BRITISH STANDARD

BS ISO/IEC
8613-5:1994

Implementation of
ISO/IEC 8613-5:1994

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

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee IST/18, Document processing and related communication, upon which the following bodies were represented:

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British Telecommunications plc

Digital Equipment Co. Ltd.

HM Treasury (Central Computer and Telecommunications Agency)

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International Computers Limited

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Rank Xerox Ltd.

SEMA Group Systems Ltd.

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National foreword

This British Standard reproduces verbatim ISO/IEC 8613-5:1994 and implements it as the UK national standard. It supersedes BS 7299-5:1990 which is obsolescent. ISO 8613-5:1989, with which BS 7299-5:1990 is identical, is referenced in a number of International Standardized Profiles (ISPs), BSI has therefore decided to retain BS 7299-5:1990 as available for purchase.

This British Standard is published under the direction of the Information Systems Technology Assembly, whose Technical Committee IST/18 has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international committee any enquiries on interpretation, or proposals for change, and keep UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ISO/IEC title page, pages ii to vi, pages 1 to 102 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

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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

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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. Annex A, Annex B, Annex C, Annex D, Annex F and Annex 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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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.

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

NOTE 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
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 OFObject-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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