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Information processing — Text and office systems — Office Document Architecture (ODA) and interchange format —

Part 5 : Office Document Interchange Format (ODIF)

*Traitement de l'information — Bureautique — Architecture des documents de
bureau (ODA) et format d'échange —*

Partie 5 : Format d'échange de documents de bureau



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75% approval by the member bodies voting.

International Standard ISO 8613-5 was prepared by Technical Committee ISO/TC 97, *Information processing systems*.

At present, ISO 8613 consists of seven parts:

- part 1, Introduction and general principles;
- part 2, Document structures;
- part 4, Document profile;
- part 5, Office document interchange format (ODIF);
- part 6, Character content architectures;
- part 7, Raster graphics content architectures;
- part 8, Geometric graphics content architectures.

NOTE – At present, there is no part 3.

Further parts may be added to this International Standard.

Development of this International Standard has been in parallel with:

- ECMA 101 : 1985, *Office document architecture*;
- CCITT Recommendation T.73 (1984) : *Document interchange protocol for the telematic services*;
- CCITT Recommendations in the T.410 series (1988) : *Open Document Architecture (ODA) and Interchange Format*.

This part contains six annexes:

- annex A (informative): Coded representation;
- annex B (normative): Application class tag assignments;
- annex C (informative): Summary of object identifiers;
- annex D (informative): Examples;
- annex E (normative): Office Document Language (ODL);
- annex F (informative): Examples of Office Document Language representations.

Information processing — Text and office systems — Office Document Architecture (ODA) and interchange format —

Part 5 : Office Document Interchange Format (ODIF)

1 Scope

The purpose of ISO 8613 is to facilitate the interchange of documents.

In the context of ISO 8613, 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, geometric graphics elements and raster graphics elements, all potentially within one document.

NOTE — ISO 8613 is designed to allow for extensions, including typographical features, colour, spreadsheets and additional types of content such as sound.

ISO 8613 applies to the interchange of documents by means of data communications or the exchange of storage media.

ISO 8613 provides 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.

ISO 8613 also provides for the interchange of ODA information structures used for the processing of interchanged documents.

Furthermore, ISO 8613 allows for the interchange of documents containing one or more different types of content such as character text, images, graphics and sound.

This part of ISO 8613 defines

- the format of the data stream used to interchange documents structured in accordance with ISO 8613-2;
- the representation of the constituents which may appear in an interchanged document.

NOTES

- 1 This part of ISO 8613 does not specify the coded representation of content elements.
- 2 Data formats for presentation attributes and coding attributes are defined in other parts of ISO 8613.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 8613. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8613 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 8601 : 1988, *Data elements and interchange formats – Information interchange – Representation of dates and times*.

ISO 8613 : 1989, *Information processing – Text and office systems – Office Document Architecture (ODA) and Interchange Format –*

Part 1 – Introduction and general principles;

Part 2 – Document structures;

Part 4 – Document profile;

Part 6 – Character content architectures;

Part 7 – Raster graphics content architectures;

Part 8 – Geometric graphics content architectures.

ISO 8824 : 1987, *Information processing – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1)*.

ISO 8824 Add.1 : ¹⁾, *Information processing systems – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1) – Addendum 1 : ASN.1 extensions*.

ISO 8825 : 1987, *Information processing – Open Systems Interconnection – Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1)*.

ISO 8825 Add.1 : ¹⁾, *Information processing systems – Open Systems Interconnection – Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1) – Addendum 1 : ASN.1 extensions*.

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 9541-6 : ¹⁾, *Information processing – Font and character information interchange – Part 6: Font and character attribute subsets and applications*.

3 Definitions

For the purpose of this part of ISO 8613, the definitions given in ISO 8613-1 apply.

¹⁾ To be published.

4 Document representations

A document structured in accordance with ISO 8613 is represented for interchange by either the Office Document Interchange Format (ODIF), or the Office 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 information about the document constituents and attributes.

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.

4.1 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 ISO 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 5.

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 ISO 8824 itself. Basic encoding rules for ASN.1 are defined in ISO 8825 and are summarized in annex A.

4.2 ODL and SDIF

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 (normative).

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

5 Office Document Interchange Format (ODIF)

5.1 General description

A document structured in accordance with ISO 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.

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 part of ISO 8613 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 part of ISO 8613.

5.2 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.

The order of the interchange data elements is as follows:

- a) document profile descriptor;
- b) layout object class descriptors;
- c) logical object class descriptors;
- d) text units representing generic content portions;
- e) presentation style descriptors;
- f) layout style descriptors;
- g) layout object descriptors;
- h) logical object descriptors;
- i) text units representing specific content portions.

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 ISO 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.

5.3 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.

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.

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.

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 ISO 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.

5.4 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 or layout style descriptor consists of simple and composite data items representing the attributes of the constituent concerned.

The document profile, each object class, each style and each object 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 5.5 to 5.12, using the abstract syntax notation ASN.1 defined in ISO 8824.

NOTE – 5.5 to 5.12 by themselves do not completely define the data stream format; additional rules are specified in 5.1 to 5.4 of this part and in other parts of ISO 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 part 2 or part 4.

5.5 Interchange data elements

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

DEFINITIONS ::= BEGIN

EXPORTS Interchange-Data-Element;

IMPORTS Document-Profile-Descriptor
FROM Document-Profile-Descriptor - - see 5.6
Layout-Class-Descriptor, Layout-Object-Descriptor
FROM Layout-Descriptors - - see 5.8
Logical-Class-Descriptor, Logical-Object-Descriptor
FROM Logical-Descriptors - - see 5.9
Presentation-Style-Descriptor, Layout-Style-Descriptor
FROM Style-Descriptors - - see 5.10
Text-Unit
FROM Text-Units; - - see 5.12

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}
END

5.6 Document profile descriptor

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

DEFINITIONS ::= BEGIN

EXPORTS Document-Profile-Descriptor;

IMPORTS Resource-Name, Object-or-Class-Identifier

FROM Identifiers-and-Expressions

-- see 5.7

Measure-Pair, Transparency, Colour, Dimension-Pair, One-Of-Four-Angles,
Border, Medium-Type

FROM Layout-Descriptors

-- see 5.8

Protection

FROM Logical-Descriptors

-- see 5.9

Content-Architecture-Class, Content-Type, Block-Alignment, Fill-Order

FROM Style-Descriptors

-- see 5.10

Type-of-Coding

FROM Text-Units

-- see 5.12

Character-Content-Defaults, Char-Presentation-Feature,

Character-Coding-Attribute

FROM Character-Profile-Attributes { 2 8 1 6 4 }

-- see ISO 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 ISO 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 ISO 8613-8

Font-Reference FROM ISO9541-FONTS { 1 9541 6 10 };

-- see ISO 9541-6

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,

-- 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 OPTIONAL,

document-management-attributes

[3] IMPLICIT Document-Management-Attributes OPTIONAL}

Document-Characteristics

::= SET {

document-application-profile

CHOICE {

[0] IMPLICIT INTEGER {

group-4-facsimile (2)},

[4] IMPLICIT OBJECT IDENTIFIER} OPTIONAL,

doc-appl-profile-defaults

[10] IMPLICIT Doc-Appl-Profile-Defaults OPTIONAL,

document-architecture-class

[1] IMPLICIT INTEGER {

formatted (0),

processable (1),

formatted-processable (2)} OPTIONAL,

content-architecture-classes

[5] IMPLICIT SET OF OBJECT IDENTIFIER OPTIONAL,

interchange-format-class	[6] IMPLICIT INTEGER { if-a (0), if-b (1)} OPTIONAL,
oda-version	[8] IMPLICIT SEQUENCE {
standard-or-recommendation	Character-Data,
publication-date	Date-and-Time} 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	[0] IMPLICIT Content-Architecture-Class OPTIONAL,
content-type	[1] IMPLICIT Content-Type OPTIONAL,
page-dimensions	[2] IMPLICIT Measure-Pair OPTIONAL,
transparency	[3] IMPLICIT Transparency OPTIONAL,
colour	[4] IMPLICIT Colour 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,
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}

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

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

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

Character-Data	::= [APPLICATION 3] IMPLICIT OCTET STRING
----------------	---

- - string of characters from the sets designated by the attribute
- - "profile character sets", plus 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-number	[1] IMPLICIT Character-Data OPTIONAL,
revisors	[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,
title	[3] IMPLICIT Character-Data OPTIONAL}
Other-User-Information	::= SET {
copyright	[0] IMPLICIT SET OF SET {
copyright-information	[0] IMPLICIT SET OF Character-Data OPTIONAL,
copyright-dates	[1] IMPLICIT SET OF Date-and-Time OPTIONAL}
	OPTIONAL,
status	[1] IMPLICIT Character-Data OPTIONAL,
user-specific-codes	[2] IMPLICIT SET OF Character-Data OPTIONAL,
distribution-list	[3] IMPLICIT SEQUENCE OF SET {
personal-name	[0] IMPLICIT Personal-Name OPTIONAL,
organization	[1] IMPLICIT Character-Data OPTIONAL} OPTIONAL,
additional-information	[5] ANY OPTIONAL}
External-References	::= SET {
references-to-other-documents	[0] IMPLICIT SET OF Document-Reference OPTIONAL,
superseded-documents	[1] IMPLICIT SET OF Document-Reference OPTIONAL}
Local-File-References	::= SET OF SET {
file-name	[0] IMPLICIT Character-Data OPTIONAL,
location	[1] IMPLICIT Character-Data OPTIONAL,
user-comments	[2] IMPLICIT Character-Data OPTIONAL}
Content-Attributes	::= SET {
document-size	[1] IMPLICIT INTEGER OPTIONAL,
number-of-pages	[2] IMPLICIT INTEGER OPTIONAL,
languages	[4] IMPLICIT SET OF Character-Data OPTIONAL}

Security-Information
authorization
 person
 organization
security-classification
access-rights

```
::= SET {  
  CHOICE {  
    [0] IMPLICIT Personal-Name,  
    [4] IMPLICIT Character-Data} OPTIONAL,  
    [1] IMPLICIT Character-Data OPTIONAL,  
    [2] IMPLICIT SET OF Character-Data OPTIONAL}  
END
```

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5.7 Identifiers and expressions

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

DEFINITIONS ::= BEGIN

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

IMPORTS Layout-Object-Type
FROM Layout-Descriptors
Logical-Object-Type
FROM Logical-Descriptors;

- - see 5.8

- - see 5.9

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

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

Layout-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
 current-object-function
 preceding-object-function
 superior-object-function
 current-instance-function

```
 ::= CHOICE {
    [0] IMPLICIT NULL,
    [1] Object-Id-Expression,
    [3] Object-Id-Expression,
    [4] Current-Instance-Function}
```

Numeric-Expression
 numeric-literal
 increment-application
 decrement-application
 ordinal-application
 identifier
 expression
 binding-reference

```
 ::= CHOICE {
    [0] IMPLICIT INTEGER,
    [1] Numeric-Expression,
    [2] Numeric-Expression,
    [3] CHOICE {
        Object-or-Class-Identifier,
        Object-Id-Expression},
    [4] IMPLICIT Binding-Reference}
```

Binding-Reference
 object-reference
 identifier
 expression
 binding-identifier

```
 ::= SET {
    CHOICE {
        Object-or-Class-Identifier,
        Binding-Selection-Function},
    Binding-Name}
```

Binding-Selection-Function
 current-object-function
 preceding-function
 superior-function
 current-instance-function

```
 ::= CHOICE {
    [0] IMPLICIT NULL,
    [1] Object-Id-Expression,
    [3] Object-Id-Expression,
    [4] Current-Instance-Function}
```

Current-Instance-Function
 first-parameter
 identifier
 layout-object-type
 logical-object-type
 second-parameter
 identifier
 expression

```
 ::= SEQUENCE {
    CHOICE {
        [0] IMPLICIT Object-or-Class-Identifier,
        [1] IMPLICIT Layout-Object-Type,
        [2] IMPLICIT Logical-Object-Type},
    CHOICE {
        Object-or-Class-Identifier,
        Object-Id-Expression}}
```

String-Expression

```
 ::= SEQUENCE OF Atomic-String-Expression
```

Atomic-String-Expression
 string-literal
 binding-reference
 make-string-application
 upper-alpha-application
 lower-alpha-application
 upper-roman-application
 lower-roman-application

```
 ::= CHOICE {
    [0] IMPLICIT OCTET STRING,
    [2] IMPLICIT Binding-Reference,
    [3] Numeric-Expression,
    [4] Numeric-Expression,
    [5] Numeric-Expression,
    [6] Numeric-Expression,
    [7] Numeric-Expression}
```

END

5.8 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;

IMPORTS Object-or-Class-Identifier, Style-Identifier,
Layout-Category-Name, Resource-Name, Binding-Name,
Construction-Expression, Object-Id-Expression,
Numeric-Expression, String-Expression
FROM Identifiers-and-Expressions - - see 5.7
Presentation-Attributes
FROM Style-Descriptors - - see 5.10
Default-Value-Lists-Layout
FROM Default-Value-Lists; - - see 5.11

Position-Spec ::= SET {
 offset [0] IMPLICIT SET {
 [0] IMPLICIT INTEGER OPTIONAL,
 [1] IMPLICIT INTEGER OPTIONAL,
 [2] IMPLICIT INTEGER OPTIONAL,
 [3] IMPLICIT INTEGER OPTIONAL} OPTIONAL,
 [1] IMPLICIT SET {
 [0] IMPLICIT INTEGER OPTIONAL,
 [1] IMPLICIT INTEGER OPTIONAL,
 [2] IMPLICIT INTEGER OPTIONAL} OPTIONAL,
 [2] IMPLICIT INTEGER {
 right-hand (0), centred (1),
 left-hand (2)} OPTIONAL,
 [3] IMPLICIT INTEGER {
 normal (0), reverse (1)} OPTIONAL}

Dimension-Pair ::= SEQUENCE {
 horizontal [0] IMPLICIT INTEGER,
 vertical CHOICE {
 fixed [0] IMPLICIT INTEGER,
 variable [1] IMPLICIT INTEGER}}

Dimension-Spec ::= SEQUENCE {
 horizontal Dimension,
 vertical Dimension}

Dimension ::= CHOICE {
 fixed [0] IMPLICIT INTEGER,
 rule-a [1] IMPLICIT SET {
 [0] IMPLICIT INTEGER OPTIONAL,
 [1] IMPLICIT INTEGER OPTIONAL},
 [2] IMPLICIT SET {
 [0] IMPLICIT INTEGER OPTIONAL,
 [1] IMPLICIT INTEGER OPTIONAL},
 [3] IMPLICIT NULL}

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,
- - carriage return and line feed

Binding-Pair
binding-identifier
binding-value

```
::= SET {
  [0] IMPLICIT Binding-Name,
  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
horizontal
vertical

```
::= SEQUENCE {
  [0] IMPLICIT INTEGER,
  [0] IMPLICIT INTEGER}
```

Medium-Type
nominal-page-size
side-of-sheet

```
::= SEQUENCE {
  Measure-Pair OPTIONAL,
  INTEGER {unspecified (0), recto (1), verso (2)} OPTIONAL}
```

Colour

```
::= INTEGER {colourless (0), white (1)}
```

Border
left-hand-edge
right-hand-edge
trailing-edge
leading-edge

```
::= SET {
  [0] IMPLICIT Border-Edge OPTIONAL,
  [1] IMPLICIT Border-Edge OPTIONAL,
  [2] IMPLICIT Border-Edge OPTIONAL,
  [3] IMPLICIT Border-Edge OPTIONAL}
```

Border-Edge
line-width
line-type

```
::= SET {
  [0] IMPLICIT INTEGER OPTIONAL,
  [1] IMPLICIT INTEGER {
    invisible (0), solid (1),
    dashed (2), dot (3),
    dash-dot (4),
    dash-dot-dot (5)} OPTIONAL,
  [2] IMPLICIT INTEGER OPTIONAL}
```

freespace-width

- - a "null" border edge is represented by an empty set

Layout-Object-Descriptor
object-type
descriptor-body

```
::= SEQUENCE {
  Layout-Object-Type OPTIONAL,
  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
object-identifier
subordinates
content-portions
object-class
position
dimensions
transparency
presentation-attributes
default-value-lists
user-readable-comments
bindings
layout-path
imaging-order
permitted-categories

```
::= SET {
  Object-or-Class-Identifier OPTIONAL,
  [0] IMPLICIT SEQUENCE OF NumericString OPTIONAL,
  [1] IMPLICIT SEQUENCE OF NumericString OPTIONAL,
  [2] IMPLICIT Object-or-Class-Identifier OPTIONAL,
  [3] IMPLICIT Measure-Pair OPTIONAL,
  [4] IMPLICIT Dimension-Pair OPTIONAL,
  [5] IMPLICIT Transparency OPTIONAL,
  [6] IMPLICIT Presentation-Attributes OPTIONAL,
  [7] IMPLICIT Default-Value-Lists-Layout OPTIONAL,
  [8] IMPLICIT Comment-String OPTIONAL,
  [9] IMPLICIT SET OF Binding-Pair OPTIONAL,
  [11] IMPLICIT One-Of-Four-Angles OPTIONAL,
  [12] IMPLICIT SEQUENCE OF NumericString OPTIONAL,
  [13] IMPLICIT SET OF Layout-Category-Name OPTIONAL,
```

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

user-visible-name
page-position

```
[14] IMPLICIT Comment-String OPTIONAL,
[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 set	
colour	[22] IMPLICIT Colour OPTIONAL,
border	[23] IMPLICIT Border OPTIONAL,
application-comments	[25] IMPLICIT OCTET STRING 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,
permitted-categories	[13] IMPLICIT SET OF Layout-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,
border	[23] IMPLICIT Border OPTIONAL,
resource	[24] IMPLICIT Resource-Name OPTIONAL,
application-comments	[25] IMPLICIT OCTET STRING OPTIONAL}

END

5.9 Logical descriptors

Logical-Descriptors { 2 8 1 5 9 }

DEFINITIONS ::= BEGIN

EXPORTS Logical-Object-Descriptor, Logical-Class-Descriptor,
Logical-Object-Type, Protection;

IMPORTS Object-or-Class-Identifier, Style-Identifier,
Resource-Name, Construction-Expression, String-Expression
FROM Identifiers-and-Expressions - - see 5.7
Comment-String, Binding-Pair
FROM Layout-Descriptors - - see 5.8
Presentation-Attributes FROM Style-Descriptors - - see 5.10
Default-Value-Lists-Logical
FROM Default-Value-Lists; - - see 5.11

Logical-Object-Descriptor ::= SEQUENCE {
object-type
descriptor-body
Logical-Object-Type OPTIONAL,
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
subordinates
content-portions
object-class
presentation-attributes
Object-or-Class-Identifier OPTIONAL,
[0] IMPLICIT SEQUENCE OF NumericString OPTIONAL,
[1] IMPLICIT SEQUENCE OF NumericString OPTIONAL,
[2] IMPLICIT Object-or-Class-Identifier OPTIONAL,
[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}

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

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

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

default-value-lists [7] IMPLICIT Default-Value-Lists-Logical OPTIONAL,
user-readable-comments [8] IMPLICIT Comment-String OPTIONAL,
bindings [9] IMPLICIT SET OF Binding-Pair OPTIONAL,
content-generator [10] IMPLICIT String-Expression OPTIONAL,

user-visible-name	[14] IMPLICIT Comment-String OPTIONAL,
presentation-style	[17] IMPLICIT Style-Identifier OPTIONAL,
layout-style	[19] IMPLICIT Style-Identifier OPTIONAL,
protection	[20] IMPLICIT Protection OPTIONAL,
resource	[24] IMPLICIT Resource-Name OPTIONAL,
application-comments	[25] IMPLICIT OCTET STRING OPTIONAL}
Protection	::= INTEGER {unprotected (0), protected (1)}
	END

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5.10 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,
Layout-Category-Name, Object-Id-Expression,
FROM Identifiers-and-Expressions - - see 5.7
Comment-String, Transparency, Colour, Border,
Layout-Object-Type
FROM Layout-Descriptors - - see 5.8
Character-Attributes
FROM Character-Presentation-Attributes { 2 8 1 6 2 } - - see ISO 8613-6
Raster-Graphics-Attributes
FROM Raster-Gr-Presentation-Attributes { 2 8 1 7 2 } - - see ISO 8613-7
Geometric-Graphics-Attributes
FROM Geo-Gr-Presentation-Attributes { 2 8 1 8 2 }; - - see ISO 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,
transparency [2] IMPLICIT Transparency OPTIONAL,
presentation-attributes [3] IMPLICIT Presentation-Attributes OPTIONAL,
colour [4] IMPLICIT Colour OPTIONAL,
border [5] IMPLICIT Border OPTIONAL}

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

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

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

Content-Type ::= [APPLICATION 2] IMPLICIT INTEGER {
formatted-raster-graphics (1)}

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,
layout-directives [4] IMPLICIT Layout-Directives OPTIONAL}

Layout-Directives ::= SET {
indivisibility CHOICE {
to-layout-object-class [0] IMPLICIT Object-or-Class-Identifier,
to-layout-category [1] IMPLICIT Layout-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 Layout-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,
layout-category	[12] IMPLICIT Layout-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}
Separation	::= SET {
leading	[0] IMPLICIT INTEGER OPTIONAL,
trailing	[1] IMPLICIT INTEGER OPTIONAL,
centre	[2] IMPLICIT INTEGER OPTIONAL}
Offset	::= SET {
right-hand	[0] IMPLICIT INTEGER OPTIONAL,
left-hand	[1] IMPLICIT INTEGER OPTIONAL,
trailing	[2] IMPLICIT INTEGER OPTIONAL,
leading	[3] IMPLICIT INTEGER OPTIONAL}
Fill-Order	::= INTEGER {normal (0), reverse (1)}
Concatenation	::= INTEGER {non-concatenated (0), concatenated (1)}
Same-Layout-Object	::= SET {
to-logical-object	CHOICE {
	[0] IMPLICIT Object-or-Class-Identifier,
	[4] Object-Id-Expression,
	[5] IMPLICIT NULL},
	CHOICE {
to-layout-object-class	[1] IMPLICIT Object-or-Class-Identifier,
to-layout-category	[2] IMPLICIT Layout-Category-Name,
to-layout-object-type	[3] IMPLICIT Layout-Object-Type} OPTIONAL}
Block-Alignment	::= INTEGER {
	right-hand (0), left-hand (1),
	centred (2), null (3)}
	END

5.11 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, Layout-Category-Name
 FROM Identifiers-and-Expressions - - see 5.7
 Measure-Pair, One-Of-Four-Angles, Medium-Type,
 Dimension-Pair, Transparency, Colour, Border
 FROM Layout-Descriptors - - see 5.8
 Protection FROM Logical-Descriptors - - see 5.9
 Presentation-Attributes
 FROM Style-Descriptors; - - see 5.10

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

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

Page-Attributes ::= SET {
 dimensions < Attribute OPTIONAL,
 transparency < Attribute OPTIONAL,
 presentation-attributes < Attribute OPTIONAL,
 page-position < Attribute OPTIONAL,
 medium-type < Attribute OPTIONAL,
 presentation-style < Attribute OPTIONAL,
 colour < Attribute OPTIONAL}

Frame-Attributes ::= SET {
 position < Attribute OPTIONAL,
 dimensions < Attribute OPTIONAL,
 transparency < Attribute OPTIONAL,
 layout-path < Attribute OPTIONAL,
 permitted-categories < Attribute OPTIONAL,
 colour < Attribute OPTIONAL,
 border < Attribute OPTIONAL}

Block-Attributes ::= SET {
 position < Attribute OPTIONAL,
 dimensions < Attribute OPTIONAL,
 transparency < Attribute OPTIONAL,
 presentation-attributes < Attribute OPTIONAL,
 presentation-style < Attribute OPTIONAL,
 colour < Attribute OPTIONAL,
 border < Attribute OPTIONAL}

Composite-Logical-Attributes ::= SET {
 protection < Attribute OPTIONAL,
 layout-style < 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}
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 Layout-Category-Name,
protection	[8] IMPLICIT Protection,
presentation-style	[9] IMPLICIT Style-Identifier,
layout-style	[10] IMPLICIT Style-Identifier,
colour	[11] IMPLICIT Colour,
border	[12] IMPLICIT Border}
	END

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5.12 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 5.7
 Character-Coding-Attributes
 FROM Character-Coding-Attributes { 2 8 1 6 3 } -- see ISO 8613-6
 Raster-Gr-Coding-Attributes
 FROM Raster-Gr-Coding-Attributes { 2 8 1 7 3 } -- see ISO 8613-7
 Geo-Gr-Coding-Attributes
 FROM Geo-Gr-Coding-Attributes { 2 8 1 8 3 }; -- see ISO 8613-8

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

Content-Portion-Attributes
 content-identifier-layout
 content-identifier-logical
 type-of-coding
 coding-attributes
 character-coding-attributes
 raster-gr-coding-attributes
 geo-gr-coding-attributes
 ::= SET {
 Content-Portion-Identifier OPTIONAL,
 [4] IMPLICIT Content-Portion-Identifier OPTIONAL,
 Type-Of-Coding OPTIONAL,
 CHOICE {
 [1] IMPLICIT Character-Coding-Attributes,
 [2] IMPLICIT Raster-Gr-Coding-Attributes,
 [7] IMPLICIT Geo-Gr-Coding-Attributes,
 -- the following data element is used in CCITT Recommendations T.415
 -- videotex-coding-attributes
 -- [8] IMPLICIT Videotex-Coding-Attributes,
 -- the following tags are reserved for additional types
 -- of coding attributes:
 -- [9] audio
 -- [10] dynamic-graphics
 ext-cont-arch-coding-attributes [11] IMPLICIT EXTERNAL} OPTIONAL,
 alternative-representation [3] IMPLICIT Alternative-Representation OPTIONAL}

Content-Information ::= OCTET STRING

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

Alternative-Representation ::= OCTET STRING

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

END

Annex A

(informative)

Coded representation

This annex is a summary of the basic encoding rules for the abstract syntax notation ASN.1 defined in ISO 8825.

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

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

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

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

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

The following tag numbers for universal tags have been assigned in ISO 8824 and ISO 8825:

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

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

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

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

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

Annex B

(informative)

Application class tag assignments

The application class tag assignments made in various clauses of this part of ISO 8613 are summarized in the table below:

Tag	Data type	Clause
APPLICATION 0	Content-Portion-Identifier	5.7
APPLICATION 1	Object-or-Class-Identifier	5.7
APPLICATION 2	Content-Type	5.10
APPLICATION 3	Character-Data	5.6
APPLICATION 4	Date-and-Time	5.6
APPLICATION 5	Style-Identifier	5.7
APPLICATION 6	Personal-Name	5.6

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Annex C

(informative)

Summary of object identifiers

Values of ASN.1 object identifiers are assigned in various clauses in this part of ISO 8613. These are summarized below.

Object identifier value	Meaning	Clause
{ 2 8 0 0 }	Identifies External data type	5.1
{ 2 8 1 5 5 }	Identifies Module Interchange-Data-Elements	5.5
{ 2 8 1 5 6 }	Identifies Module Document-Profile-Descriptor	5.6
{ 2 8 1 5 7 }	Identifies Module Identifiers-and-Expressions	5.7
{ 2 8 1 5 8 }	Identifies Module Layout-Descriptors	5.8
{ 2 8 1 5 9 }	Identifies Module Logical-Descriptors	5.9
{ 2 8 1 5 10 }	Identifies Module Style-Descriptors	5.10
{ 2 8 1 5 11 }	Identifies Module Default-Value-Lists	5.11
{ 2 8 1 5 12 }	Identifies Module Text-Units	5.12

Annex D

(informative)

Examples

The first four examples in this annex consist of data streams representing various versions of the sample document in annex B of ISO 8613-2.

Four versions of the sample document are considered:

- Example 1: specific layout structure only. This example is specified by clause B.4.1, including figure B.7 and table B.1, of ISO 8613-2.
- Example 2: specific logical structure only. This example is specified by clause B.4.2, including figure B.8 and tables B.2, B.3 of ISO 8613-2.
- Example 3: specific logical structure, generic logical structure and generic layout structure. This example is specified by clause B.5, including figures B.8, B.9, B.10, and tables B.4, B.5, B.6, B.7 of ISO 8613-2.
- Example 4: specific layout structure only, as generated from the structures in example 3. This example is specified by clause B.6, including figure B.11 and table B.8, of ISO 8613-2.

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

- a) the ASN.1 notation for data values defined in ISO 8824;
- b) the hexadecimal notation of the encoded data values, after applying the basic encoding rules defined in ISO 8825.

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

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

In addition, clause D.5 presents an example consisting of a data stream representing the sample document profile in annex C of ISO 8613-4.

D.1 Example 1: Sample document from annex B of ISO 8613-2; Specific layout structure only

```

document-profile{
  specific-layout-structure "1",
  document-characteristics {
    document-architecture-class formatted,
    content-architecture-classes{
      {2 8 2 6 0},
      {2 8 2 7 0},
      {2 8 2 8 0}},
    interchange-format-class if-b,
    oda-version {
      standard-or-recommendation "ISO 8613",
      publication-date "1988"}}}
layout-object{
  object-type document-layout-root,
  descriptor-body{
    object-identifier "1",
    user-visible-name "Letter",
    subordinates{
      "0", "1", "2"}}},
layout-object{
  object-type page,
  descriptor-body{
    object-identifier "1 0",
    user-visible-name "Header Page",

    dimensions{
      horizontal 9920,
      vertical fixed 14030},
    subordinates{
      "0", "1", "2", "3", "4"}}},
layout-object{
  object-type block,
  descriptor-body{
    object-identifier "1 0 0",
    user-visible-name "Logo",
    position{
      horizontal 710,
      vertical 730},
    dimensions{
      horizontal 3685,
      vertical fixed 2495},
    presentation-attributes{
      content-architecture-class
      {2 8 2 7 0},
      raster-graphics-attributes{
        pel-transmission-density 5}},
    content-portions{"0"}}},
text-unit{
  content-portion-attributes{
    content-identifier-layout "1 0 0 0",
    raster-gr-coding-attributes{
      number-of-pels-per-line 737}},
  content-information{/* Array of raster
    graphic elements for the logo*/}},
layout-object{
  object-type block,
  descriptor-body{
    object-identifier "1 0 1",
    user-visible-name "Date",
    position{
      horizontal 5440,
      vertical 1275},

```

A030
 810131
 A22B
 810100
 A512
 060458020600
 060458020700
 060458020800
 860101
 8810
 430849534F2038363133
 440431393838
 A21B
 020100
 3116
 410131
 8E064C6574746572
 A009
 120130120131120132
 A232
 020102
 312D
 4103312030
 8E0B4865616465720D506167
 65
 A408
 800226C0
 800236CE
 A00F
 120130120131120132120133
 120134
 A238
 020104
 3133
 41053120302030
 8E044C6F676F
 A308
 800202C6
 800202DA
 A408
 80020E65
 800209BF
 A60B
 060458020700
 A103
 820105
 A103120130
 A3LL
 31LL
 4009400731203020302030
 A204
 80020E1
 04LL

 A22B
 020104
 3126
 41053120302031
 8E0444617465
 A308
 80021540
 800204FB

```

    dimensions{
        horizontal 3060,
        vertical fixed 540},
    content-portions{"0"}},
text-unit{
    content-portion-attributes{
        content-identifier-layout "1 0 1 0"},
    content-information{"CESSON, 26 JUNE 1985"}},
layout-object{
    object-type block,
    descriptor-body{
        object-identifier "1 0 2",
        user-visible-name "Addressee",
        position{
            horizontal 1105,
            vertical 4310},
        dimensions{
            horizontal 4505,
            vertical fixed 540},
        content-portions{"0"}},
text-unit{
    content-portion-attributes{
        content-identifier-layout "1 0 2 0"},
    content-information{"To members of ISO/
        TC97/SC18/WG3"}},
layout-object{
    object-type block,
    descriptor-body{
        object-identifier "1 0 3",
        user-visible-name "Subject",
        position{
            horizontal 1105,
            vertical 6660},
        dimensions{
            horizontal 7200,
            vertical fixed 905},
        presentation-attributes{
            character-attributes{
                line-spacing 300}},
        content-portions{"0"}},
text-unit{
    content-portion-attributes{
        content-identifier-layout "1 0 3 0"},
    content-information{"SUBJECT: PROPOSED
        EXAMPLE TO CLARIFY
        THE DOCUMENT\
        ARCHITECTURE MODEL"}},
layout-object{
    object-type block,
    descriptor-body{
        object-identifier "1 0 4",
        user-visible-name "Summary",
        position{
            horizontal 2180,
            vertical 9695},
        dimensions{
            horizontal 5585,
            vertical fixed 2325},
        presentation-attributes{
            character-attributes{
                alignment justified}},
        content-portions{"0"}},
text-unit{
    content-portion-attributes{
        content-identifier-layout "1 0 4 0"},

```

```

A408
80020BF4
8002021C
A103120130
A323
310B
4009400731203020312030
0414434553534F4E2C..
..31393835
A230
020104
312B
41053120302032
8E09416464726573736565
A308
80020451
800210D6
A408
80021199
8002021C
A103120130
A32E
310B
4009400731203020322030
041F546F206D656D626572
73...574733
A234
020104
312F
41053120302033
8E075375626A656374
A308
80020451
80021A04
A408
80021C20
80020389
A604

8702012C
A103120130
A3LL
310B
4009400731203020332030
04LL5456424A4543553A..
.....4D4F44454C
A233
020104
312E
41053120302034
8E0753756D6D617279
A308
80020884
800225DF
A408
800215D1
80020915
A603

880103
A103120130
A3LL
31LL
4009400731203020342030

```

```

content-information{/*Formatted string of
                        SUMMARY- */}},
layout-object{
  object-type page,
  descriptor-body{
    object-identifier "1 1",
    user-visible-name "Body Page 1",
    dimensions{
      horizontal 9920,
      vertical fixed 14030},
    subordinates{
      "0","1","2","3","4"}},
  layout-object{
    object-type block,
    descriptor-body{
      object-identifier "1 1 0",
      user-visible-name "Para A",
      position{
        horizontal 1105,
        vertical 1105},
      dimensions{
        horizontal 7935,
        vertical fixed 1785},
      presentation-attributes{
        character-attributes{
          line-spacing 300,
          alignment justified}},
      content-portions{"0"}},
    text-unit{
      content-portion-attributes{
        content-identifier-layout "1 1 0 0"},
        content-information{/*Formatted string
                              of A's*/}},
      layout-object{
        object-type block,
        descriptor-body{
          object-identifier "1 1 1",
          user-visible-name "Para B",
          position{
            horizontal 1105,
            vertical 3770},
          dimensions{
            horizontal 7935,
            vertical fixed 1785},
          presentation-attributes{
            character-attributes{
              line-spacing 400,
              alignment justified}},
            content-portions{"0"}},
          text-unit{
            content-portion-attributes{
              content-identifier-layout "1 1 1 0"},
              content-information{/*Formatted string
                                  of B's*/}},
            layout-object{
              object-type block,
              descriptor-body{
                object-identifier "1 1 2",
                user-visible-name "Drawing",
                position{
                  horizontal 2180,
                  vertical 6460},
                  dimensions{
                    horizontal 5045,
                    vertical fixed 4140},

```

04LL53554D4D4152415259..

```

.....
A232
020102
312D
4103312031
8E0B426F647920506167652031
A408
800226C0
800236CE
A00F
12013012013112013212013312
A236
020104
3131
41053120312030
8E06506172612041
A308
80020451
80020451
A408
80021EFF
800206F9
A607
8702012C
880103
A103120130
A3LL
310B
4009400731203120302030
04LL414141 .....
.....
A236
020104
3131
41053120312031
8E06506172612042
A308
80020451
80020EBA
A408
80021EFF
800206F9
A607
87020190
880103
A103120130
A3LL
310B
4009400731203120312030
04LL4242 .....
.....
A236
020104
3131
41053120312032
8E0744726177686E67
A308
80020884
8002193C
A408
800213B5
8002102C

```

```

    presentation-attributes{
        content-architecture-class
        { 2 8 2 8 0 }},
    content-portions{"0"}},
text-unit{
    content-portion-attributes{
        content-identifier-layout "1 1 2 0",
        content-information{ /* Ordered set of
            geometric graphics
            content elements for
            the diagram */}},
layout-object{
    object-type block,
    descriptor-body{
        object-identifier "1 1 3",
        user-visible-name "Caption",
        position{
            horizontal 2550,
            vertical 10800},
        dimensions{
            horizontal 3970,
            vertical fixed 370},
        content-portions{"0"}},
text-unit{
    content-portion-attributes{
        content-identifier-layout "1 1 3 0",
        content-information{ /* Formatted string
            for the caption */}},
layout-object{
    object-type block,
    descriptor-body{
        object-identifier "1 1 4",
        user-visible-name "Para C1",
        position{
            horizontal 1105,
            vertical 11980},
        dimensions{
            horizontal 7935,
            vertical fixed 1075},
        presentation-attributes{
            character-attributes{
                line-spacing 300,
                alignment justified}},
        content-portions{"0"}},
text-unit{
    content-portion-attributes{
        content-identifier-layout "1 1 4 0",
        content-information{ /* Formatted string
            of C's */}},
layout-object{
    object-type page,
    descriptor-body{
        object-identifier "1 2",
        user-visible-name "Body Page 2",
        dimensions{
            horizontal 9920,
            vertical fixed 14030},
        subordinates{"0", "1", "2", "3", "4"}},
layout-object{
    object-type block,
    descriptor-body{
        object-identifier "1 2 0",
        user-visible-name "Para C2",
        position{
            horizontal 1105,
            vertical 1105},

```

```

A606
060458020800

A103120130
A3LL
310B
4009400731203120322030
04LL .....
.....
.....
A22E
020104
3129
41053120312033
8E0743617074696F6E
A308
800209F6
80022A30
A408
80020F82
80020172
A103120130
A3LL
310B
4009400731203120332030
04LL63617074696F6E..
.....
A239
020104
3134
41053120312034
8E09506172612043283129
A308
80020451
80022ED6
A408
80021EFF
80020433
A607

8702012C
880103
A103120130
A3LL
310B
4009400731203120342030
04LL .....
.....
A232
020102
312D
4103312032
8E0B426F647920506167652032
A408
800226C0
800236CE
A00F120130120131120132120133
120134

A239
020104
3134
41053120322030
8E09506172612043283229
A308
80020451
80020451

```

<pre> dimensions{ horizontal 7935, vertical fixed 1275}, presentation-attributes{ character-attributes{ line-spacing 300, alignment justified}}, content-portions{"0"}}, text-unit{ content-portion-attributes{ content-identifier-layout "1 2 0 0"}, content-information{ /*Formatted string of C's*/ }, layout-object{ object-type block, descriptor-body{ object-identifier "1 2 1", user-visible-name "Para D", position{ horizontal 1105, vertical 3260}, dimensions{ horizontal 7935, vertical fixed 1615}, presentation-attributes{ character-attributes{ line-spacing 300, alignment justified}}, content-portions{"0"}}, text-unit{ content-portion-attributes{ content-identifier-layout "1 2 1 0"}, content-information{ /*Formatted string of D's*/ }, layout-object{ object-type block, descriptor-body{ object-identifier "1 2 2", user-visible-name "Ending", position{ horizontal 1985, vertical 5755}, dimensions{ horizontal 6860, vertical fixed 2155}, presentation-attributes{ character-attributes{ line-spacing 300, alignment justified}}, content-portions{"0"}}, text-unit{ content-portion-attributes{ content-identifier-layout "1 2 2 0"}, content-information{ /*Formatted string of FORMAL ENDING"}}, layout-object{ object-type block, descriptor-body{ object-identifier "1 2 3", user-visible-name "signature", position{ horizontal 3260, vertical 8675}, dimensions{ horizontal 5585, vertical fixed 2495}, </pre>	<pre> A408 80021EFF 800206F9 A607 8702012C 880103 A003120130 A3LL 310B 4009400731203230302030 04LL4343 A236 020104 3131 41053120322031 8E06506172612044 A308 80020451 80020CBC A408 80021EFF 8002064F A607 8702012C 880103 A103120130 A3LL 310B 4009400731203220312030 04LL444444 A236 020104 3131 41053120322032 8E06456E64696E67 A308 800207C1 8002167B A408 80021ACC 8002086B A607 8702012C 880103 A103120130 A3LL 310B 4009400731203220322030 04LL464F52524D41402045 4E44494E47 A23D 020104 3138 41053120322033 8E095369676E6174757265 A308 80020CBC 800221E3 A408 800215D1 800209BF </pre>
--	---

```

presentation-attributes{
  content-architecture-class
    { 2 8 2 7 0 },
  raster-graphics-attributes{
    pel-transmission-density 5}},
content-portions{"0"}},
text-unit{
  content-portion-attributes{
    content-identifier-layout "1 2 3 0",
    raster-gr-coding-attributes{
      number-of-pels-per-line 1117}},
  content-information{ /* Array of
    raster-graphics content
    elements for the
    signature* /}},
layout-object{
  object-type block,
  descriptor-body{
    object-identifier "1 2 4",
    user-visible-name "Name",
    position{
      horizontal 5950,
      vertical 11170},
    dimensions{
      horizontal 2520,
      vertical fixed 905},
    presentation-attributes{
      character-attributes{
        line-spacing 300}},
    content-portions{"0"}},
text-unit{
  content-portion-attributes{
    content-identifier-layout "1 2 4 0"},
  content-information{"Miss Aude HEA\n
    Document Architect"}}
```

```

A60B
060458020700
A103
820105
A103120130
A3LL
310B
4009400731203220332030
A204
8002045D
04LL .....
.....
.....
.....
A231
020104
312C
41053120322034
8E044E616D65
A308
8002173E
80022BA2
A408
800209D8
80020389
A604
8702012C
A103120130
A3LL
310B
4009400731203220342030
04LL4D697373.....
.....
```


D.2 Example 2: Sample document from annex B of ISO 8613-2; Specific logical structure only

document-profile{	A033
presentation-styles "1",	860131
specific-logical-structure "1",	850131
document-characteristics {	A22B
document-architecture-class	
formatted-processable,	810101
content-architecture-classes{	A512
{ 2 8 2 6 1 },	060458020600
{ 2 8 2 7 1 },	060458020701
{ 2 8 2 8 0 },	060458020800
interchange-format-class if-a,	860100
oda-version {	8810
standard-or-recommendation "ISO 8613",	430849534F2038363133
publication-date "1988" } } } ,	440431393838
presentation-style{	A70D
style-identifier "5 0",	4503352030
presentation-attributes{	A306
character-attributes{	A004
line-spacing 300 } } } ,	8702012C
presentation-style{	A711
style-identifier "5 1",	4503352031
presentation-attributes{	A30A
character-attributes{	A008
first-line-offset 1417,	97020589
line-spacing 300 } } } ,	8702012C
presentation-style{	A714
style-identifier "5 2",	4503352032
presentation-attributes{	A30D
character-attributes{	A00B
first-line-offset 1417,	97020589
alignment justified,	880103
line-spacing 300 } } } ,	8702012C
presentation-style{	A714
style-identifier "5 3",	4503352033
presentation-attributes{	A30D
character-attributes{	A00B
first-line-offset 1020,	970203FC
alignment justified,	880103
line-spacing 300 } } } ,	8702012C
presentation-style{	A714
style-identifier "5 4",	4503352034
presentation-attributes{	A30D
character-attributes{	A00B
first-line-offset 1417,	97020589
alignment justified,	880103
line-spacing 400 } } } ,	87020190
logical-object {	A624
object-type document-logical-root,	020100
descriptor-body {	311F
object-identifier "3",	410133
user-visible-name "Letter",	8E064C6574746572
subordinates {"0", "1"},	A006120130120131
default-value-lists{	A70A
basic-logical-attributes {	A608
presentation-attributes {	3106
content-architecture-class	060458020601
{ 2 8 2 6 1 } } } } } ,	
logical-object{	A620
object-type composite-logical,	020101
descriptor-body{	311B
object-identifier "3 0",	4103332030
user-visible-name "Header",	8E06486561646572
subordinates {"0", "1", "2", "3"} } } ,	A00C120130120131120132120133

logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 0 0", user-visible-name "Date", content-portions{"0"}},	A617 020102 3112 41053320302030 8E0444617465 A103120130 A61C 020102 3117 41053320302031 8E09416464726573736565 A103120130 A61F 020102 311A 41053320302032 8E075375626A656374 9103352030 A103120130 A61A 020101 3115 41053320302033 8E0753756D6D617279 A003120130 A62B 020102 3126 410733203020332030 8E1153756D6D617279 2D706172616772617068 9103352031 A103120130 A627 020101 3122 4103332031 8E04426F6479 A0151201301201311201321201 120134120135120136 A623 020102 311E 41053320312030 8E0B5061726167726170682041 9103352032 A103120130 A623 020102 311E 41053320312031 8E0B5061726167726170682042 9103352032 A103120130 A61C 020101 3117 41053320322032 8E06466967757265 A006120130120131 A624 020102 311F 410733203120322030 8E0744726177686E67 A606
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 0 1", user-visible-name "Addressee", content-portions{"0"}},	
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 0 2", user-visible-name "Subject", presentation-style "5 0", content-portions{"0"}},	
logical-object{ object-type composite-logical, descriptor-body{ object-identifier "3 0 3", user-visible-name "Summary", subordinates{"0"}},	
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 0 3 0", user-visible-name "Summary-paragraph", presentation-style "5 1", content-portions{"0"}},	
logical-object{ object-type composite-logical, descriptor-body{ object-identifier "3 1", user-visible-name "Body", subordinates{"0", "1", "2", "3", "4", "5", "6"}},	
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 1 0", user-visible-name "Paragraph A", presentation-style "5 2", content-portions{"0"}},	
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 1 1", user-visible-name "Paragraph B", presentation-style "5 2", content-portions{"0"}},	
logical-object{ object-type composite-logical, descriptor-body{ object-identifier "3 1 2", user-visible-name "Figure", subordinates{"0", "1"}},	
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 1 2 0", user-visible-name "Drawing", presentation-attributes{	

content-architecture-class {2 8 2 8 0}},	060458020800
content-portions{"0"}},	A103120130
logical-object{	A61C
object-type basic-logical,	020102
descriptor-body{	3117
object-identifier "3 1 2 1",	410733203120322031
user-visible-name "Caption",	8E0743617074696F6E
content-portions{"0"}},	A103120130
logical-object{	A623
object-type basic-logical,	020102
descriptor-body{	311E
object-identifier "3 1 3",	41053320312033
user-visible-name "Paragraph C",	8E0B5061726167726170682043
presentation-style "5 2",	9103352032
content-portions{"0"}},	A103120130
logical-object{	A623
object-type basic-logical,	020102
descriptor-body{	311E
object-identifier "3 1 4",	41053320312034
user-visible-name "Paragraph D",	8E0B5061726167726170682043
presentation-style "5 2",	9103352032
content-portions{"0"}},	A103120130
logical-object{	A61E
object-type basic-logical,	020102
descriptor-body{	3119
object-identifier "3 1 5",	41053320312035
user-visible-name "Ending",	8E06456E64696E67
presentation-style "5 3",	9103352033
content-portions{"0"}},	A103120130
logical-object{	A628
object-type composite-logical,	020101
descriptor-body{	3123
object-identifier "3 1 6",	41053320312036
user-visible-name "Signature and Name",	8E125369676E61747572652D
	4E616D65
subordinates{"0", "1"}},	A006120130120131
logical-object{	A626
object-type basic-logical,	020102
descriptor-body{	3121
object-identifier "3 1 6 0",	410733203120362030
user-visible-name "Signature",	8E095369676E6174757265
presentation-attributes{	A606
content-architecture-class	060458020701
{2 8 2 7 1}},	
content-portions{"0"}},	A103120130
logical-object{	A61E
object-type basic-logical,	020102
descriptor-body{	3119
object-identifier "3 1 6 1",	410733203120362031
user-visible-name "Name",	8E044E616D65
presentation-style "5 0",	9103352030
content-portions{"0"}},	A103120130
text-unit{	A321
content-portion-attributes{	3109
content-identifier-logical "3 0 0 0",	840733203020312030
content-information{"CESSON, 26	
JUNE 1985"}},	
text-unit{	0414434553534F4E2C.....31393835
content-portion-attributes{	A32C
content-identifier-logical "3 0 1 0",	3109
content-information{"To members	840730203020312030
of TC97/SC18/WG3"}},	
text-unit{	041F546F206D656D62657273..
content-portion-attributes{	A3LL
content-identifier-logical "3 0 2 0",	3109
	840733203020322030

content-information{"SUBJECT: PROPOSED EXAMPLE TO CLARIFY THE DOCUMENT ARCHITECTURE MODEL"}},	04LL5456424A4543553A..4D4F44454C
text-unit{ content-portion-attributes{ content-identifier-logical "3 0 3 0 0"}, content-information{ /* Unformatted string of SUMMARY-*/ }},	A3LL 310B 8409332030203320302030 04LL53554D4D415259
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 0 0"}, content-information{ /* Unformatted string of A's*/ }},	A3LL 3109 840733203120302030 04LL414141
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 1 0"}, content-information{ /* Unformatted string of B's*/ }},	A3LL 3109 840733203120312030 04LL4242424242
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 2 0 0"}, content-information{ /* Ordered set of geometric-graphics content elements for the diagram*/ }},	A3LL 310B 8409332031203220302030 04LL4242424242
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 2 1 0"}, content-information{ /* Unformatted string for the caption*/ }},	A3LL 310B 8409332031203220312030 04LL63617074696F6E
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 3 0"}, content-information{ /* Unformatted string of C's*/ }},	A3LL 3109 840733203120332030 04LL4343434343
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 4 0"}, content-information{ /* Unformatted string of D's*/ }},	A3LL 3109 840733203120342030 04LL44444444
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 5 0"}, content-information{ /* Unformatted string for Ending*/ }},	A3LL 3109 840733203120352030 04LL464F524D414C2D 454E44494E47
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 6 0 0", raster-gr-coding-attributes{ number-of-pels-per-line 1117}}, content-information{ /* Array of raster-graphics content elements for the signature*/ }},	A3LL 3111 4109332031203620302030 A204 8002045D 04LLZZZZZZZZZZZZ
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 6 1 0"}, content-information{ "Miss Aude HEA Document Architect" }}	A3LL 310B 8409332031203620312030 04LL4D697373

D.3 Example 3: Sample document from annex B of ISO 8613-2; Generic layout, generic logical and specific logical structures

document-profile{	A03C
generic-layout-structure "1",	800131
generic-logical-structure "1",	840131
presentation-styles "1",	860131
layout-styles "1",	870131
specific-logical-structure "1",	850131
document-characteristics {	A22B
document-architecture-class	
processable,	810101
content-architecture-classes{	A512
{2 8 2 6 1},	060458020601
{2 8 2 7 0},	060458020700
{2 8 2 8 0}},	060458020800
interchange-format-class if-a,	860101
oda-version {	8810
standard-or-recommendation "ISO 8613",	430849534F2038363133
publication-date "1988"}}},	440431393838
layout-object-class{	A122
object-type document-layout-root,	020100
descriptor-body{	311D
object-class-identifier "0",	410130
user-visible-name "Letter",	8E064C6574746572
generator-for-subordinates{	A010
sequence-construction	A00E
required-construction-factor	A005
object-class-identifier "0 0",	4103302030
repetitive-construction-factor	A205
object-class-identifier "0 1"}}},	4103302031
layout-object-class{	A14D
object-type page,	020102
descriptor-body{	3148
object-class-identifier "0 0",	4103302030
user-visible-name "Header",	8E06486561646572
dimensions{	A408
horizontal fixed 9920,	800226C0
vertical fixed 14030},	800236CE
generator-for-subordinates{	A02F
sequence-construction	A02D
required-construction-factor	A007
object-class-identifier "0 0 0",	41053020302030
required-construction-factor	A007
object-class-identifier "0 0 1",	41053020302031
required-construction-factor	A007
object-class-identifier "0 0 2",	41053020302032
required-construction-factor	A007
object-class-identifier "0 0 3",	41053020302033
required-construction-factor	A007
object-class-identifier	
"0 0 4"}}},	41053020302034
layout-object-class{	A12F
object-type frame,	020103
descriptor-body{	312A
object-class-identifier "0 0 0",	41053020302030
position{	
fixed-position{	A308
horizontal 710,	800202C6
vertical 730}},	800202DA
dimensions{	A408
horizontal fixed 3685,	80020E65
vertical fixed 2495},	800209BF
generator-for-subordinates{	A00D
single-term-construction	A30B
required-construction-factor	A009

object-class-identifier "0 0 0 0" } } } ,	410730203020302030
layout-object-class{ object-type block, descriptor-body{ object-class-identifier "0 0 0 0", user-visible-name "Logo", presentation-attributes{ content-architecture-class { 2 8 2 7 0 } } , content-portions{"0" } } } ,	A121 020104 311C 410730203020302030 8E044C6F676F A606
layout-object-class{ object-type frame, descriptor-body{ object-class-identifier "0 0 1", user-visible-name "Date", position{ fixed-position{ horizontal 5045, vertical 565 } } , dimensions{ horizontal fixed 3970, vertical fixed 1615 } } } ,	060458020700 A103120130 A126 020103 3121 41053020302031 8E0444617465
layout-object-class{ object-type frame, descriptor-body{ object-class-identifier "0 0 2", user-visible-name "Addressee", position{ fixed-position{ horizontal 1105, vertical 4310 } } , dimensions{ horizontal fixed 5395, vertical fixed 1415 } } } ,	A308 800213B5 80020235 A408 80020F82 8002064F A12B 020103 3126 41053020302032 8E09416464726573736565
layout-object-class{ object-type frame, descriptor-body{ object-class-identifier "0 0 3", user-visible-name "Subject", position{ fixed-position{ horizontal 1105, vertical 6660 } } , dimensions{ horizontal fixed 7200, vertical fixed 1785 } } } ,	A308 80020451 800210D6 A408 80021513 80020587 A129 020103 3124 41053020302033 8E075375626A656374
layout-object-class{ object-type frame, descriptor-body{ object-class-identifier "0 0 4", user-visible-name "Summary", position{ fixed-position{ horizontal 2180, vertical 9695 } } , dimensions{ horizontal fixed 6290, vertical fixed 3570 } } } ,	A308 80020451 80021A04 A408 80021C20 800206F9 A129 020103 3124 41053020302034 8E0753756D6D617279
layout-object-class{ object-type page, descriptor-body{ object-class-identifier "0 1", user-visible-name "Body", dimensions{ horizontal fixed 9920, vertical fixed 14030 } ,	A308 80020884 800225DF A408 80021892 80020DF2 A127 020102 3122 4103302031 8E04426F6479 A408 800226C0 800236CE

generator-for-subordinates{ single-term-construction required-construction-factor object-class-identifier "0 1 0"}}},	A00B A309 A007
layout-object-class{ object-type frame, descriptor-body{ object-class-identifier "0 1 0", user-visible-name "Body", position{ fixed-position{ horizontal 565, vertical 565}}}, dimensions{ horizontal fixed 8815, vertical fixed 12870}}},	41053020312030 A126 020103 3121 41053020312030 8E04426F6479
logical-object-class{ object-type document-logical-root, descriptor-body{ object-class-identifier "2", user-visible-name "Letter", generator-for-subordinates{ sequence-construction required-construction-factor object-class-identifier "2 0", required-construction-factor object-class-identifier "2 1"}}},	A308 80020235 80020235 A408 8002226F 80023246 A522 020100 311D 410132 8E064C6574746572 A010 A00E A005 4103322030 A005
logical-object-class{ object-type composite-logical, descriptor-body{ object-class-identifier "2 0", user-visible-name "Header", generator-for-subordinates{ sequence-construction required-construction-factor object-class-identifier "2 0 0", required-construction-factor object-class-identifier "2 0 1", required-construction-factor object-class-identifier "2 0 2", required-construction-factor object-class-identifier "2 0 3"}}},	4103322031 A53A 020101 3135 4103322030 8E06486561646572 A026 A024 A007 41053220302030 A007 41053220302031 A007 41053220302032 A007
logical-object-class{ object-type basic-logical, descriptor-body{ object-class-identifier "2 0 0", user-visible-name "Date", layout-style "4 0", presentation-attributes{ content-architecture-class { 2 8 2 6 1}}},	41053220302033 A51F 020102 311A 41053220302030 8E0444617465 9303342030 A606 060458020601
logical-object-class{ object-type basic-logical, descriptor-body{ object-class-identifier "2 0 1", user-visible-name "Addressee", layout-style "4 1", presentation-attributes{ content-architecture-class { 2 8 2 6 1}}},	A524 020102 311F 41053220302031 8E09416464726573736565 9303342031 A606 060458020601
logical-object-class{ object-type basic-logical, descriptor-body{ object-class-identifier "2 0 2",	A527 020102 3122 41053220302032

user-visible-name "Subject", layout-style "4 2", presentation-style "5 0", presentation-attributes{ content-architecture-class { 2 8 2 6 1 } } } },	8E075375626A656374 9303342032 9103352030 A606 060458020601
logical-object-class{ object-type composite-logical, descriptor-body{ object-class-identifier "2 0 3", user-visible-name "Summary", layout-style "4 3", generator-for-subordinates{ single-term-construction repetitive-construction-factor object-class-identifier "2 0 3 1" } } },	A529 020101 3124 41053220302033 8E0753756D6D617279 9303342033 A00D A30B A309
logical-object-class{ object-type basic-logical, descriptor-body{ object-class-identifier "2 0 3 1", user-visible-name "Summary-paragraph", layout-style "4 4", presentation-style "5 1", presentation-attributes{ content-architecture-class { 2 8 2 6 1 } } } },	410732203020332031 A533 020102 312E 410732203020332031 8E1153756D6D6172792D70617261 6772617068 9303342034 9103352031 A606 060458020601
logical-object-class{ object-type composite-logical, descriptor-body{ object-class-identifier "2 1", user-visible-name "Body", layout-style "4 5", generator-for-subordinates{ sequence-construction repetitive-construction-factor choice-construction required-construction-factor object-class-identifier "2 1 0", required-construction-factor object-class-identifier "2 1 1", required-construction-factor object-class-identifier "2 1 2", required-construction-factor object-class-identifier "2 1 3" } } },	A531 020101 312C 4103322031 8E04426F6479 9303342035 A02A A028 A214 A212 A007 41053220312030 A007 41053220312031 A007 41053220312032 A007
logical-object-class{ object-type composite-logical, descriptor-body{ object-class-identifier "2 1 0", user-visible-name "Figure", layout-style "4 6", generator-for-subordinates{ sequence-construction required-construction-factor object-class-identifier "2 1 0 0", required-construction-factor object-class-identifier "2 1 0 1" } } },	41053220312033 A533 020101 312E 41053220312030 8E06466967757265 9303342036 A018 A016 A009
logical-object-class{ object-type basic-logical, descriptor-body{	410732203120302030 A009 410732203120302031 A524 020102 311F

object-class-identifier "2 1 0 0",	410732203120302030
user-visible-name "Drawing",	8E0744726177686E67
presentation-attributes{	A606
content-architecture-class	060458020800
{ 2 8 2 8 0 }},	
layout-style "4 7"}},	9303342037
logical-object-class{	A524
object-type basic-logical,	020102
descriptor-body{	311F
object-class-identifier "2 1 0 1",	410732203120302031
user-visible-name "Caption",	8E0743617074696F6E
layout-style "4 8",	9303342038
presentation-attributes{	A606
content-architecture-class	060458020601
{ 2 8 2 6 1 }},	
logical-object-class{	A52E
object-type basic-logical,	020102
descriptor-body{	3129
object-class-identifier "2 1 1",	41053220312031
user-visible-name "Body-paragraph",	8E0E426F64792D70617261677261
	7068
layout-style "4 9",	9303342039
presentation-style "5 3",	9103352033
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content-architecture-class	060458020601
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logical-object-class{	A52C
object-type basic-logical,	020102
descriptor-body{	3127
object-class-identifier "2 1 2",	41053220312032
user-visible-name "Ending",	8E06456E64696E67
layout-style "4 10",	930434203130
presentation-style "5 4",	9103352034
content-portions{"0"},	A103120130
presentation-attributes{	A606
content-architecture-class	060458020601
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logical-object-class{	A538
object-type composite-logical,	020101
descriptor-body{	3133
object-class-identifier "2 1 3",	41053220312033
user-visible-name "Signature-and-Name",	8E125369676E61747572652D616E
	642D4E616D65
generator-for-subordinates{	A018
sequence-construction	A016
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object-class-identifier	
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required-construction-factor	A009
object-class-identifier	
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logical-object-class{	A527
object-type basic-logical,	020102
descriptor-body{	3122
object-class-identifier "2 1 3 0",	410732203120332030
user-visible-name "Signature",	8E095369676E6174757265
presentation-attributes{	A606
content-architecture-class	060458020701
{ 2 8 2 7 1 }},	
layout-style "4 11"}},	930434203131
logical-object-class{	A527
object-type basic-logical,	020101
descriptor-body{	3122
object-class-identifier "2 1 3 1",	410732203120332031
user-visible-name "Name",	8E044E616D65
layout-style "4 12",	930434203132
presentation-style "5 0",	9103352030

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        { 2 8 2 6 1 } } },
text-unit{
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        content-identifier-layout "0 0 0 0 0",
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            number-of-pels-per-line 737 } },
    content-information{ /* Array of
                        raster-graphics
                        content elements for
                        the logo* / } },
text-unit{
    content-portion-attributes{
        content-identifier-logical "2 1 2 0",
        content-information{ /* Unformatted string
                        of ending* / } },
presentation-style{
    style-identifier "5 0",
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        character-attributes{
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presentation-style{
    style-identifier "5 1",
    presentation-attributes{
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            alignment justified } } },
presentation-style{
    style-identifier "5 3",
    presentation-attributes{
        character-attributes{
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            alignment justified,
            line-spacing 300 } } },
presentation-style{
    style-identifier "5 4",
    presentation-attributes{
        character-attributes{
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            alignment justified,
            line-spacing 300 } } },
layout-style{
    style-identifier "4 0",
    layout-directives{
        layout-object-class "0 0 1",
        offset{
            trailing 710,
            right-hand 395 } } },
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    style-identifier "4 1",
    layout-directives{
        layout-object-class "0 0 2" } },
layout-style{
    style-identifier "4 2",
    layout-directives{
        layout-object-class "0 0 3" } },
layout-style{
    style-identifier "4 3",
    layout-directives{
        layout-object-class "0 0 4" } },
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    layout-directives{
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            left-hand 705 } } },
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A606
060458020601

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04LL

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layout-style{ style-identifier "4 5", layout-directives{ new-layout-object{ to-layout-object-class "0 1"}}, }	A80C 4503342035 A405
layout-style{ style-identifier "4 6", layout-directives{ indivisibility{ to-layout-object-class "0 1 0"}}, }	8703302031 A80E 4503342036 A407
layout-style{ style-identifier "4 7", layout-directives{ offset{ right-hand 1615, left-hand 2155}, separation{ trailing 905}}, }	80053020312030 A817 4503342037 A410 A408 8002064F 8102086B A304 81020389 A817
layout-style{ style-identifier "4 8", layout-directives{ offset{ right-hand 1985, left-hand 2860}, separation{ trailing 200}}, }	4503342038 A410 A408 800207C1 81020B26 A304 810201C8 A81F
layout-style{ style-identifier "4 9", layout-directives{ offset{ trailing 540, leading 280, right-hand 540, left-hand 340}, separation{ trailing 880}}, }	4503342039 A418 A410 8202021C 83020118 8002021C 81020154 A304 81020370 A818
layout-style{ style-identifier "4 10", layout-directives{ offset{ right-hand 1420, left-hand 535}, separation{ trailing 880}}, }	450434203130 A410 A408 8002058C 81020217 A304 81020370 A818
layout-style{ style-identifier "4 11", layout-directives{ offset{ right-hand 2695, left-hand 535}, separation{ trailing 765}}, }	450434203131 A410 A408 80020A87 81020217 A304 810202FD A812
layout-style{ style-identifier "4 12", layout-directives{ offset{ right-hand 5385, left-hand 910}}, }	450434203132 A40A A408 80021509 8102038E A61B
logical-object{ object-type document-logical-root, descriptor-body{ object-identifier "3", object-class "2", user-visible-name "Letter", subordinates{"0", "1"}}, }	020100 3118 410103 820132 8E064C6574746572 A006120130120131 A625 020101

descriptor-body{ object-identifier "3 0", object-class "2 0", user-visible-name "Header", subordinates{"0","1","2","3"}},	3120 4103302030 8203322030 8E06486561646572 A00C120130120131120132120133 A61E 020102 3119 41053320302030 82053220302030 8E0444617465 A103120130 A623 020102 311E 41053320302031 82053220302031 8E09416464726573736565 A103120130 A621 020102 311C 41053320302032 82053220302032 8E075375626A656374 A103120130 A621 020101 311C 41053320302033 82053320302033 8E0753756D6D617279 A003120130 A62F 020102 312A 410733203020332030 820732203020332031 8E1153756D6D617279 2D706172616772617068 A103120130 A62C 020101 3127 4103332031 8203322031 8E04426F6479 A015120130120131120132120133 120134120135120136 A625 020102 3120 41053320312030 82053220312031 8E0B5061726167726170682041 A103120130 A62D 020102 3128 41053320312031 82053220312031 8E0B5061726167726170682042 A606 A004 87020190 A103120130
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 0 0", object-class "2 0 0", user-visible-name "Date", content-portions{"0"}},	
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 0 1", object-class "2 0 1", user-visible-name "Addressee", content-portions{"0"}},	
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 0 2", object-class "2 0 2", user-visible-name "Subject", content-portions{"0"}},	
logical-object{ object-type composite-logical, descriptor-body{ object-identifier "3 0 3", object-class "2 0 3", user-visible-name "Summary", subordinates{"0"}},	
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 0 3 0", object-class "2 0 3 1", user-visible-name "Summary-paragraph", content-portions{"0"}},	
logical-object{ object-type composite-logical, descriptor-body{ object-identifier "3 1", object-class "2 1", user-visible-name "Body", subordinates{"0","1","2","3","4", "5","6"}},	
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 1 0", object-class "2 1 1", user-visible-name "Paragraph A", content-portions{"0"}},	
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 1 1", object-class "2 1 1", user-visible-name "Paragraph B", presentation-attributes{ character-attributes{ line-spacing 400}}, content-portions{"0"}},	

logical-object{ object-type composite-logical, descriptor-body{ object-identifier "3 1 2", object-class "2 1 0", user-visible-name "Figure", subordinates{"0","1"}}, }	A623 020101 311E 41053320312032 82053220312030 8E06466967757265 A006120130120131 A625
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 1 2 0", object-class "2 1 0 0", user-visible-name "Drawing", content-portions{"0"}}, }	020102 3120 410733203120322030 820732203120302030 8E0744726177686E67 A103120130 A625
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 1 2 1", object-class "2 1 0 1", user-visible-name "Caption", content-portions{"0"}}, }	020102 3120 410733203120322031 820732203120302031 8E0743617074696F6E A103120130 A625
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 1 3", object-class "2 1 1", user-visible-name "Paragraph C", content-portions{"0"}}, }	020102 3120 41053320312033 82053220312031 8E0B5061726167726170682043 A103120130 A625
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 1 4", object-class "2 1 1", user-visible-name "Paragraph D", content-portions{"0"}}, }	020102 3120 41053320312034 82053220312031 8E0B5061726167726170682043 A103120130 A61B
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 1 5", object-class "2 1 2", user-visible-name "Ending"}}, }	020102 3116 41053320312035 82053220312032 8E06456E64696E67 A62F
logical-object{ object-type composite-logical, descriptor-body{ object-identifier "3 1 6", object-class "2 1 3", user-visible-name "Signature and Name", subordinates{"0","1"}}, }	020101 312A 41053320312036 82053220312033 8E125369676E61747572652D 4E616D65 A006120130120131 A627
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 1 6 0", object-class "2 1 3 0", user-visible-name "Signature", content-portions{"0"}}, }	020102 3122 410733203120362030 820732203120332030 8E095369676E6174757265 A103120130 A622
logical-object{ object-type basic-logical, descriptor-body{ object-identifier "3 1 6 1", object-class "2 1 3 1", user-visible-name "Name", content-portions{"0"}}, }	020102 311D 410733203120362031 820732203120332031 8E044E616D65 A103120130 A321
text-unit{ content-portion-attributes{ content-identifier-logical "3 0 0 0", content-information{"CESSON, 26 JUNE 1985"}}, }	3109 840733203020312030 0414434553534F4E2C.....31393835

text-unit{ content-portion-attributes{ content-identifier-logical "3 0 1 0", content-information{"To members of TC97 /SC18 /WG3"}}, }	A32C 3109 840730203020312030 041F546F206D656D62657273.. ..4733 A3LL 3109 840733203020322030
text-unit{ content-portion-attributes{ content-identifier-logical "3 0 2 0", content-information{"SUBJECT: PROPOSED EXAMPLE TO CLARIFY THE DOCUMENT ARCHITECTURE MODEL"}}, }	04LL5456424A4543553A..4D4F44454C
text-unit{ content-portion-attributes{ content-identifier-logical "3 0 3 0 0", content-information{/* Unformatted string of SUMMARY-*/}}, }	A3LL 310B 8409332030203320302030 04LL53554D4D415259.....
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 0 0", content-information{/* Unformatted string of A's*/}}, }	A3LL 3109 840733203120302030
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 1 0", content-information{/* Unformatted string of B's*/}}, }	04LL414141..... A3LL 3109 840733203120312030
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 2 0 0", content-information{/* Ordered set of geometric-graphics content elements for the diagram*/}}, }	04LL4242424242 A3LL 310B 8409332031203220302030
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 2 1 0", content-information{/* Unformatted string for the caption*/}}, }	04LL4242424242 A3LL 310B 8409332031203220312030
text-unit{ content-portion-attributes{ content-identifier-logical "3 1 3 0", content-information{/* Unformatted string of C's*/}}, }	04LL63617074696F6E A3LL 3109 840733203120332030
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text-unit{ content-portion-attributes{ content-identifier-logical "3 1 6 0 0", raster-gr-coding-attributes{ number-of-pels-per-line 1117}}, content-information{/* Array of raster-graphics content elements for the signature*/}}, }	04LL44444444 A3LL 310B 4109332031203620302030 A104 8002045D
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D.4 Example 4: Sample document from annex B of ISO 8613-2; Specific layout structure only

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{ 2 8 2 7 0 },	060458020700
{ 2 8 2 8 0 }},	060458020800
interchange-format-class if-b,	860101
oda-version {	8810
standard-or-recommendation "ISO 8613",	430849534F2038363133
publication-date "1988"}}},	440431393838
layout-object{	A21E
object-type document-layout-root,	020100
descriptor-body{	3119
object-identifier "1",	410131
object-class "0",	820130
user-visible-name "Letter",	8E064C6574746572
subordinates{"0","1","2"}}},	A009120130120131120132
layout-object{	A228
object-type page,	020102
descriptor-body{	3123
object-identifier "1 0",	4103312030
object-class "0 0",	8203302030
user-visible-name "Header",	8E06486561646572
subordinates{"0","1","2","3","4"}}},	A00F120130120131120132120133
	120134
layout-object{	A218
object-type frame,	020103
descriptor-body{	3113
object-identifier "1 0 0",	41053120302030
object-class "0 0 0",	82053020302030
subordinates{"0"}}},	A003120130
layout-object{	A229
object-type block,	020104
descriptor-body{	3124
object-identifier "1 0 0 0",	410531203020302030
object-class "0 0 0 0",	820730203020302030
user-visible-name "Logo",	8E044C6F676F
presentation-attributes{	A60C
content-architecture-class	060458020700
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raster-graphics-attributes{	
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layout-object{	820105
object-type frame,	A21E
descriptor-body{	020103
object-identifier "1 0 1",	3119
object-class "0 0 1",	41053120302031
user-visible-name "Date",	82053020302031
subordinates{"0"}}},	8E0444617465
layout-object{	A003120130
object-type block,	A22F
descriptor-body{	020104
object-identifier "1 0 1 0",	312A
position{	410731203020312030
horizontal 395,	A308
vertical 710},	8002018B
dimensions{	800202C6
horizontal 3060,	A408
vertical fixed 540},	80020BF4
content-portions{"0"},	8002021C
presentation-attributes{	A103180130
	A606

content-architecture-class {2 8 2 6 2}}},	060458020602
layout-object{ object-type frame, descriptor-body{ object-identifier "1 0 2", object-class "0 0 2", user-visible-name "Addressee", subordinates{"0"}}},	A223 020103 311E 41053120302032 82053020302032 8E09416464726573736565 A003120130
layout-object{ object-type block, descriptor-body{ object-identifier "1 0 2 0", dimensions{ horizontal 4505, vertical fixed 540}, content-portions{"0"}, presentation-attributes{ content-architecture-class {2 8 2 6 2}}},	A225 020104 3120 410731203020322030 A408 80021199 8002021C A103180130 A606 060458020602
layout-object{ object-type frame, descriptor-body{ object-identifier "1 0 3", object-class "0 0 3", user-visible-name "Subject", subordinates{"0"}}},	A221 020103 311C 41053120302033 82053020302033 8E075375626A656374 A003120130
layout-object{ object-type block, descriptor-body{ object-identifier "1 0 3 0", dimensions{ horizontal 7200, vertical fixed 905}, presentation-style "5 0", content-portions{"0"}, presentation-attributes{ content-architecture-class {2 8 2 6 2}}},	A22A 020104 3125 410731203020332030 A408 80021C20 80020389 9103352030 A103120130 A606 060458020602
layout-object{ object-type frame, descriptor-body{ object-identifier "1 0 4", object-class "0 0 4", user-visible-name "Summary", subordinates{"0"}}},	A221 020103 311C 41053120302034 82053020302034 8E0753756D6D617279 A003120130
layout-object{ object-type block, descriptor-body{ object-identifier "1 0 4 0", dimensions{ horizontal 5585, vertical fixed 2325}, presentation-style "5 1", content-portions{"0"}, presentation-attributes{ content-architecture-class {2 8 2 6 2}}},	A22A 020104 3125 410731203020342030 A408 800215D1 80020915 9103352031 A103120130 A606 060458020602
layout-object{ object-type page, descriptor-body{ object-identifier "1 1", object-class "0 1", user-visible-name "Body", subordinates{"0"}}},	A21A 020102 3115 4103312031 8203302031 8E04426F6479 A00310130
layout-object{ object-type frame,	A22A 020103

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descriptor-body{
  object-identifier "1 1 0",
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  user-visible-name "Body",
  subordinates{"0","1","2","3","4"}},
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layout-object{
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    position{
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      vertical 540},
    dimensions{
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      vertical fixed 1785},
    presentation-style "5 3",
    content-portions{"0"},
    presentation-attributes{
      content-architecture-class
      {2 8 2 6 2}}},

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layout-object{
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  descriptor-body{
    object-identifier "1 1 0 1",
    position{
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      vertical 3205},
    dimensions{
      horizontal 7935,
      vertical fixed 1785},
    presentation-style "5 3",
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    presentation-attributes{
      character-attributes{
        line-spacing 400},
      content-architecture-class
      {2 8 2 6 2}}}},

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  descriptor-body{
    object-identifier "1 1 0 2",
    position{
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      vertical 6460},
    dimensions{
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      vertical fixed 4140},
    presentation-attributes{
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      { 2 8 2 8 0 }},
    content-portions "0" }}}},

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content-portion { "0" },
layout-object {
    object-type block,
    descriptor-body {
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        position {
            horizontal 1985,
            vertical 10235},
        dimensions {
            horizontal 3970,
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        content-portions { "0" },
        presentation-attributes {
            content-architecture-class
            { 2 8 2 6 2 } }}}},

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A606
060458020602

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layout-object{ object-type page, descriptor-body{ object-identifier "1 2", object-class "0 1", user-visible-name "Body", subordinates{"0"}}, }	A21A 020102 3115 4103312032 8203302031 8E04426F6479 A003120130 A22A 020103 3125 41053120322030 82053020312030 8E04426F6479 A00F120130120131120132120133 120134
layout-object{ object-type frame, descriptor-body{ object-identifier "1 2 0", object-class "0 1 0", user-visible-name "Body", subordinates{"0","1","2","3","4"}}, }	A234 020104 312F 410731203220302030 A308 8002021C 8002021C A408 80021EFF 800206F9 9103352033 A103120130 A606 060458020602
layout-object{ object-type block, descriptor-body{ object-identifier "1 2 0 0", position{ horizontal 540, vertical 540}, dimensions{ horizontal 7935, vertical fixed 1275}, presentation-style "5 3", content-portions{"0"}, presentation-attributes{ content-architecture-class { 2 8 2 6 2}}}, }	A234 020104 312F 410731203220302031 A308 8002021C 80020A87 A408 80021EFF 8002064F 9103352033 A103120130 A606 060458020602
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text-unit{ content-portion-attributes{ content-identifier-layout "1 1 0 3 0", content-identifier-logical "3 1 2 1 0"}, content-information{ /*Formatted string for the caption*/ },	A3LL 3118 400B4009312031203020332030 8409332031203220312030 04LL63617074696F6E..
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text-unit{ content-portion-attributes{ content-identifier-layout "1 2 0 1 0", content-identifier-logical "3 1 4 0"}, content-information{ /*Formatted string of D's*/ },	A3LL 3116 400B4009312032203020312030 840733203120342030 04LL444444
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text-unit{ content-portion-attributes{ content-identifier-layout "1 2 0 4 0", content-identifier-logical "3 1 6 1 0"}, content-information{ "Miss Aude HEA\nDocument Architect" }}	A3LL 3118 400B4009312032203020342030 8409332031203620312030 04LL4D697373

D.5 Example 5: Sample document profile from annex C of ISO 8613-4; Document profile only

document-profile { generic-layout-structure "1", specific-layout-structure "1", specific-logical-structure "1", resource-document descriptive-reference "Finance Master, Widget Inc, 4511 McKenzie, Atlanta, Georgia, USA",	A082LLLL 800131 810131 850131 AA41 433F46696E616E636520 4D61737465722C576964 67657420496E632E2C34 353131204D634B656E7A 69652C41746C616E7461 2C2047656F726769612C 205553412E A2LL 800103 AA0F A00D A208 800227D8 80023390 830101 810102 A50706058808020602 860100 8814 430849534F2038363133 44083139383831323135 A222 A20A 300880023390 800227D8 A80F 300D3008 800227D8 80023390 020101 B703 020101 A9LL A30602010C02010A A2LL 020100 30LL 020101 30LL
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document-type "Report",
 abstract "The current figures show
 an improvement in return
 on assets but still show
 an undercapitalization of
 production capacity.",

keywords {
 "Finance", "Financial",
 "May", "Return on assets"}}

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 {"1988-06-05,11:51:03"},

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 preparers {
 {personal-name {
 surname "Maltby",
 givenname "Reginald",
 initials "P.",
 title "Accountant"}}},

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 Atlanta, Georgia, USA"}},

 authors{
 {organization
 "Dewey, Cheatham & Howe CPA"}}},

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 copyright-dates {"1988"}},
 status "May financial report",

 distribution-list {
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 initials "D",
 title "Accountant"}}},

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 title "VP",
 organization "Finance"}},
 {personal-name {
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 givenname "James",
 initials "K.",
 organization "Audits"}},
 {personal-name {
 surname "Duck",
 initials "D.",
 title "Controller"}}},
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 descriptive-reference
 "May balance",
 descriptive-reference
 "May accounting prelim."},

 superseded-documents {
 descriptive-reference
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 local-file-references {
 {file-name "mayfin",

 location "financial-previous"},

 {file-name "mayfin",

 location "financial-current"}}},

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 number-of-pages 16,
 languages {"US English"}},

 security information {
 authorization
 organization "Widget Inc., Finance",

 security-classification
 "Company Financial",
 access-rights "Finance Group"}}}

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 A34F
 A03A
 4314417072696C206669
 6E616E6365207265706F
 7274
 430B4D61792062616C61
 6E6365
 43154D6179206163636F
 756E74696E6720707265
 6C696D
 A111
 430F4D61792066696E61
 6E6369616C2041
 A43B
 311C
 80066D617966696E
 811266696E616E636961
 6C5F70726576696F7573
 311B
 80066D617966696E
 811166696E616E636961
 6C5F63757272656E74
 A516
 8103009DFF
 820110
 840C
 430A555320456E676C69
 7368
 A632

 840C5769646765742049
 6E632E2C
 8111436F6D70616E7920
 46696E616E6369616C
 A20F
 430D46696E616E636520
 47726F7470

Annex E

(normative)

Office Document Language (ODL)

NOTE – To maintain correspondence in clause numbering with CCITT Recommendation T.415, this portion of the Office Document Language (ODL) is specified in a normative annex rather than in the body of this part of ISO 8613.

E.1 Introduction

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

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

The definitions of ISO 8879 apply to this annex.

E.2 Fundamentals

E.2.1 Basic objects and their content

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

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

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

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

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

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

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

E.2.2 ODL names

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

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

E.2.2.1 Logical object type names

The ODL names for the logical object types are the short form human-readable names defined in A.2.5 of ISO 8613-2:

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

E.2.2.2 Layout object type names

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

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

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

E.2.2.3 Content architecture class names

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

Those defined at present are:

cf	--- character formatted content architecture
cfp	--- character formatted processable content architecture
cp	--- character processable content architecture
gfp	--- geometric graphics formatted processable content architecture
rf	--- raster graphics formatted content architecture
rpf	--- raster graphics formatted processable content architecture

E.2.2.4 Data element type names

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

E.2.2.5 Data content notation names

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

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

E.2.2.6 SGML generic identifier (GI)

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

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

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

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

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

E.2.2.7 SGML unique identifier (ID)

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

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

An ODL unique identifier cannot be "null", in any combination of upper-case and/or lower-case characters.

E.2.2.8 Default value list attribute names

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

The presently recognized default value list attribute names are:

dvclo	--- composite logical object
dvblo	--- basic logical object
dvpag	--- page (composite)
dvbpag	--- page (basic)
dvframe	--- frame
dvblock	--- block
dvcf	--- character formatted content architecture
dvcfp	--- character formatted processable content architecture
dvcp	--- character processable content architecture
dvgrp	--- geometric graphics formatted processable content architecture
dvrp	--- raster graphics formatted content architecture
dvrfp	--- raster graphics formatted processable content architecture

E.2.3 Content

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

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

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

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

Generic content is discussed in E.4.2.2.

E.2.4 Linking the logical and layout structures

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

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

```

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

```

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

E.2.5 Attributes

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

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

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

E.3 Representation of attribute values

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

The semantics of the attribute values are specified in ISO 8613–2. The representation of attribute values is as specified in ISO 8613–2, except where a different representation is specified in the public text or elsewhere in this annex.

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

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

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

NOTE – Most attribute values consist of a single parameter.

E.3.1 Constructed parameters

In ISO 8613–2, a parameter is a constructed parameter if one or more of its permissible values is a group of two or more sub-parameters. The description of the attribute in ISO 8613–2 determines the number of sub-parameters, and whether any can be omitted. If more than one sub-parameter is present, they are separated from one another by commas. Successive commas denote an omitted sub-parameter, but they are required only if a succeeding sub-parameter is present.

NOTE – For an example of a constructed parameter, see the attribute “position” in the public text.

E.3.2 String parameters

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

E.3.3. Keyword parameters

Possible keyword values are defined in ISO 8613–2 for some parameters, and by this annex for others.

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

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

parameter name: keyword keyword ...

with the keywords appearing in the same order as the permissible values that they represent appear within ISO 8613–2. For attributes that have but one parameter, the attribute name is the parameter name.

NOTE – For example:

— side of sheet: R V U —

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

E.3.4 Integer parameters

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

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

E.3.5 Expression parameters

Expression parameters use the ODA human-readable expression notation defined in normative annex A of ISO 8613–2. Its application to ODL is specified in this sub-clause.

NOTE – Construction expressions are discussed in E.4.2.1.

E.3.5.1 Delimiters

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

H(hexadecimal string)

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

E.3.5.2 Names and identifiers

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

An object type is represented by its ODL name.

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

An object identifier is represented by an SGML unique identifier.

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

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

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

E.3.5.3 String literals

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

E(general entity name)

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

E.3.6 Parameters requiring names or identifiers

Object types, object class identifiers, and object identifiers, are represented as specified in E.3.5.2.

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

EXAMPLE – ID(myid)

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

E.3.7 Special SGML constructs

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

E.4 Shared attributes

E.4.1 Identification attributes

E.4.1.1 Object type

E.4.1.1.1 Logical objects

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

- a) if the content is declared to be a data element or a choice of data elements, the object is a basic logical object;
- b) if the element is the document element, the object is the document logical root;
- c) in all other cases, the object is a composite logical object.

E.4.1.1.2 Layout objects

The attribute "object type" is declared as follows:

objtype NAME #FIXED ODLname

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

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

E.4.1.2 Object identifier

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

id ID #IMPLIED

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

E.4.1.3 Object class identifier

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

E.4.2 Construction attributes

E.4.2.1 Generator for subordinates

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

NOTE – The content model syntax differs only in notational constructs from the human-readable construction expression in annex A of ISO 8613–2.

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

1. In the logical DTD, the following attribute is defined for it:
ignore NAME #FIXED ignore
2. In the layout DTD, the object type attribute is defined for it as follows:
objtype NAME #FIXED ignore

E.4.2.2 Content generator and generic content information

E.4.2.2.1 Layout structure

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

congen CDATA #FIXED 'string expression'

and the attribute "content information" is declared as:

coninfo ENTITIES #FIXED 'entity names'

E.4.2.2.2 Link attribute definition

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

congen CDATA 'string expression'

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

gentype NAME "CONGEN"

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

icongen CDATA #IMPLIED

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

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

ucongen CDATA yes

E.4.3 Relationship attributes

E.4.3.1 Object class

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

E.4.3.2 Subordinates

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

E.4.3.3 Content portions

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

content ENTITIES #REQUIRED

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

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

content ENTITIES #CONREF

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

Generic content is discussed in E.4.2.2.

E.4.3.4 Resource

This attribute is declared as:

resource CDATA #FIXED "table key"

E.4.3.5 Presentation style

See E.8.1.

E.4.4 Content architecture class attributes

E.4.4.1 Content architecture class

This attribute is declared for data elements as:

conarch NAME #FIXED ODLarch

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

E.4.4.2 Content type

This attribute is not recognized in ODL. Its equivalent, "content architecture class", is used instead.

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

E.4.5 Miscellaneous attributes

E.4.5.1 User-readable comments

These are represented by SGML comment declarations.

E.4.5.2 Application comments

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

appcmnt ENTITY #IMPLIED

E.4.5.3 User-visible name

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

E.4.5.4 Bindings

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

binding-name CDATA #IMPLIED

or

binding-name CDATA 'binding-value'

and specified in the form

binding-name = 'binding-value'

where

"binding-name" is an SGML name derived from the ODA binding name; and

"binding-value" is an expression, represented as specified in E.3.5.

E.4.5.5 Default value lists

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

ODLdvm ENTITY #IMPLIED

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

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

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

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

E.5 Layout attributes

E.5.1 Property, formatting, and imaging attributes

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

```
<! -- (C) International Organization for Standardization 1989
    Permission to copy in any form is granted for use with conforming SGML systems and applications as
    defined in ISO 8879, provided this notice is included in all copies.
-->
<! -- Public entity set. Typical invocation:
<!ENTITY % layatt PUBLIC "ISO 8613-5:1989//ENTITIES
    ODA Layout Attributes//EN">
    %layatt;
-->
    <! -- Property Attributes -->
<!ENTITY % ODApos -- position --
    "pos CDATA '0 0'"
    -- fixed or variable: implied by number of parameters --
    -- horizontal position: integer --
    -- vertical position: integer --
    -- offset: (integer,integer,integer,integer) --
    -- separation: (integer,integer,integer) --
    -- alignment: R C L --
    -- fill order: N R -->
<!ENTITY % ODAdim -- dimensions --
    "dim CDATA #IMPLIED"
    -- fixed dimension: integer --
    -- variable page height: (V,integer) --
    -- rule a: (A,(integer,integer)) --
    -- rule b: (B,(integer,integer)) --
    -- maximum size: M -->
<!ENTITY % ODAbor -- border --
```

```

"border CDATA #IMPLIED"
  -- null: N ---
  -- border line width: integer ---
  -- border line type: S DA DO DD DDD I ---
  -- border free space width: integer --->

<!-- Formatting Attributes --->
<!ENTITY % ODAbal  -- balance ---
  "balance CDATA null">
<!ENTITY % ODApath -- layout path: 0 90 180 270 ---
  "laypath NUMBER 270">
<!ENTITY % ODAsrce -- logical source ---
  "logsrce NAME #IMPLIED">
<!ENTITY % ODAperm -- permitted categories ---
  "permcate NAMES null" >

<!-- Imaging Attributes --->
<!ENTITY % ODAiord -- imaging order ---
  "imagord IDREFS #IMPLIED" >
<!ENTITY % ODAtran -- transparency: T O ---
  "trans NAME t" >
<!ENTITY % ODAcol  -- colour: C W ---
  "colour NAME c" >
<!ENTITY % ODAppos -- page position: integer integer ---
  "ppos NUMBERS #IMPLIED">
<!ENTITY % ODAmid  -- medium type ---
  "medium NMTOKENS '9920,14030 u'"
  -- nominal page size: (integer,integer) ---
  -- side of sheet: R V U --->

```

E.5.2 Presentation attributes

The presentation attributes are described in the parts of ISO 8613 in which content architectures are specified.

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

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

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

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

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

- a) P: result attribute specifications in link rules (that is, in presentation styles).
- b) F: like format attributes (that is, in data element start-tags in the layout structure).
- c) FP: both of the above, with the link rules being recognized for the layout process and the layout structure start-tags for the imaging process.

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

NOTE – See how “para” is handled in the example in F.1.2.3.

E.6 Logical attributes

E.6.1 Protection

The attribute “protection” is defined as:

protect NAME unprot — protection: PROTECT UNPROT —

E.6.2 Layout style

See E.7.1.

E.7 Layout style attributes

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

E.7.1 Layout style identifier

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

E.7.2 Layout object class

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

E.7.3 Layout category

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

EXAMPLE – CAT(mycat)

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

E.7.4 Other layout directive attributes

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

E.7.4.1 Layout directives for basic and composite logical objects

```
<! --- (C) International Organization for Standardization 1989
  Permission to copy in any form is granted for use with conforming SGML systems and applications as
  defined in ISO 8879, provided this notice is included in all copies.
-->
<! --- Public text entity. Typical invocation:
<!ENTITY % ldir-bc PUBLIC "ISO 8613-5:1989//TEXT
  Layout Directives: Basic and Composite//EN">
<!ATTLIST clo %ldir-bc; >
```

```
-->
    -- layout object class is not an attribute: see E.7.2 --
    -- 'object type page' is represented by 'PAGE' --
    indiv    CDATA    null    -- indivisibility --
    newlay   CDATA    null    -- new layout object --
    samelay  CDATA    null    -- same layout object --
    synchr   CDATA    null    -- synchronization --
```

E.7.4.2 Layout directives for basic logical objects

```
<! -- (C) International Organization for Standardization 1989
    Permission to copy in any form is granted for use with conforming SGML systems and applications as
    defined in ISO 8879, provided this notice is included in all copies.
-->
<! -- Public text entity. Typical invocation:
<!ENTITY % ldir-b PUBLIC "ISO 8613-5:1989//TEXT
    Layout Directives: Basic//EN">
<!ATTLIST blo %ldir-b; %ldir-bc;>
-->
```

blkalign	NAME	r	-- block alignment: R L C N --
concat	NAME	n	-- concatenation: C N --
fillord	NAME	n	-- fill order: N R --
category	NAME	null	-- layout category --
offset	NUMBERS	"0 0 0 0"	-- offset: four integers --
sep	NUMBERS	"0 0 0"	-- separation: three integers --

E.8 Presentation style attributes

E.8.1 Presentation style identifier

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

E.8.2 Other presentation style attributes

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

E.9 Content portion attributes

E.9.1 Identification attributes: content identifier

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

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

E.9.2 Common coding attributes: type of coding

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

```
codetype NAME (default)
```

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

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

E.9.3 Content information attributes

E.9.3.1 Content information

The content information attribute is discussed in E.2.3.

E.9.3.2 Alternative representation

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

altreps ENTITIES #IMPLIED

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

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

E.9.4 Coding attributes

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

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

E.10 Data content notations

E.10.1 Notation declarations for content architectures

ODL notation declarations for data content notations representing the content architecture classes are included in the parts of ISO 8613 where the content-related attributes are defined. Those notations apply to the full function of the content architecture class.

NOTE — If a different content architecture level is used, the external identifier parameter of the standard notation declaration should be changed to identify the correct level.

E.10.2 Content-related public text

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

E.10.2.1 Logical structure

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