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```
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
    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",                 8E0E426F64792D70617261677261
                                                                              7068
    layout-style "4 9",                                 9303342039
    presentation-style "5 3",                           9103352033
    presentation-attributes {                           A606
        content-architecture-class                      060458020601
        { 2 8 2 6 1 }}}},
logical-object-class {                                  A52C
  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
                                                                        642D4E616D65
    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
```


--`,,`-`-`,,`,,`,`,,`---

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```
    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",                       400730203020302030 20
    raster-gr-coding-attributes {                                A204
      number-of-pels-per-line 737 }},                            800202E1
  content-information { /* Array of
              raster-graphics                                    04LL.....
              content elements for                               .....
                  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
```


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```
    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
    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
```


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```
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
  descriptor-body {                                             311E
    object-identifier "3 0 1",                                  41053320302031
    object-class "2 0 1",                                       82053220302031
    user-visible-name "Addressee",                              8E094164647265737365 65
    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
                                                                2D706172616772617068
    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" }}},                                 A0151201301201311201321201331
                                                                120134120135120136
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",                            8E0B5061726167267 26170682041
  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",                            8E0B5061726167267 26170682042
```


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```
    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",                                 8E06466967757265
    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
  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
```


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```
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
content-portion {                                          A3LL
  content-portion-attributes {                             310B
    content-identifier-logical "3 0 3 0 0" },              8409332030203320302030
  content-information { /* Unformatted string              04LL53554D4D415259.....
                of 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" },              8409332031203220302030
  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" }}                              .....
```


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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" }}},	A00F120130120131120132120133 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 { 2 8 2 7 0 },	060458020700
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 { 2 8 2 6 2 }}}},	060458020602
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

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```
    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" }}},         A00F120130120131120132120133120134

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
```


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```
    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
```


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```
        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
```


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```
    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/             041F546F206D656D62657273..
            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" },           8409332030203320302030
  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
```


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```
    content-identifier-logical "3 1 2 0 0" },                    840933203120322030 2
  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
```


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```
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) I ISO/IEC 8613 : 1994;   2E343130205365726965732028 31
   version 2.00",                                           39393329207C2049534F2F494543
                                                            2038363133203A20313939343B20
                                                            76657273696F6E20322E3030
  publication-date "19920501" },                            4408313939323035 3031
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 {    }},

  {font-identifier 1,                                       30LL.....
  font-reference {    }}}},                                 31LL020101

                                                            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
```


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```
 keywords {                                                    A42A
  "Finance", "Financial",                                      430746696E616E6365
  "May", "Return on assets" }}                                 430846696E616369616C
                                                               43034D6179
                                                               431052657475726E206F
                                                               6E20617373657473

dates-and-times {                                              A048
 document-date-and-time "19880605",                            8008313938383036303 5
 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",                               8508313938393 1323331
 release-date-and-time "19880605" },                           8608313938383036303 5
originators {                                                  A18195
 organizations {                                               A022
  "Widget Inc., Finance and Control" },                        4320576964676574 2049
                                                               6E632E2C2046696E616E
                                                               636520616E6420436F6E
                                                               74726F6C

 preparers {                                                   A1193117
  {personal-name {                                             A015
   surname "Maltby",                                           80064D616C746279
   givenname "Reginald",                                       8108526567696E616C64
   initials "P" }}},                                           820150
 owners {                                                      A2353133
  { organization                                               8131576964676574 2049
   "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" },                                 4317536967 6E61747572
                                                               6520726536569707420
                                                               7265712764
```


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```
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" },                8414576964676574 2049
                                                        6E632E2C2046696E616E
                                                        6365
 security-classification                                8111436F6D70616E7920
  "Company Financial",                                  46696E616E6369616C
 access-rights "Finance Group" }}}                      A20F
                                                        430D46696E616E636520
                                                        47726F7570
```


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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".

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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).

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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.

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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
          logobj1    [sep="450 00 00"]                    dlar
                                                          #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.

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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.

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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.

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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'

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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.

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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 --
```


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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.

```
<!-- 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 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" >
```


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```
<!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.

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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.

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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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     defined in ISO 8879, provided this notice is included in all copies.
-->
<!-- 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 --
```


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E.7.6.2 Layout directives for basic logical objects

```
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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.

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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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     defined in ISO 8879, provided this notice is included in all copies.
-->
<! -- 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; >
```


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```
<!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">
```


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```
<!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 --
```


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```
                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.

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E.11.3.1 Document type definition for specific logical structure

```
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     defined in ISO 8879, provided this notice is included in all copies.
-->
<! -- 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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-->
<! -- 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 --
```


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```
                    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

```
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```


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```
-->
<! -- 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.

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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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-->
<! -- 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"
```


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```
                    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?)>
```


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```
<!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 a11, a12, a13, a21, a22, a23, a31, a32, a33 -->
<!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?)>
```


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```
<!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 -->
```


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```
<!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)>
```


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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>
```


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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
</ l >
```

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 **"(l)"**, 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.

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```
<! -- 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   l           SYSTEM "Reference to layout structure DTD" [
 <! -- Entity declarations for specific layout content portions -->
 <!ENTITY     endcfp   CDATA "/* Formatted processable string of ENDING */ " >
]>
<!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 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>
```


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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 -->
```


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```
<!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
```


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```
                letter                                  |
                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>
<fontrole>primary<fontref>optima
<fontrole>hilite<fontref>optimait
      <! -- Document Management Attributes -- >
<docmanag>
<descript>
```


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```
<title> May finance report
<subject>May results
<docrefid><string>May financial prelim.
<doctype>Report
<abstract>
The current figures show an improvement in return on assets but still show an undercapitalization of production
capacity.
        <! -- Dates and Times -- >
<dates>
<document><date>1988-06-05
<creation><date>1988-05-23<time>16:29:57
<filing><date>1988-06-05<time>11:51:03
<expiry><date>1989
<purge><date>1989-12-31
<release><date>1988-06-05
        <! -- Originators -- >
<origin><organ>
Widget Inc.,
Finance and Control
<preparer><person>
<surname>Maltby<givename>Reginald<initials>P
<owner><organ>
Widget Inc.,
4511 McKenzie,
Atlanta, Georgia, USA.
<author><organ>Dewey, Cheatam & Howe CPA
        <! -- Other User Information -- >
<userinfo>
<copyrite>
<copyinfo>Widget Inc.
<copydate>1988
<status>May final report
<distlist><person><surname>Marks<initials>D
<distlist><person><surname>Bucks<initials>B<organ>Finance
<distlist><person><surname>Pencil<givename>James<initials>K<organ>Audits
<distlist><person><surname>Duck<initials>D
<distlist><person><surname>Zeckendorf<initials>L<organ>Editor
<addition>Signature receipt req'd
        <! --References -- >
<extrefs>
<other>
<docref><string>April finance report
<docref><string>May balance
<docref><string>May accounting prelim.
<previous>
<docref><string>May financial A
<localref>
<filename>mayfin
<location>financial_previous
<filename>mayfin
<location>financial_current
        <! -- Content Attributes -- >
<contents size=40447 pages=16>
<language>US English
        <! -- Security Information -- >
<security>
<authoriz><organ>Widget Inc., Finance
<class>Company Financial
<access>Finance Group
</profile>
```


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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.

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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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