Stable Implementation Agreements for Open Systems Interconnection Protocols: Part 22 - ODA Image DAP

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Foreword

This part of the Stable Implementation Agreements was prepared by the Office Document Architecture (ODA) Special Interest Group (SIG) of the Open Systems Environment Implementors' Workshop (OIW). Development of this document application profile has been done in liaison with several organizations. These include the DoD Computer-aided Acquisition and Logistic Support (CALS) Office, Navy's David Taylor Research Center, and the ad-hoc Tiling Task Group.

This document application profile is intended to be suitable for the interchange of large format raster images which may be annotated with character, raster, or geometric revisions.

This part contains four annexes:

a) annex A (normative): Amendments and corrigenda;

b) annex B (informative): Recommended practices;

c) annex C (informative): References to other standards and registers;

d) annex D (informative): Supplementary information on attributes.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as struckout. New and replacement text will be shown as shaded.

This part uses a convention of double and single quotes that has been established by ISO for use in the ODA base standard and related document application profiles. The convention is to use within the text double quotes to accentuate ODA attribute names and single quotes to accentuate values for those attributes.

Table of Contents

List of Figures

List of Tables

Part 22 - ODA Image DAP

0 Introduction

This is the definition of a specification for an Open Document Architecture (ODA) Document Application Profile (DAP) named ODA Image DAP. This DAP is suitable for interchanging documents in formatted form. The documents contain primarily raster graphics images but may also contain character and geometric graphics content portions.

There are two DAP object identifiers supporting this DAP with the only difference being in the encoding of the data stream. One uses the ASN.1 based ODIF encoding. The other uses the SGML/SDIF based ODL encoding. When this document refers to *this profile*, it is referring to this specification regardless of which DAP identifier may be selected to create the data stream.

The DAP is defined in accordance with ISO 8613-1 and CCITT T.411 and follows the standardized proforma and notation defined in ISO 8613-1 Annex F. The DAP is based on ODA as defined in ISO 8613 and the Tiled Raster Graphics Addendum to ISO 8613, Part 7.

1 Scope and field of applications

This DAP specifies an interchange format suitable for transfer of structured documents between equipment designed for raster processing. The documents supported by this DAP are based on a paradigm of an electronic engineering drawing or illustration. Such documents contain one or more pages. Each page consists of a base image in the form of a bi-tonal raster graphics, character, or geometric graphics content. This base image may be further annotated with character, raster graphics or geometric graphics content. These latter content portions serve to provide revision control for the engineering drawing or illustration. There is no restriction on the minimum size of the base image.

This document defines a DAP that allows large format raster documents to be interchanged in a formatted form in accordance with ISO 8613.

It is assumed that, when negotiation is performed by the service using this DAP, all non-basic values are subject to negotiation.

This DAP is independent of the processes carried out in an end system to create, edit, or reproduce raster documents. It is also independent of the means to transfer the document which, for example, may be by means of communication links or exchanged storage media.

The features of a document that can be interchanged using this DAP fall into the following categories:

a) Page format features - these concern how the layout of each page of a document will appear when reproduced;

b) Raster graphics layout and imaging features - these concern how the document content will appear within pages of the reproduced document;

c) Raster graphics coding - these concern the raster graphics representations and control functions that make up the document raster graphics content.

2 Normative references

The following references are required in order to implement this DAP:

2.1 ISO

[**1**] ISO 8613-1 : 1989, *Information processing - Text and Office Systems; Open Document Architecture (ODA) and Interchange Format - Part 1: Introduction and General Principles*;

[**2**] ISO 8613-2 : 1989, *Information processing - Text and Office Systems; Open Document Architecture (ODA) and Interchange Format - Part 2: Document Structures*;

[**3**] ISO 8613-4 : 1989, *Information processing - Text and Office Systems; Open Document Architecture (ODA) and Interchange Format - Part 4: Document Profile*;

[**4**] ISO 8613-5 : 1989, *Information processing - Text and Office Systems; Open Document Architecture (ODA) and Interchange Format - Part 5: Open Document Interchange Format*;

[**5**] ISO 8613-6 : 1989, *Information processing - Text and Office Systems; Open Document Architecture (ODA) and Interchange Format - Part 6: Character Content Architecture*;

[**6**] ISO 8613-7 : 1989, *Information processing - Text and Office Systems; Open Document Architecture (ODA) and Interchange Format - Part 7: Raster Graphics Content Architectures*;

[**7**] ISO 8613-8 : 1989, *Information processing - Text and Office Systems; Open Document Architecture (ODA) and Interchange Format - Part 8: Geometric Graphics Content Architectures*;

[**8**] ISO 8613-1 : 1991, *Information processing - Text and Office Systems; Open Document Architecture (ODA) and Interchange Format - Part 1:Annex F - A Document Application Profile Proforma and Notation*;

[**9**] ISO 8613-7 : (~~to be published~~see CCITT/TSS T.417), *Information processing - Text and Office Systems; Office Document Architecture (ODA) and Interchange Format - Part 7: Amendment - Tiled Raster Graphics Addendum to ISO 8613, Part 7*;

[**10**] ISO 8613-7 : (~~to be published~~see CCITT/TSS T.417), *Information processing - Text and Office Systems; Office Document Architecture (ODA) and Interchange Format - Part 7: Amendment - Additional Bit Order Mapping Addendum*;

[**11**] ISO 646 : 1990, *Information processing - ISO 7-bit coded character sets for information interchange*;

[**12**] ISO 8859-1 : 1983, *Information processing - 8-bit Single-byte coded graphic character sets - Part 1: Latin alphabet No. 1*;

[**13**] ISO 6937-2 : 1983, *Information processing - Coded character sets for text communication - Part 2: Latin alphabet and non-alphabetic characters*;

[**14**] ISO 2022 : 1986, *Information processing - ISO 7-bit and 8-bit coded character sets - Code extension* techniques;

[**15**] ISO 7350 : 1984, *Text communication - Registration of graphic character subrepertoires*;

[**16**] ISO 8824 : 1987, *Information Processing Systems - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1)*;

[**17**] ISO 8825 : 1987, *Information Processing Systems - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)*;

[**18**] ISO 8879 : 1986, *Information processing - Text and office systems - Standard Generalized Markup Language (SGML)*;

[**19**] ISO 8879 : 1986, *Information processing - Text and office systems - Standard Generalized Markup Language (SGML), Amendment 1*;

[**20**] ISO 9069 : 1988, *Information processing - SGML support facilities - SGML Document Interchange Format (SDIF)*.

2.2 CCITT-->ITU

[**19**] Recommendation T.4 : 1988, *Standardization of Group 3 Facsimile Apparatus for Document Transmission*.

[**20**] Recommendation T.6 : 1988, *Facsimile Coding Schemes and Coding Control Functions for Group 4 Facsimile Apparatus*.

[**21**] TSS Recommendation T.417 : 1992, *Information Technology - Open Document Architecture (ODA) and Interchange Formats - Raster Graphics Content Architectures*.

3 Definitions and terminology

3.1 Definitions

The definitions given in ISO 8613-1 are applicable to this document.

3.2 Constituent names

Each constituent that may be included in a document that conforms to this profile has been given a unique name which serves to identify that constituent throughout this profile.

The convention is that full names are used (i.e., no abbreviations are used), two or more words in a name are concatenated and each word begins with a capital. Examples of constituent names used in this profile are CompositePage, DocumentLayoutRoot, and SpecificBlock.

In clause 6, each constituent provided by this profile is underlined once at the point in the text at which the purpose of that constituent is defined. This also serves to identify all the constituents provided by this profile.

The same constituent names are also used in the technical specification in clause 7 so that there is a one-to-one correspondence between the use of these names in clauses 6 and 7.

Although the constituent names relate to the purpose of the constituents, the semantics of constituents must not be implied from the actual names that are used. Also, these names do not appear in an interchanged document but a mechanism for identifying constituents in an interchange document is provided. Thus in an application using this profile, the constituents may be known to the user by different names.

4 Relationship to other DAPs

~~Functionally, this DAP is a functional superset of the CCITT Recommendation T.503, A Document Application Profile for the Interchange of Group 4 Facsimile Documents.~~The raster graphics content portion of this DAP closely aligns with FOD036. The primary exception is that this DAP supports tiled raster graphics and the additional bit order mapping.

5 Conformance

In order to conform to this DAP, a data stream representing a document must meet the requirements specified in 5.1.

The requirements for implementations that originate and/or receive data streams conforming to this DAP are specified in 5.2.

5.1 Data stream conformance

The following requirements apply to the encoding of data streams that conform to these agreements:

a) The data stream shall be encoded in accordance with the ASN.1 encoding rules defined in ISO 8825 or the SGML grammar and syntax of ISO 8879;

b) The data stream shall be structured in accordance with the interchange format defined in clause 8;

c) The document shall be structured in accordance with only the formatted document architecture class specified in clause 7. In addition, the document shall contain all mandatory constituents specified for that class and may optionally contain constituents permitted for that class as specified in clause 7;

d) Each constituent shall contain all those attributes specified as required for that constituent in this profile. Other attributes may be specified provided they are permitted for that constituent;

e) The attributes shall have values within the range of permissible values specified in this profile;

f) The encoded document shall be structured in accordance with the abstract document architecture defined in ISO 8613-2;

g) The encoded document shall be structured in accordance with the characteristics defined in clause 6 and shall contain only those features defined in clause 6.

5.2 Implementation conformance

This clause states the requirements for implementations claiming conformance to this DAP.

A conforming receiving implementation must be capable of receiving *either* any data streams conforming to this profile structured in accordance with ODIF *or* any data streams conforming to this profile structured in accordance with ODL *or* both of these. Receiving usually, but not always, involves recognizing and further processing the data stream elements.

6 Characteristics supported by this DAP

This clause describes the characteristics of documents that can be represented by data streams conforming to this profile. This clause also describes how these characteristics are represented in terms of divisional components of the data streams.

6.1 Overview

This DAP describes the features of ISO 8613 that are needed to support the interchange of documents containing images. It specifies interchange formats for the transfer of structured documents with simple layout structures.

This DAP describes documents that can be interchanged in the formatted form, which facilitates the reproduction of a document as intended by the originator.

The content within the document forming the original or base image(s) may be formatted processable raster graphics, formatted processable geometric graphics, and/or formatted character. This is intended to facilitate the reproduction of the document content as intended by the originator or allows the reformatting of the document content.

The content allowed within the document to annotate revisions to the base image(s) may also be formatted processable raster graphics, formatted processable geometric graphics, and/or formatted character.

This clause describes the layout features that can be represented in documents conforming to this DAP. The features are described in terms that are typical of the user-perceived capabilities and semantics found in a raster document interchange environment.

For the purpose of interchange, a document is represented as a collection of **constituents**, each of which is represented by a set of attributes. The constituents that make up a formatted document are defined below in this clause and are illustrated in figure 1.

Document Profile
Generic Layout Structure (Optional)
Presentation Style (Optional)
Specific Layout Structure
Content Portion Description

Figure 1 - Constituents

Constituents defined as **required** must occur in any document that conforms to this profile. Constituents listed as **optional** may or may not be present in the document, depending on the requirements of the particular document.

The required constituents include:

a) a document profile;

b) layout object descriptions representing a specific layout structure;

c) content portion description.

The only optional constituents are presentation style and generic layout structure.

6.2 Logical constituents

Not applicable.

6.3 Layout constituents

This clause describes the features of the layout objects that can be represented in documents conforming to this DAP.

6.3.1 Overview of the layout characteristics

The document structure allows the document content to be laid out and presented in one or more pages. Each page in a document may consist of a single raster graphics content. This would be the case for an original image of an engineering drawing, illustration, or other raster scanned image. Optionally, each page in a document may consist of an original image which contains raster graphics, geometric graphics, and/or character content, with additional character, raster graphics or geometric graphics content, representing a set of revision annotations of the original image.

A specific layout structure of the document conforming to this application profile consists of a four-level hierarchy consisting of a document layout root, composite pages, frames, and blocks. The document can consist of multiple composite pages where each page represents a single image including any revision annotations. The composite pages consist of frames which in turn contain blocks containing the content associated with the base image and the revision annotation.

Figure 2 is an illustration of the features of the document layout structure supported by this DAP.

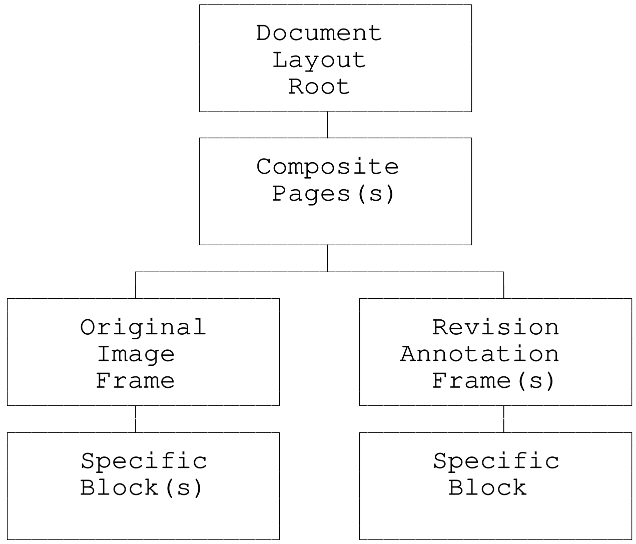

Figure 2 - Document layout structure

6.3.2 DocumentLayoutRoot

A DocumentLayoutRoot is the top level in a document layout structure. A DocumentLayoutRoot consists of a sequence of one or more CompositePage constituent constraints.

6.3.3 Page characteristics

Only one constituent constraint is provided to present pages within a document.

A document consists of a sequence of one or more composite pages. In a document's composite page, two types of frames are used to position content information on the page. One frame type is used to position the content representing the original image on the page. Only one frame of this type is allowed per page, but it may contain any number of raster graphics, geometric graphics, or character content portions. The second frame type is used to position a character, raster graphics or geometric graphics content representing a revision annotation on the page. There may be one or more of the frames containing a revision annotation.

A document may consist of multiple pages of different sizes. Each page may be either landscape or portrait orientation. Both orientations are permitted in the document.

6.3.3.1 CompositePage

A CompositePage is a constituent constraint which defines a composite-page that corresponds to the page area used for presenting the sequence of an OriginalImage frame and zero or more RevisionAnnotation frames.

6.3.3.2 Page dimensions

A wide variety of page dimensions are supported including large format raster documents. The dimensions of the pages may be specified as any value, in BMU measurement units, including the larger sizes produced from foldout-size images and roll paper. These sizes apply to both portrait and landscape orientations. The page sizes include: ISO A0-A5, ANSI A-K, Japanese legal and letter, foldouts 27.94 cm (11 in.) X 34.56 cm (14 in.) and 27.94 cm (11 in.) X 43.18 cm (17 in.), and 27.94 cm (11 in.) roll paper.

Dimensions equivalent to or less than the common assured reproduction area (CARA) of ISO A4 and North American Letter (NAL) in portrait or landscape orientation are basic values. Larger page sizes including those produced from roll paper are non-basic and their use must be indicated in the document profile (See table 2).

The default dimensions are the CARA of ISO A4 and North American Letter (A). Any default page dimensions may be specified in the document profile subject to the maximum dimensions defined above by using the "page dimensions" attribute. The "page position" attribute may be used to specify the position of the pel array image on the page. Although actual page dimensions may be used allowing for the raster content to completely fill a page leaving no borders, it is advised that the assured reproduction area (ARA) listed in table 1 be used wherever feasible. See 7.3 of ISO 8613-2 for general rules for positioning pages on presentation surfaces.

6.3.3.3 Nominal page sizes

The nominal page sizes that may be specified are listed in table 1. In addition, 11 inch roll paper of any length is supported. These may be specified in portrait or landscape orientations. All values of nominal page size are non-basic and hence all values used in a document must be indicated in the document profile using the "medium type" attribute (See table 2).

Any of the nominal page sizes defined in table 1, subject to the restriction specified above, may be specified as the default value in the document profile.

Table 1 also includes the recommended ARA. Information loss may occur when a document is reproduced if the dimensions of the CompositePage exceed the ARA for the specified nominal page size.

6.3.4 OriginalImage

An <u>OriginalImage</u> is a constituent constraint which defines a lowest level frame used for laying out the original image of an engineering drawing, illustration or other image. This frame contains one or more SpecificBlocks each of which may contain one of a character content portion, a raster graphics content portion, or a geometric graphics content portion. Note that there must be exactly one OrigninalImage frame on each page.

This type of frame has a fixed position and dimensions. The position, if not specified, defaults to the origin of the page. The dimensions, if not specified, default to the maximum size that can be achieved for the position within the area of the page.

6.3.5 RevisionAnnotation

A RevisionAnnotation is a constituent constraint which defines a lowest level frame used for laying out the revision annotation associated with the original image. This frame contains a single SpecificBlock containing either a character content portion, a raster graphics content portion or a geometric graphics content portion.

This type of frame has a fixed position and dimensions. This provision provides for the capability of positioning of revision annotation anywhere on the page. Registration of revision annotation over a portion of the original image, as in revision artwork, is accomplished using this capability.

6.3.6 SpecificBlock

A SpecificBlock is a constituent constraint which defines a basic layout object used to position and image the content portions associated with either an OriginalImage or RevisionAnnotation frame.

The position of the block is fixed and defaults to the origin of the superior frame. The dimensions default to the maximum size that can be achieved for the position within the area of the superior frame.

6.3.7 GenericBlock

GenericBlock is a constituent constraint which defines a layout object class which can define content that is common and can be referenced throughout the document. Any content type (raster, character, or geometric graphics) can be defined using this technique.

Table 1 Dimensions for various page sizes

Page type	Size	Size (BMU)	ARA (BMU)
- Metric			
ISO-A5	148mm x 210mm	7015 x 9920	not defined
ISO-A4	210mm x 297mm	9920 x 14030	9240 x 13200
ISO-A3	297mm x 420mm	14030 x 19840	13200 x 18480
ISO-A2	420mm x 594mm	19840 x 28060	18898 x 27118
ISO-A1	594mm x 841mm	28060 x 39680	26173 x 37843
ISO-A0	841mm x 1189mm	39680 x 56120	37843 x 54283
- ANSI, North American (NA)			
NA-A	8.5in x 11in	10200 x 13200	9240 x 12400
NA-B	11in x 17in	13200 x 20400	12744 x 19656
NA-C	17in x 22in	20400 x 26400	19500 x 25800
NA-D	22in x 34in	26400 x 40800	25800 x 39600
NA-E	34in x 44in	40800 x 52800	39600 x 52200
NA-F	28in x 40in	33600 x 48000	32400 x 47400
NA-G	11in x 90in	13200 x 108000	12400 x 106800
NA-H	28in x 143in	33600 x 171600	31400 x 170400
NA-J	34in x 176in	40800 x 211200	39600 x 210000
NA-K	40in x 143in	48000 x 171600	47400 x 170400
NA-Legal	8.5in x 14in	10200 x 16800	9240 x 15480
- Foldouts			
Small	11in x 14in	13200 x 16800	12744 x 15480
NA-B	11in x 17in	13200 x 20400	12744 x 19656
- Japan			
Legal	257mm x 364mm	12141 x 17196	11200 x 15300
Letter	182mm x 257mm	8598 x 12141	7600 x 10200

Tutorial Note - These page sizes are for the portrait orientation.

Table 2 Layout attributes

Attributes	**Basic values**	**Permissible Default values**	**Non-basic values**
Page dimensions **	CARA NA A~~,~~ and ISO A4	CARA NA-A and ISO A4	ARA NA B-K, ISO A0-A3,Japan legal, 11" Roll Paper
Medium-type ** (Nominal page size)	None	None	NA A-K, ISO A0-A5, Japan letter & legal, 11" Roll Paper

Tutorial Note - See table 1 **

6.4 Document layout characteristics

This DAP provides only for formatted documents. Hence, no provision is made for constraining the document layout process other than as implied in the formatted documents supported by this DAP. In particular, these formatted documents are characterized by the following:

a) Documents containing only composite pages;

b) Documents may contain one or more pages;

c) Pages may vary by orientation within a document;

d) As a minimum, each page contains a single raster graphics, geometric graphics, or character content portion, representing the original image;

e) Each page may additionally contain one or more character, raster graphics or geometric graphics content portions representing revision annotation;

f) Content is positioned within fixed position and dimension frames.

6.5 Content layout and imaging control

A document is modelled as an original image with optional revision annotation(s). The original image and the revision annotation(s) may be represented by either character, raster graphics, or geometric graphics content portions, as specified in ISO 8613-6, ISO 8613-7 and ISO 8613-8, respectively.

The content architectures that may be specified using the attribute "content architecture class" are formatted character, formatted processable raster graphics and formatted processable geometric graphics. Any of the above contents may be specified as the default in the document profile.

6.5.1 Raster graphics content

6.5.1.1 Introduction

This clause defines the features that are applicable to the raster graphics content.

The default values for the following features may be specified in the document profile:

a) type of coding (required);

b) compression;

c) pel path;

d) line progression;

e) pel spacing;

f) spacing ratio;

g) number of pels per tile line;

h) number of lines per tile.

The specification in a document of a non-basic value by a presentation or coding attribute must be indicated in the document profile.

6.5.1.2 Raster graphics content architecture

The formatted processable raster graphics content architecture is supported by this DAP and will frequently be the primary content architecture in a document.

In a composite page, multiple content portions may be associated with the original image, whereas only one content portion may be associated with a given revision annotation.

6.5.1.3 Raster graphics encoding methods

The content may be encoded in accordance with the encoding schemes defined in CCITT Recommendations T.4 and T.6. In the case of T.4, either the one-dimensional or two dimensional encoding scheme may be used. Also the ‘bit-map encoding’ scheme defined in ISO 8613-7 may be used. All these forms of encoding may be used in a single document and all are basic values. ‘Uncompressed’ mode of encoding may also be used but only as a non-basic value.

In a content portion, it is required that the coding attribute "number of pels per line" is specified. The coding attribute "number of lines" may also be specified. No restriction is placed on the values that may be specified for these coding attributes. This profile places no constraints on the size of the pel arrays that may be used.

The type of coding method used is specified by the attribute "type of coding". The use of this attribute is mandatory in the "document architecture defaults" of the document profile to define the default value of either ‘T.6 encoding’ (untiled), ‘T.6 encoding - MSB’ (untiled), or ‘tiled encoding’. The use of this attribute in the description of the content portions is non-mandatory. If this attribute is not specified for a particular content portion, then the default value specified in the "document architecture defaults" of the document profile is used.

~~If~~ When the tiled encoding method is used~~,~~ and if the default value of 512 for the "number of pels per tile line" and "number of lines per tile" ~~must~~ is to be used~~. No other values are supported, therefore~~, these two attributes do not need to be specified. All other values are non-basic. If the "tile types" attribute is not present, then all tiles will be T.6 encoded. If it is present, then there must be a value specified for each tile in which case only ‘null background’, ‘null foreground’, ‘T.6 encoded’, ‘T.6 encoded - MSB’, or ‘bitmap encoded’ values are supported. The T.4 encodings are not supported. There are no restrictions on the use of the "tiling offset" attribute other than that specified in ISO 8613-7 Addendum.

See table D.1, Annex D, for a tabulated list of the attributes and their basic, default, and non-basic values.

> **NOTE -** ‘T.6 encoded - MSB’ is included in ITU Rec. T.417 but not included in ISO 8613-7:1993.

6.5.1.4 Raster presentation

Raster presentation is controlled by the presentation attributes specified in ISO 8613-7. This DAP provides for additional constraints on these presentation attributes as specified below.

The basic values for the attribute "pel path" supported by this profile are 0 and 90 degrees. The "pel path" values of 180 and 270 degrees are non-basic.

The basic values for the attribute "line progression" supported by this profile is 270 degrees. The "line progression" value of 90 degrees is non-basic.

Any value may be explicitly specified for pel spacing provided that the spacing between pels is not less than 1 BMU. The pel spacing need not be an integer value. The value of ‘null’ may not be specified because the scalable layout process is not supported. The specification of the spacings of 16, 12, 8, 6, 5, 4, 3, 2, and 1 BMU between adjacent pels are basic. The specification of any other spacing is non-basic and must be specified in the document profile.

NOTES

1 The basic pel spacing values listed above are equivalent to resolutions of 75, 100, 150, 200, 240, 300, 400, 600, and 1200 pels per 25.4mm respectively when the BMU is interpreted as 1/1200 inch.

2 The attribute "pel spacing" specifies two integers, the ratio of which determines the pel spacing. No restriction is placed on the values of these integers.

There are no restrictions on the use of the "clipping" attribute. The "image dimensions" attribute is not supported.

There are no restrictions placed on the value of the "spacing ratio" attribute providing that the resultant line spacing is not less than 1 BMU. Also, the line spacing need not be an integral number of BMUs. All values are basic.

See table D.2, Annex D, for a tabulated list of the attributes and their basic, default, and non-basic values.

6.5.2 Character content

The formatted character content is permitted in this DAP for use in either the original image or in revision annotations of that original image.

The specification in a document of a non-basic feature by a presentation attribute or control function must be indicated in the document profile.

6.5.2.1 Character content architecture class

When using character content, only one content portion may be associated with a basic component. The content information in a content portion must be present.

6.5.2.2 Character repertoires

The basic character set supported by this profile is the primary character set of ISO 8859-1. This must be designated to the G0 set and invoked to the GL. Any other graphic character set which is registered in accordance with ISO 2375 may be designated and invoked at any point in the document provided its use is announced in the document profile as a non-basic value using the character presentation attribute "graphic character sets". No locking shift functions are specified in this presentation attribute. The default graphic character sets which apply to the content portions within a document can be specified in the document profile using the presentation attribute "graphic character sets".

Using code extension techniques, the graphic character sets designated and/or invoked at the beginning of a content portion containing character content are specified using the presentation attribute "graphics character sets".

If the character set defined in ISO 6937-2 is designated and invoked, then the use of any sub-repertoire registered according to ISO 7350 may be specified. All sub-repertoires are non-basic and their use must be indicated in the document profile.

6.5.2.3 Code extension techniques

The code extension techniques specified in ISO 2022 may be used subject to the following restrictions:

a) G0 set: only the primary character sets of ISO 6937-2, ISO 8859-X (where ISO 8859-X corresponds to any finalized part of ISO 8859) and a version of ISO 646 may be designated for this set; these character sets may only be invoked in GL;

b) G1, G2, G3 sets: no restrictions are placed on the character sets that may be designated for these sets; these sets may only be invoked in GR;

c) The locking and single shift functions allowed should be restricted to the following:

LS0 for the G0 set

LS1R for the G1 set

LS2R for the G2 set

LS3R for the G3 set

SS2

SS3;

d) When specifying the presentation attribute "graphic character sets", it is necessary to invoke character sets for both GL and GR. Thus an allowed character set must be designated into G0, as specified above, and invoked into GR. It is also necessary to invoke a character set into GR which has been designated into G1, G2 or G3 sets;

e) The empty set should be designated and invoked in GR if no other specific set is invoked into GR.

The announcement and encoding of these functions are to be as specified in ISO 2022.

6.5.2.4 Line spacing

Any value of line spacing may be specified. Values of 150, 200, 300 and 400 BMUs are basic; the use of any other value in a document is non-basic and must be indicated in the document profile. The line spacing may be specified at the beginning of the content associated with a basic component using the presentation attribute "line spacing". The value may be changed anywhere within the content portion using the control functions SVS and SLS.

6.5.2.5 Character spacing

Any value of character spacing may be specified. Values greater than or equal to 100 are basic; the use of any other value in a document is non-basic and must be indicated in the document profile. The character spacing may be specified at the beginning of the content associated with a basic component using the attribute "character spacing". The value may be changed anywhere within a content portion using the control functions SHS or SCS.

6.5.2.6 Character path and line progression

Both horizontal and vertical writing directions may be used within a character content. In the case of horizontal writing, the characters progress either from left to right or from right to left across the page and the line progression is from the top of the page to the bottom. In the case of vertical writing, the characters progress from the top of the page to the bottom and the line progression is from the right to the left. The values of character path and line progression may be specified at the beginning of the content associated with a basic component using the presentation attributes "character path" and "line progression", respectively. These values cannot be changed within a content portion.

6.5.2.7 Character orientation

The character orientation may be specified as 0 or 90 degrees depending on whether vertical or horizontal writing is used. When vertical writing is used, characters are normally orientated at 0 degrees. When horizontal writing is used, characters may be orientated at 0 or 90 degrees. A value of 0 degrees is basic; a value of 90 degrees is non-basic and its use in a document must be indicated in the document profile. The value of the character orientation is specified at the beginning of the content associated with a basic component by the presentation attribute "character orientation". This value cannot be changed within the content.

6.5.2.8 Emphasis

The following modes of emphasising graphic characters may be distinguished:

a) normal rendition;

b) normal intensity;

c) increased intensity (bold);

d) italicised;

e) not italicised;

f) underlined;

g) doubly underlined;

h) not underlined;

i) crossed-out;

j) not crossed-out.

All the above modes of emphasis are basic. If no default mode is explicitly specified in the document profile, then the default mode is normal rendition. The mode of emphasis may be specified at the beginning of the content associated with a basic component using the presentation attribute "graphic rendition". The mode may be changed anywhere within the content using the control function SGR. The mode of emphasis remains in effect within the content associated with a basic component until changed into a mutually exclusive mode or by the specification of ‘normal rendition’. Mutually exclusive modes are normal/increased intensity, italicized/not italicized, underlined/not underlined and crossed out/not crossed-out. One mode from each mutually exclusive set may be in operation at any point in the document content. Normal rendition cancels the effect of all methods of emphasis that are currently in operation and specifies that the text should be displayed in accordance with the default rendition parameters set for the presentation device. Thus, for example, if it is required to ensure that the content is not underlined, then it is necessary to explicitly specify that underlined is not to be used.

6.5.2.9 Tabulation

Tabulation stop positions may be specified at any character position along the character path. Each stop is specified by means of the following:

a) The tabulation position relative to the margin position in the direction opposite to the character path;

b) An alignment qualifier that specifies the type of alignment to be used at the designated tabulation position. The type may be specified as one of the following:

start aligned;

end aligned;

centered;

aligned around.

These alignment qualifiers are defined in ISO 8613-6. If the alignment qualifier is not explicitly specified, then it is assumed that start aligned is to be used. Only one set of tabulation stops can be specified to be applicable to the content associated with a basic component. No limit is placed on the number of tabulation stops that can be specified within a given set. The set of tabulation stop positions associated with the content of a basic component are specified using the presentation attribute "line layout table". Tabulation stop positions are invoked within the content using the control function STAB.

6.5.2.10 Alignment

This feature is concerned with how the first and last characters on each line of character content is to be laid out during the formatting process. The following values of alignment may be specified:

a) start aligned;

b) end aligned;

c) centred;

d) justified.

The semantics of these values are as defined in ISO 8613-6. The presentation attribute "alignment" is used to specify the alignment that is applicable to the content associated with a basic component. The alignment value cannot be changed within a content portion.

6.5.2.11 Fonts

Any number of fonts may used within a document. The fonts used in a particular document are specified in the document profile using the attribute "font list". Further information concerning the specification of font references in the document profile is given in Annex B. The fonts that may be used within the content associated with each basic component are specified by the presentation attribute "character fonts". Up to 10 fonts taken from the list specified by the attribute "font list" may be specified by the attribute "character fonts". The font to be used at the start of the content associated with a basic component is specified using the attribute "graphic rendition". The fonts used within the content may be changed using the control function *SGR*.

6.5.2.12 Reverse character strings

Bi-directional writing is supported by this profile. Hence, a string of characters in a content portion associated with a basic component may be specified to be imaged in the reverse direction of the immediately preceding character string. Such strings can be specified by the control function *SRS* as defined in ISO 8613-6. This control function is provided for cases in which the text belongs to different languages and the character content is written, for example, from left to right or from right to left within the same line of characters, dependent upon the language and/or character set being used.

> **NOTE -** The use of this control function cannot be indicated in the document profile. Thus it is intended that implementations should ignore this control function when reverse character string layout and presentation is not supported.

6.5.2.13 Superscripts and subscripts

Superscripts and subscripts may be specified anywhere within the content associated with a basic component by using the control functions ‘PLU’ and ‘PLD’. The use of these control functions shall be in accordance with ISO 8613-6.

6.5.2.14 Substitution of characters

The control function 'SUB' is provided to represent characters produced by a local system that cannot be represented by a character within a character set supported by this profile.

6.5.2.15 Use of control functions

The following is a list of all the control functions and parameter values (where applicable) that may be specified in character content:

a) SHS - set horizontal spacing;

b) SCS - set character spacing;

c) SVS - set vertical spacing;

d) SLS - set line spacing;

e) SGR - set graphic rendition;

f) STAB - selective tabulation (allowed parameter values: any);

g) SRS - start reverse string (allowed parameters: any);

h) PLD - partial line down;

i) PLU - partial line up;

j) SUB - substitute character;

k) SP - space;

l) CR - carriage return;

m) LF - line feed;

n) - code extension control functions .

6.5.3 Geometric graphics content

The formatted processable graphics content is permitted in this DAP for use in either the original image or in the revision annotation of that image. Such geometric graphics content is encoded as CGM (Computer Graphics Metafile) metafiles in accordance with ISO 8632 and ISO 8613-8. Each CGM figure must consist of a single picture only.

Further information concerning the specification of geometric graphics content information is given in Annex

B.

6.6 Miscellaneous features

6.6.1 Resource documents

A GenericBlock may refer to a corresponding constituent in a resource document. The GenericBlock in the resource document may refer to content portions and to presentation styles that are contained within the resource document. These are the only constituents that may appear in a resource document.

6.6.2 Application comments

Specification and use of the attribute "application comments" is optional.

This attribute is structured so that it contains two fields. The first field is mandatory when the attribute is specified and contains a numeric string which uniquely identifies the constituent constraint applicable to the constituent for which the attribute is specified. This structure is compatible with other International Standard Profiles and facilitates the processing of documents. The identifiers are as follows:

a) DocumentLayoutRoot	0;
b) CompositePage	2;
c) OriginalFrame	46;
d) RevisionAnnotation	47;
e) SpecificBlock	30;
f) GenericBlock	29.

The second field, "external-data", is optional. It is used to contain any type of data outside the scope of ODA, i.e., tile offsets. When used in a SpecificBlock in conjunction with the "type of coding" of ‘tiled encoding’, it contains a sequence of positive integers, one for each tile in the content portion. The sequence of integers ~~is a set of indices representing~~ contains the octet offsets to the beginning of the respective tiles.~~, starting from t~~The beginning of the "content information" is an offset of zero (0). A~~ tile index~~n octet offset of zero(0) indicates that the respective tile is null. The integers will be sequenced in the same order as the tiles. The tiles will be sequenced primarily in the pel path and secondarily in the line progression direction as defined by the presentation attributes.

6.7 Document management features

Every document interchanged in accordance with this DAP must include a document profile containing information which relates to the document as a whole.

The features specified by the document profile are listed below. A definition of the information contained in these features is given in the corresponding attribute definitions in ISO 8613-4.

6.7.1 Document constituent information

This information specifies which constituents are used to represent the document, specifically it indicates which constituents are included in the document. The available attributes are:

a) specific layout structure;

b) generic layout structure;

c) presentation styles (optional);

d) resource document information (optional).

6.7.2 Document characteristics

This information provides document identification information and specifies default values for attributes used in the document. The available attributes are:

a) document application profile;

b) document application profile defaults;

c) document architecture class;

d) content architecture class;

e) interchange format class;

f) ODA version date;

g) raster graphics content defaults.

6.7.3 Non-basic document characteristics

This information specifies the non-basic attribute values specified in the document. The following types of non-basic attribute values may be specified.

a) profile character sets;

b) page dimensions;

c) medium type;

d) raster graphics presentation features.

6.7.3.1 Profile character sets

Some document profile attributes have values consisting of character strings, for example, the document management attributes. The character sets used in these character srings are specified by the document profile attribute "profile character sets".

This attribute "profile character sets" specifies a code extension announcer and designations of character sets, which are subject to the following restrictions:

a) the code extension announcer shall be 04/03 when specified. This code extension announcer means to use G0 and G1 sets in an 8-bit environment and also the invocation of G0 and G1 sets into GL and GR, respectively. Thus, in each attribute to which this attribute applies, invocation shift functions are not necessary because G0 and G1 sets are implicitly invoked by this code extension announcer.

b) G0 set: only ISO-IR6 (the IRV of ISO 646 revised 1991), ISO-IR2 (the primary set of ISO 6937-2), or any other version of ISO 646 may be designated for this set; these graphic character sets are implicitly invoked in GL.

c) G1 set: no restrictions are placed on the graphic character sets that may be designated for this set. These graphic character sets are implicitly invoked in GR.

d) the empty set shall be designated into G1 and invoked into GR if no other specific character set is invoked in GR.

If the attribute "profile character sets" is not specified, then the default defined in [CCITT Recommendation T.410 series | ISO 8613] is assumed.

6.7.4 Document management attributes

Document management attributes contain information about the content of the document and its purpose. Information relating to the following may be specified:

a) document description (see note 1);

b) dates and times;

c) originators;

d) other user information;

e) external references;

f) local file references;

g) content attributes;

h) security information.

NOTE - The document description includes the specification of the document reference.

The attributes that may be used to specify this information are defined in [CCITT Recommendation T.414 | ISO 8613-4].

The string of characters used in the document management attributes shall belong to the character set indicated in the document profile attribute "profile character sets" (see 6.7.3.1). If the latter attribute is not explicitly specified in the document profile, then the default character set is the minimum subrepertoire of ISO 6937-2.

The control functions space (SP), carriage return (CR) and line feed (LF) may also be used within the character strings, but no other control functions are allowed. Therefore, the graphic character set cannot be changed in the document management attributes.

NOTE - The attributes applicable to the document profile are defined in table D.3, Annex D.

7 Specification of constituent constraints

7.1 Document profile constraints

7.1.1 Macro definitions

```
-- General macros --

DEFINE(FDA, "{'formatted'}")

DEFINE(DAC,"DocumentProfile (Document-architecture-class)")

DEFINE(FC,"          ASN.1{2 8 2 6 0}")  -- Character formatted --
DEFINE(FPR,"         ASN.1{2 8 2 7 2}")  -- Raster graphics formatted processable --
DEFINE(FPG,"         ASN.1{2 8 2 8 0}")  -- Geometric graphics formatted processable --

-- Basic page dimensions. --
DEFINE(BasicPageDimension,"
REQ #horizontal-dimension {REQ #fixed-dimension { 1..9240 }},
REQ #vertical-dimension {REQ #fixed-dimension { 1..12400 }}
| REQ #horizontal-dimension {REQ #fixed-dimension { 1..12400 }},
REQ #vertical-dimension {REQ #fixed-dimension { 1..9240 }}
")
-- Any size equal to or smaller than CARA (Common Assured Reproduction Area) of ISO A4 and NA A.
Both Portrait and Landscape may be specified. --

-- Non-basic page dimensions. --
DEFINE(NonBasicPageDimensions,"
   {REQ #horizontal-dimension {REQ #fixed-dimension {1..39680}},
```

```
    REQ #vertical-dimension {REQ #fixed-dimension {12401..56120}}}
    | {REQ #horizontal-dimension {REQ #fixed-dimension {9241..39680}},
    REQ #vertical-dimension {REQ #fixed-dimension {1..56120}}}
                          -- up to ISO A0 portrait  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {1..56120}},
    REQ #vertical-dimension {REQ #fixed-dimension {9241..39680}}}
    | {REQ #horizontal-dimension {REQ #fixed-dimension {12401..56120}},
    REQ #vertical-dimension {REQ #fixed-dimension {1..39680}}}
                          --  up to ISO A0 landscape  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {1..48000}},
    REQ #vertical-dimension {REQ #fixed-dimension {12401..211200}}}
    | {REQ #horizontal-dimension {REQ #fixed-dimension {9241..48000}},
    REQ #vertical-dimension {REQ #fixed-dimension {1..211200}}}
                          -- up to ANSI J/K portrait  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {1..211200}},
    REQ #vertical-dimension {REQ #fixed-dimension {9241..48000}}}
    | {REQ #horizontal-dimension {REQ #fixed-dimension {12401..211200}},
    REQ #vertical-dimension {REQ #fixed-dimension {1..48000}}}
                          --  up to ANSI J/K landscape  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {1..12141}},
    REQ #vertical-dimension {REQ #fixed-dimension {12401..17196}}}
    | {REQ #horizontal-dimension {REQ #fixed-dimension {9241..12141}},
    REQ #vertical-dimension {REQ #fixed-dimension {1..17196}}}
                          -- up to Japanese legal portrait  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {1..17196}},
    REQ #vertical-dimension {REQ #fixed-dimension {9241..12141}}}
    | {REQ #horizontal-dimension {REQ #fixed-dimension {12401..17196}},
    REQ #vertical-dimension {REQ #fixed-dimension {1..12141}}}
                          --  up to Japanese legal landscape  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {13200}},
    REQ #vertical-dimension {REQ #fixed-dimension {>= 16801}}}
      --  Any portrait size larger than the typical foldout size (11 in x 14 in) including 11 inch roll paper.  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {>= 16801}},
    REQ #vertical-dimension {REQ #fixed-dimension {13200}}}
     --  Any landscape size larger than the typical foldout size (14 in x 11 in) including 11 inch roll paper
--
    ")

DEFINE(PermissiblePageDimensions,"
    {REQ #horizontal-dimension {REQ #fixed-dimension {1..39680}},
    REQ #vertical-dimension {REQ #fixed-dimension {1..56120}}}
                          -- up to ISO A0 portrait  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {1..56120}},
    REQ #vertical-dimension {REQ #fixed-dimension {1..39680}}}
                          --  up to ISO A0 landscape  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {1..48000}},
    REQ #vertical-dimension {REQ #fixed-dimension {1..211200}}}
                          -- up to ANSI J/K portrait  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {1..211200}},
```

```
    REQ #vertical-dimension {REQ #fixed-dimension {1..48000}}}
                         --  up to ANSI J/K landscape  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {1..12141}},
    REQ #vertical-dimension {REQ #fixed-dimension {1..17196}}}
                         -- up to Japanese legal portrait  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {1..17196}},
    REQ #vertical-dimension {REQ #fixed-dimension {1..12141}}}
                         --  up to Japanese legal landscape  --
    ")

DEFINE(NominalPageSizes,"

-- ISO Page Sizes --
    REQ #horizontal-dimension {7015},  REQ #vertical-dimension {9920}
                         --  ISO A5 Portrait --
    | REQ #horizontal-dimension {9920},  REQ #vertical-dimension {7015}
                         --  ISO A5 Landscape --
    | REQ #horizontal-dimension {9920},  REQ #vertical-dimension {14030}
                         --  ISO A4 Portrait --
    | REQ #horizontal-dimension {14030},  REQ #vertical-dimension {9920}
                         --  ISO A4 Landscape --
    | REQ #horizontal-dimension {14030},  REQ #vertical-dimension {19840}
                         --  ISO A3 Portrait --
    | REQ #horizontal-dimension {19840},  REQ #vertical-dimension {14030}
                         --  ISO A3 Landscape --
    | REQ #horizontal-dimension {19840},  REQ #vertical-dimension {28060}
                         --  ISO A2 Portrait --
    | REQ #horizontal-dimension {28060},  REQ #vertical-dimension {19840}
                         --  ISO A2 Landscape --
    | REQ #horizontal-dimension {28060},  REQ #vertical-dimension {39680}
                         --  ISO A1 Portrait --
    | REQ #horizontal-dimension {39680},  REQ #vertical-dimension {28060}
                         --  ISO A1 Landscape --
    | REQ #horizontal-dimension {39680},  REQ #vertical-dimension {56120}
                         --  ISO A0 Portrait --
    | REQ #horizontal-dimension {56120},  REQ #vertical-dimension {39680}
                         --  ISO A0 Landscape --

-- ANSI Page Sizes --

    | REQ #horizontal-dimension {10200},  REQ #vertical-dimension {13200}
                         --  ANSI A Portrait --
    | REQ #horizontal-dimension {13200},  REQ #vertical-dimension {10200}
                         --  ANSI A Landscape --
    | REQ #horizontal-dimension {10200},  REQ #vertical-dimension {16800}
                         --  ANSI Legal Portrait --
    | REQ #horizontal-dimension {16800},  REQ #vertical-dimension {10200}
                         --  ANSI Legal Landscape --
    | REQ #horizontal-dimension {13200},  REQ #vertical-dimension {20400}
```

```
                                -- ANSI B Portrait --
     | REQ #horizontal-dimension {20400}, REQ #vertical-dimension {13200}
                                -- ANSI B Landscape --
     | REQ #horizontal-dimension {20400}, REQ #vertical-dimension {26400}
                                -- ANSI C Portrait --
     | REQ #horizontal-dimension {26400}, REQ #vertical-dimension {20400}
                                -- ANSI C Landscape --
     | REQ #horizontal-dimension {26400}, REQ #vertical-dimension {40800}
                                -- ANSI D Portrait --
     | REQ #horizontal-dimension {40800}, REQ #vertical-dimension {26400}
                                -- ANSI D Landscape --
     | REQ #horizontal-dimension {40800}, REQ #vertical-dimension {52800}
                                -- ANSI E Portrait --
     | REQ #horizontal-dimension {52800}, REQ #vertical-dimension {40800}
                                -- ANSI E Landscape --
     | REQ #horizontal-dimension {33600}, REQ #vertical-dimension {48000}
                                -- ANSI F Portrait --
     | REQ #horizontal-dimension {48000}, REQ #vertical-dimension {33600}
                                -- ANSI F Landscape --
     | REQ #horizontal-dimension {13200}, REQ #vertical-dimension {108000}
                                -- ANSI G Portrait --
     | REQ #horizontal-dimension {108000}, REQ #vertical-dimension {13200}
                                -- ANSI G Landscape --
     | REQ #horizontal-dimension {33600}, REQ #vertical-dimension {171600}
                                -- ANSI H Portrait --
     | REQ #horizontal-dimension {171600}, REQ #vertical-dimension {33600}
                                -- ANSI H Landscape --
     | REQ #horizontal-dimension {40800}, REQ #vertical-dimension {211200}
                                -- ANSI J Portrait --
     | REQ #horizontal-dimension {211200}, REQ #vertical-dimension {40800}
                                -- ANSI J Landscape --
     | REQ #horizontal-dimension {48000}, REQ #vertical-dimension {171600}
                                -- ANSI K Portrait --
     | REQ #horizontal-dimension {171600}, REQ #vertical-dimension {48000}
                                -- ANSI K Landscape --

-- Japanese --

     | REQ #horizontal-dimension {12141}, REQ #vertical-dimension {17196}
                                -- JIS B4 (Japanese legal) Portrait --
     | REQ #horizontal-dimension {17196}, REQ #vertical-dimension {12141}
                                -- JIS B4 (Japanese legal) Landscape --
     | REQ #horizontal-dimension {8598}, REQ #vertical-dimension {12141}
                                -- JIS B5 (Japanese letter) Portrait --
     | REQ #horizontal-dimension {12141}, REQ #vertical-dimension {8598}
                                -- JIS B5 (Japanese letter) Landscape --

-- Foldouts --
```

```
   | REQ #horizontal-dimension {13200},  REQ #vertical-dimension {16800}
                        --  Foldout Portrait --
   | REQ #horizontal-dimension {16800},  REQ #vertical-dimension {13200}
                        --  Foldout Landscape --
    | REQ #horizontal-dimension {13200},  REQ #vertical-dimension {>= 16801}
    --  Any portrait size larger than the typical foldout size (11 in x 14 in) including 11 inch roll paper --
    | REQ #horizontal-dimension {>= 16801},  REQ #vertical-dimension {13200}
    --  Any landscape size larger than the typical foldout size (14 in x 11 in) including 11 inch roll paper --
")

-- Macro defining permissible code extension announcers  --

DEFINE(CDEXTEN, "  ESC 02/00 05/00,        -- LS0 --
              [ESC 02/00 05/03],      -- LSR1 --
              [ESC 02/00 05/05],      -- LSR2 --
              [ESC 02/00 05/07],      -- LSR3 --
              [ESC 02/00 05/10],      -- SS2 --
              [ESC 02/00 05/11]       -- SS3 --
")


-- Macro defining permitted graphic renditions  --

DEFINE(GRAPHICRENDITIONS "
             {'cancel'|'increased-intensity'
              |'italicised'|'underlined'|'crossed-out'
              |'primary-font'|'first-alternative-font'
              |'second-alternative-font'|'third-alternative-font'
              |'fourth-alternative-font'|'fifth-alternative-font'
1              |'sixth-alternative-font'|'seventh-alternative-font'
              |'eighth-alternative-font'|'ninth-alternative-font'
              |'doubly-underlined'|'normal-intensity'
              |'not-italicised'|'not-underlined'|'not-crossed-out'}...
")


-- Macros defining final character for designation --

DEFINE(FCORE,  "04/02 -- the 94 characters of the IRV of ISO 646
                   (revised 1990) (i.e., ASCII) --")

DEFINE(F646,   "-- a final character designating any version of ISO 646
              except 04/02 --")

DEFINE(F94S,   "-- a final character designating any registered 94 single
              byte graphic character set --")

DEFINE(F94M,   "-- a final character designating any registered 94 multi
              byte graphic character set --")
```

```
DEFINE(F96S,   "-- a final character designating any registered 96 single
               byte graphic character set --")

DEFINE(F96M,   "-- a final character designating any registered 96 multi
               byte graphic character set --")

DEFINE(FEMPTY, "07/14  -- the empty set --")


-- Macros defining designation sequences --

DEFINE(DEG-CORE-GO,  "ESC 02/08 $FCORE")
                -- Designate the 94 characters of the IRV of
                   ISO 646 to G0 --

DEFINE(DEG-646-GO,   "ESC 02/08 $F646")
                -- Designate any version of ISO 646, except 04/02,
                   to GO --

DEFINE(DEG-ANY-G1,   "{ESC 02/09 $F94S
                  |ESC 02/04 02/09 $F94M
                  |ESC 02/13 $F96S
                  |ESC 02/04 02/13 $F96M}")
                -- Designate any character set to G1 --

DEFINE(DEG-ANY-G2,   "{ESC 02/10 $F94S
                  |ESC 02/04 02/10 $F94M
                  |ESC 02/14 $F96S
                  |ESC 02/04 02/14 $F96M}")
                -- Designate any character set to G2 --

DEFINE(DEG-ANY-G3,   "{ESC 02/11 $F94S
                  |ESC 02/04 02/11 $F94M
                  |ESC 02/15 $F96S
                  |ESC 02/04 02/15 $F96M}")
                -- Designate any character set to G3 --

DEFINE(DEG-EMPTY-G1, "ESC 02/09 $FEMPTY")
                -- Designate the empty set to G1 --


-- Macros defining shift functions --

DEFINE(LSO,    "00/15")        -- locking shift invoking G0 to GL --

DEFINE(LS1R,   "ESC 07/14")    -- locking shift invoking G1 to GR --

DEFINE(LS2R,   "ESC 07/13")    -- locking shift invoking G2 to GR --
```

```
DEFINE(LS3R,   "ESC 07/14")    -- locking shift invoking G3 to GR --

DEFINE(SS2,    "08/14")        -- single shift invoking G2 to GL --

DEFINE(SS3,    "08/15")        -- single shift invoking G3 to GL --


-- Macro defining permissible graphic character sets. --

DEFINE(PERMIT-GRCHAR,  "  {$DEG-CORE-GO $LS0
                          |$DEG-646-G0 $LS0},
                          {$DEG-ANY-G1 $LS1R
                           |$DEG-ANY-G2 $LS2R
                           |$DEG-ANY-G3 $LS3R}...
                          |{$DEG-EMPTY-G1 $LS1R}  ")

-- Macro defining default graphic character sets --

DEFINE(DAP-DEFAULT-GRCHAR, "$PERMIT-GRCHAR")


-- Macro defining basic character sets. Note that this macro is defined
   for clarification of the specification and is not to be used in any
   other part of this DAP specification. --

DEFINE(BASIC-GRCHAR, "  $DEG-CORE-G0 $LSO,
                        $DEG-EMPTY-G1 $LS1R  ")


-- Macro defining non-basic character sets --

DEFINE(NON-BASIC-GRCHAR,  "  {$DEG-646-G0
                              |$DEG-ANY-G1
                              |$DEG-ANY-G2
                              |$DEG-ANY-G3}... ")


-- Macro defining character sets used in document profile attributes --

DEFINE(PROFCHAR, "  {$DEG-CORE-G0 $LS0,
                     |$DEG-646-G0 $LS0},
                    {$DEG-ANY-G1 $LS1R
                     |$DEG-ANY-G2 $LS2R
                     |$DEG-ANY-G3 $LS3R
                     |$DEG-EMPTY-G1 $LS1R}  ")


-- Macro defining comments character sets --
```

```
DEFINE(COMCHAR, " {ESC 02/00 05/00,          -- LS0 --
                  [ESC 02/00 05/03],        -- LSR1 --
                  [ESC 02/00 05/05],        -- LSR2 --
                  [ESC 02/00 05/07],        -- LSR3 --
                  [ESC 02/00 05/10],        -- SS2 --
                  [ESC 02/00 05/11]},       -- SS3 --
                 {$DEG-CORE-G0 [LS0]
                  |$DEG-646-G0 [LS0]},
                 {{$DEG-ANY-G1 [$LS1R]
                  |$DEG-ANY-G2 [$LS2R]
                  |$DEG-ANY-G3 [$LS3R]}...
                  |$DEG-EMPTY-G1 $LS1R}}  ")
```

```
-- Macro defining character sets used for alternative representation --

DEFINE(ALTCHAR, "$PROFCHAR")
```

7.1.2 Constituent constraints

7.1.2.1 DocumentProfile

```
{

-- Presence of document constituents --

        REQ     Specific-layout-structure        {'present'},
        PERM    Generic-layout-structure         {'factor-set'},
        PERM    Presentation-styles              {'present'},
        PERM    Resource-document                {ANY_VALUE},
        PERM    Resources       {MUL {REQ #resource-identifier {ANY_VALUE},
                                      REQ #resource-object-class-identifier {ANY_VALUE}}},

-- Document characteristics --

REQ     Document-application-profile             {-- See clause 8 for a definition of the permitted values for
                                                 this attribute. --},

REQ     Document-application-profile-defaults            {

-- Document architecture defaults --

        REQ     #content-architecture-class      {$FPR},
        PERM    #dimensions                      {$PermissiblePageDimensions},
        PERM    #medium-type                     {
                PERM  #nominal-page-size         {$NominalPageSizes},
                PERM  #side-of-sheet             {ANY_VALUE}},
```

```
-- Any permitted medium type.  Both landscape and portrait may be specified.  --

REQ    #type-of-coding              {ASN.1 {2 8 3 7 0} -- T6 encoding --
                                    | ASN.1 {2 8 3 7 5} -- tiled encoding --
                                    | ASN.1 (2 8 3 7 6}  -- T6 encoding - MSB -- },
PERM   #page-position          {ANY_VALUE},
PERM   raster-graphics-contents-defaults       {
       PERM  #pel-path              {ANY_VALUE},
       PERM  #line-progression      {ANY_VALUE},
       PERM  #pel-spacing           {REQ #length {ANY_VALUE},
                                    REQ #pel-spaces {ANY_VALUE}},
       PERM  #spacing-ratio
             {REQ  #line-spacing-value       {ANY_VALUE},
              REQ  #pel-spacing-value        {ANY_VALUE}},
       PERM   #compression          {ANY_VALUE},
       PERM  #number-of-pels-per-tile-line   {ANY_VALUE},
       PERM  #number-of-lines-per-tile                 {ANY_VALUE}},
PERM   #geometric-graphics-content-defaults    {ANY_VALUE},
PERM   #character-content-defaults  {
       PERM #alignment              {ANY_VALUE},
       PERM #character-spacing      {ANY_VALUE},
       PERM #character-fonts        {ANY_VALUE},
       PERM #character-orientation  {'0-degrees' | '90-degrees'},
       PERM #character-path         {'0-degrees' | '90-degrees' | '180-degrees' |
                                    '270-degrees'},
       PERM #code-extension-announcers {$CDEXTEN},
       PERM #graphic-character-sets {$PERMIT-GRCHAR},
       PERM #graphic-character-subrepertoire {ANY_VALUE},
       PERM #graphic-rendition      {$GRAPHICRENDITIONS},
       PERM #line-progression       {'90-degrees' | '270-degrees'},
       PERM #line-spacing           {ANY_VALUE},
       PERM #line-layout-table      {ANY_VALUE}},

       -- End of document architecture defaults --

REQ    Document-architecture-class          {$FDA},
REQ    Content-architecture-classes         {{$FPR | $FPG | $FC}...},
REQ    Interchange-format-class             {-- This attribute required only for ODIF interchange.  See
                                            clause 8 for a definition of the permitted values for this
                                            attribute. --},
REQ    ODA-version
       {REQ #standard-or-recommendation {'~~ISO 8613~~
             CCITT Rec. T.410 series (1992) | ISO/IEC 8613:1993;  version 2.00'},
       REQ #publication-date  {'~~1991-12-31~~1992-05-01'}},
             -- This date represents the date that this DAP was approved.  This is the only
             -- approved value, however, the date will be changed if the DAP is significantly
             -- revised.  If the date is revised, use of the new date is required only when the
             -- additional functionality is being used.  That is, legacy products may continue to
             -- support the earlier DAP.
```

-- Non-basic document characteristics --

```
PERM  Profile-character-sets                {$PROFCHAR},
PERM  Profile-character-sets                {$PROFCHAR},
PERM  Comments-character-sets               {$COMCHAR},
PERM  Alternative-representation-character-sets        {$ALTCHAR},
PERM  Page-dimensions                       {MUL {$NonBasicPageDimensions}},
PERM  Medium-types                          {MUL{
      PERM  #nominal-page-size              {$NominalPageSizes},
      PERM  #side-of-sheet                  {ANY_VALUE}}},
      -- All values of "medium type" are non-basic --
PERM  Coding-attributes                {
      REQ #raster-graphics-coding-attributes {
            ~~REQ~~PERM #compression        {'uncompressed'},
                  PERM #number-of-pels-per-tile-line       {ANY_VALUE} EXCEPT {512},
                  PERM #number-of-lines-per-tile           {ANY_VALUE} EXCEPT {512}}},
PERM  Presentation-features                 {
      PERM  #character-presentation-features     {  MUL {
            | PERM #character-orientation  {'90-degrees'}
            | PERM #character-path                  {'90-degrees', '180-degrees', '270-degrees'}
            | PERM #graphic-character-sets          {ANY_VALUE} EXCEPT {$BASIC-GRCHAR}
            | PERM #graphic-character-subrepertoire {>0}
            | PERM #line-spacing            {ANY_VALUE} EXCEPT {150,200,300,400}
            | PERM #line-progression        {'90-degrees'}}}
      PERM  #Raster-graphics-presentation-features    { PMUL {
            ~~| PERM~~REQ     #pel-path         {'180-degrees' |
                                            '270-degrees'}
            | ~~PERM~~REQ     #line-progression         {'90-degrees'}
            ~~| PERM           #pel spacing     {REQ #length {ANY_VALUE} EXCEPT {16,12,8,6,5,4,3,2,1},~~
                                            ~~REQ #pel spaces {ANY_VALUE} EXCEPT {1}}~~
            | REQ          #pel-spacing             {ANY_VALUE} EXCEPT {16,12,8,6,5,4,3,2,1}
                           -- Any value of #pel-spaces is permitted as basic --
                           -- Basic values of #length are multiples of #pel-spaces as listed --
            | ~~PERM~~REQ     #spacing-ratio
                           {REQ #line-spacing-value         {ANY_VALUE} EXCEPT {1},
                            REQ #pel-spacing-value          {ANY_VALUE} EXCEPT {1}}}}},

      -- End of Non-basic characteristics --
```

-- Additional document characteristics --

```
PERM  Fonts-list        {MUL    {REQ #font-identifier {ANY_VALUE},
                                 REQ #font-reference {ANY_VALUE}}},
```

-- The format of the parameter "font-reference" is defined in annex B --

-- Document management attributes --

-- Document description --

PERM Title {ANY_STRING},
PERM Subject {ANY_STRING},
PERM Document-type {ANY_STRING},
PERM Abstract {ANY_STRING},
PERM Keywords {ANY_~~VALUE~~STRING...},
REQ Document-reference {ANY_VALUE},

-- Dates and times --
PERM Document-date-and-time {ANY_STRING},
PERM Creation-date-and-time {ANY_STRING},
PERM Local-filing-date-and-time {ANY_~~STRING~~VALUE},
PERM Expiry-date-and-time {ANY_STRING},
PERM Start-date-and-time {ANY_STRING},
PERM Purge-date-and-time {ANY_STRING},
PERM Release-date-and-time {ANY_STRING},
PERM Revision-history {ANY_VALUE},

--Originators --
PERM Organizations {ANY_STRING...},
PERM Preparers {ANY_VALUE},
PERM Owners {ANY_VALUE},
PERM Authors {ANY_VALUE},

-- Other user information --
PERM Copyright {ANY_VALUE},
PERM Status {ANY_STRING},
PERM User-specific-codes {ANY_STRING...},
PERM Distribution-list {ANY_VALUE},
PERM Additional-information {ANY_VALUE},

-- External references --
PERM References-to-other-documents {ANY_VALUE},
PERM Superseded-documents {ANY_VALUE},

-- Local file references --
PERM Local-file-references {ANY_VALUE},

-- Content attributes --
PERM Document-size {ANY_~~VALUE~~INTEGER},
PERM Number-of-pages {ANY_INTEGER},
PERM Languages {ANY_STRING},

-- Security information --
PERM Authorization {ANY_VALUE},
PERM Security-classification {ANY_STRING},
PERM Access-rights {ANY_STRING...}

}

7.2 Logical constituent constraints

No logical constituents applicable in this clause.

7.3 Layout constituent constraints

7.3.1 Macro definitions

```
DEFINE(CHAR,"      CONTENT_ID_OF(Character-content-portion)")
DEFINE(RAST,"            CONTENT_ID_OF(Raster-graphics-content-portion)")
DEFINE(GEOM,"      CONTENT_ID_OF(Geometric-graphics-content-portion)")
```

7.3.2 Factor constraints

```
FACTOR:     ANY-LAYOUT     {

SPECIFIC:
PERM  Object-type                    {VIRTUAL},
REQ   Object-identifier              {ANY_VALUE},
PERM  Subordinates                   {VIRTUAL},
PERM  User-visible-name              {ANY_VALUE},
PERM  User-readable-comments         {ANY_VALUE},
}
```

7.3.3 Constituent constraints

7.3.3.1 DocumentLayoutRoot

```
DocumentLayoutRoot:          ANY-LAYOUT  {

SPECIFIC:
REQ   Object-type                    { 'document-layout-root'},
REQ   Subordinates                   {SUB_ID_OF(CompositePage)+}
}
```

7.3.3.2 CompositePage

```
CompositePage:                    ANY-LAYOUT  {

SPECIFIC:
```

```
REQ   Object-type               {'page'},
REQ   Subordinates              {SUB_ID_OF(OriginalImage),
                                [SUB_ID_OF(RevisionAnnotation)+]},
PERM  Dimensions                {$PermissiblePageDimensions},
PERM  Page-position             {ANY_VALUE},
PERM  Medium-type               {REQ #nominal-page-size {$NominalPageSizes},
                                REQ #side-of-sheet {ANY_VALUE}},
PERM  Imaging-order             {ANY_VALUE},
PERM  Application-comments      {{REQ #constraint-name {"2"},
                                PERM #external-data {ANY_VALUE}}
}
```

7.3.3.3 OriginalImage

```
OriginalImage:        ANY-LAYOUT  {

SPECIFIC:
REQ   Object-type               {'frame'},
REQ   Subordinates              {SUB_ID_OF(SpecificBlock)+},
PERM  Position                  {REQ #fixed-position
                                    {REQ #horizontal-position {ANY_VALUE},
                                    REQ #vertical-position   {ANY_VALUE}}},
PERM  Dimensions                {REQ #horizontal-dimension
                                    {REQ #fixed-dimension {ANY_VALUE}},
                                REQ #vertical-dimension
                                    {REQ #fixed-dimension {ANY_VALUE}}},
PERM  Application-comments      {{REQ #constraint-name {"46"},
                                PERM #external-data {ANY_VALUE}}
}
```

7.3.3.4 RevisionAnnotation

```
RevisionAnnotation:   ANY-LAYOUT  {

SPECIFIC:
REQ   Object-type               {'frame'},
REQ   Subordinates              {SUB_ID_OF(SpecificBlock)},
PERM  Position                  {REQ #fixed-position
                                    {REQ #horizontal-position {ANY_VALUE},
                                    REQ #vertical-position   {ANY_VALUE}}},
PERM  Dimensions                {REQ #horizontal-dimension
                                    {REQ #fixed-dimension {ANY_VALUE}},
                                REQ #vertical-dimension
                                    {REQ #fixed-dimension {ANY_VALUE}}},
PERM  Application-comments      {{REQ #constraint-name {"47"},
                                PERM #external-data {ANY_VALUE}}}
```

7.3.3.5 SpecificBlock

```
SpecificBlock:                  {

SPECIFIC:
REQ    Object-type                         {'block'},
REQ    Object-identifier                   {ANY_VALUE},
REQ    Content-portions                    {$CHAR | $RAST | $GEOM},
PERM   Position                            {REQ #fixed-position     {
                                                REQ #horizontal-position {ANY_VALUE},
                                                REQ #vertical-position   {ANY_VALUE}}},
PERM   Dimensions                          {REQ #horizontal-dimension
                                                {REQ #fixed-dimension {ANY_VALUE}},
                                           REQ #vertical-dimension
                                                {REQ #fixed-dimension {ANY_VALUE}}},
PERM   Object-class                        {OBJECT_CLASS_ID_OF(GenericBlock)},
PERM   Content-architecture-class          {$FC | $FPR | $FPG},
PERM   Transparency                        {'transparent' | 'opaque'},
PERM   Colour                              {'colourless' | 'white'},
PERM   User-readable-comments              {ANY_STRING},
PERM   User-visible-name                   {ANY_STRING}
PERM   Application-comments                {{REQ #constraint-name {"30"},
                                           PERM #external-data {ANY_VALUE}},
                                   -- If tiled encoding, see 8.1.3 and 8.2.3 --
PERM   Presentation-style                  {STYLE_ID_OF(PStyle1)  |  STYLE_ID_OF(PStyle2)  |
                                           STYLE_ID_OF(PStyle3},
          -- PStyle1 for character content, PStyle2 for geometric, & PStyle3 for raster --
PERM   Presentation-attributes             {

  CASE SpecificBlock(Content-portions) OF {

{$CHAR}:
       {PERM  #character-attributes        {
              PERM #alignment              {ANY_VALUE},
              PERM #character-spacing      {ANY_VALUE},
              PERM #character-fonts        {ANY_VALUE},
              PERM #character-orientation  {'0-degrees' | '90-degrees'},
              PERM #character-path         {'0-degrees'  |  '90-degrees'  |  '180-degrees'  |
                                           '270-degrees'},
              PERM #code-extension-announcers {$CDEXTEN},
              PERM #graphic-character-sets {$PERMIT-GRCHAR},
              PERM #graphic-character-subrepertoire {ANY_VALUE},
              PERM #graphic-rendition      {$GRAPHICRENDITIONS},
              PERM #line-progression       {'90-degrees' | '270-degrees'},
              PERM #line-spacing           {ANY_VALUE},
              PERM #line-layout-table      {ANY_VALUE},
}}

{$RAST}:
```

```
        {PERM  #raster-graphics-attributes              {
                 PERM #Pel-path                  {ANY_VALUE},
                 PERM #Line-progression          {ANY_VALUE},
                 PERM #Pel-spacing               {ANY_VALUE},
                 PERM #Spacing-ratio             {REQ #line-spacing-value {ANY_VALUE},
                                                 REQ #pel-spacing-value {ANY_VALUE}},
                 PERM #Clipping                  {ANY_VALUE}}}

{$GEOM}:
        {PERM  #geometric-graphics-attributes {
                 PERM #picture-dimensions        {ANY_VALUE},
                 PERM #picture-orientation       {ANY_VALUE},
                 PERM #text-rendition            {PERM #fonts-list {ANY_VALUE},
                                                 PERM #character-set-lists {ANY_VALUE}}}
}}}
```

7.3.3.6 GenericBlock

```
GenericBlock                    {

GENERIC:
REQ     Object-type                              {'block'},
REQ     Content-portions                         {$CHAR | $RAST | $GEOM},
PERM    Position                                 {REQ #fixed-position     {
                                                          REQ #horizontal-position {ANY_VALUE}
                                                          REQ #vertical-position   {ANY_VALUE}}},
PERM    Dimensions                               {REQ #horizontal-dimension
                                                          {REQ #fixed-dimension {ANY_VALUE}},
                                                 REQ #vertical-dimension
                                                          {REQ #fixed-dimension {ANY_VALUE}}},
REQ     Object-class-identifier                           {ANY_VALUE},
PERM    Resource                                 {ANY_VALUE},
PERM    Content-architecture-class               {$FC | $FPR | $FPG},
PERM    Transparency                             {'transparent' | 'opaque'},
PERM    Colour                                   {'colourless' | 'white'},
PERM    User-readable-comments                   {ANY_STRING},
PERM    User-visible-name                        {ANY-STRING}
PERM    Application-comments                     {{REQ #constraint-name {"29"},
                                                 PERM #external-data {ANY_VALUE}},
                                       -- See 8.2 --
PERM    Presentation-style                       {STYLE_ID_OF(PStyle1)  |  STYLE_ID_OF(PStyle2)  |
                                                 STYLE_ID_OF(PStyle3},
              -- PStyle1 for character content, PStyle2 for geometric, & PStyle3 for raster
PERM    Presentation-attributes                  {

  CASE GenericBlock(Content-portions) OF {

{$CHAR}:
```

```
        {PERM  #character-attributes           {
                PERM #alignment                {ANY_VALUE},
                PERM #character-spacing        {ANY_VALUE},
                PERM #character-fonts          {ANY_VALUE},
                PERM #character-orientation    {'0-degrees' | '90-degrees'},
                PERM #character-path           {'0-degrees' | '90-degrees' | '180-degrees' |
                                               '270-degrees'},
                PERM #code-extension-announcers {$CDEXTEN},
                PERM #graphic-character-sets {$PERMIT-GRCHAR},
                PERM #graphic-character-subrepertoire {ANY_VALUE},
                PERM #graphic-rendition        {$GRAPHICRENDITIONS},
                PERM #line-progression         {'90-degrees' | '270-degrees'},
                PERM #line-spacing             {ANY_VALUE},
                PERM #line-layout-table        {ANY_VALUE},
}}

{$RAST}:
        {PERM  #raster-graphics-attributes             {
                PERM #Pel-path                 {ANY_VALUE},
                PERM #Line-progression         {ANY_VALUE},
                PERM #Pel-spacing              {ANY_VALUE},
                PERM #Spacing-ratio            {REQ #line-spacing-value {ANY_VALUE},
                                               REQ #pel-spacing-value {ANY_VALUE}}
                PERM #Clipping                 {ANY_VALUE}}}

{$GEOM}:
        {PERM  #geometric-graphics-attributes {
                PERM #picture-dimensions       {ANY_VALUE},
                PERM #picture-orientation      {ANY_VALUE},
                PERM #text-rendition           {PERM #fonts-list {ANY_VALUE},
                                               PERM #character-set-lists {ANY_VALUE}}}
}}}
```

7.4 Layout style constraints

No layout style constraints applicable in this clause.

7.5 Presentation style constraints

7.5.1 Macro definitions

No macro definitions are applicable to this clause.

7.5.2 Factor constraints

```
FACTOR:     ANY-PRESENTATION-STYLE {

REQ   Presentation-style-identifier      {ANY_VALUE},
PERM  User-readable-comments             {ANY_STRING},
PERM  User-visible-name                  {ANY_STRING},
}
```

7.5.3 Presentation style constituent constraint

7.5.3.1 PStyle1

```
PStyle1:    ANY-PRESENTATION-STYLE {

      -- This style is used for character content --

PERM  Presentation-attributes            {
      PERM  #character-attributes        {
            PERM #alignment              {ANY_VALUE},
            PERM #character-spacing      {ANY_VALUE},
            PERM #character-fonts        {ANY_VALUE},
            PERM #character-orientation  {'0-degrees' | '90-degrees'},
            PERM #character-path         {'0-degrees' | '90-degrees' | '180-degrees' |
                                         '270-degrees'},
            PERM #code-extension-announcers {$CDEXTEN},
            PERM #graphic-character-sets {$PERMIT-GRCHAR},
            PERM #graphic-character-subrepertoire {ANY_VALUE},
            PERM #graphic-rendition      {$GRAPHICRENDITIONS},
            PERM #line-progression       {'90-degrees' | '270-degrees'},
            PERM #line-spacing           {ANY_VALUE},
            PERM #line-layout-table      {ANY_VALUE}}}
}
```

7.5.3.2 PStyle2

```
PStyle2:    ANY-PRESENTATION-STYLE {

      -- This style is used for geometric graphics content --

PERM  Presentation-attributes  {
      PERM  #geometric-graphics-attributes  {
            PERM #picture-dimensions     {ANY_VALUE},
            PERM #picture-orientation    {ANY_VALUE},
            PERM #text-rendition         {PERM #fonts-list{ANY_VALUE},
```

```
                                                PERM #character-set-list{ANY_VALUE}}}}
}
```

7.5.3.3 PStyle3

```
PStyle3:        ANY-PRESENTATION-STYLE {

        -- This style is used for raster graphics content --

PERM    Presentation-attributes              {
        PERM    #raster-graphics-attributes        {
                PERM #pel-path                     {ANY_VALUE},
                PERM #line-progression             {ANY_VALUE},
                PERM #pel-spacing                  {REQ #length {ANY_VALUE},
                                                   REQ #pel-spaces {ANY_VALUE}},
                PERM #spacing-ratio    {REQ #line-spacing-value {ANY_VALUE},
                                                   REQ #pel-spacing-value {ANY_VALUE}},
                PERM #clipping                     {ANY_VALUE}}}
}
```

7.6 Content portion constraints

7.6.1 Macro definitions

```
DEFINE(TILED,"        ASN.1{2 8 3 7 5}")  -- Tiled raster encoding --
```

7.6.2 Factor constraints

No factor constraints are applicable to this clause.

7.6.3 Constituent constraints

7.6.3.1 Character content portion

```
Character-content-portion         {
REQ     Content-identifier-layout              {ANY_VALUE},
PERM    Type-of-coding                         {ASN.1{2 8 3 6 0}},
PERM    Alternative-representation             {ANY_STRING},
PERM    Content-information
           {CHARACTER, {#STAB  {ANY_VALUE}
                       |#SHS   {ANY_VALUE}
                       |#SGR   {$GRAPHICRENDITIONS}
```

```
                         |#SVS   {ANY_VALUE}
                         |#SLS   {ANY_VALUE}
                         |#SCS   {ANY_VALUE}
                         |#SRS   {ANY_VALUE}
                         |#CR
                         |#LF
                         |#PLD
                         |#PLU
                         |#SP
                         |#SUB
                         |#LS0
                         |#LS1R
                         |#LS2R
                         |#LS3R
                         |#SS2
                         |#SS3
                         |#$DEG-CORE-G0
                         |#$DEG-646-G0
                         |#$DEG-ANY-G1
                         |#$DEG-ANY-G2
                         |#$DEG-ANY-G3
                         |#$DEG-EMPTY-G1
                          }...}
}
```

7.6.3.2 Raster graphics content portion

```
Raster-graphics-content-portion          {
REQ    Content-identifier-layout                  {ANY_VALUE},
PERM   Type-of-coding                             { ASN.1{2 8 3 7 0}  -- T.6 encoding --
                                                  | ASN.1{2 8 3 7 1}  -- T.4 one dimensional --
                                                  | ASN.1{2 8 3 7 2}  -- T.4 two dimensional --
                                                  | ASN.1{2 8 3 7 3}  -- bitmap encoding --
                                                  | ASN.1{2 8 3 7 5}  -- tiled encoding --
                                                  | ASN.1{2 8 3 7 6}  -- T.6 encoding - MSB --
                                                  | ASN.1{2 8 3 7 7}  -- T.4 one dimensional - MSB --
                                                  | ASN.1{2 8 3 7 8}  -- T.4 two dimensional - MSB -- },
PERM   Coding-attributes                          {
       REQ    #raster-graphics-coding-attributes                  {
              PERM #compression                                   {ANY_VALUE},
              PERM #number-of-lines                     {>0},
              REQ   #number-of-pels-per-line                      {>0},
              CASE Raster-graphics-content-portion (Type-of-coding) OF {

              {$TILED}:      {PERM  #number-of-pels-per-tile-line     {~~512~~ANY_VALUE},
                             PERM   #number-of-lines-per-tile         {~~512~~ANY_VALUE},
                             PERM   #tiling-offset                    {ANY_VALUE},
                             PERM   #tile-types                       {'null background' |
```

```
                                                          'null foreground' |
                                                          'T.6 encoded' |
                                                          'bitmap encoded' |
                                                          'T.6 encoded - MSB'}}}},
PERM  Alternative-representation          {ANY_STRING},
PERM  Content-information                 {RASTER}
}
```

7.6.3.3 Geometric graphics content portion

```
Geometric-graphics-content-portion    {
REQ   Content-identifier-layout           {ANY_VALUE},
PERM  Type-of-coding                      {ASN.1{2 8 3 8 0}},
PERM  Alternative-representation          {ANY_VALUE},
PERM  Content-information                 {GEOMETRIC}
}
```

7.7 Additional usage constraints

No other usage constraints are currently defined.

8 Interchange format

Two interchange formats are supported by this profile. The interchange format ODIF (class A) can be used by applications requiring a binary encoding based on ASN.1. The Interchange Format SDIF can be used by applications requiring a SGML based clear text encoding. This latter interchange format is an SGML application, called Office Document Language (ODL). For the purposes of interchange, the ODL ENTITIES are placed in an ASN.1 wrapper, as defined by SDIF. Each encoding form has inherent advantages. Conversion of document encoded in one interchange format into the other should not produce the loss of semantic document information.

8.1 Interchange format ODIF (class A)

8.1.1 Interchange format

The value of the document profile attribute "interchange format" for this interchange format is 'if-a'. This form of ODIF is defined in ISO 8613-5.

The encoding is in accordance with the Basic Encoding Rules for Abstract Syntax Notation One (ASN.1), as defined in ISO 8825.

8.1.2 DAP identifier

The value for the document profile attribute "document application profile" for this interchange format is represented by the following object identifier.

Editor's Note - To be supplied.

8.1.3 Encoding of application comments

ISO 8613-5 define the encoding of the attribute "application comments" as an octet string. This document application profile requires that the encoding within that octet string be in accordance with the ASN.1 syntax specified in the following module definition:

```
NIST_DAPSpecification
DEFINITIONS ::= BEGIN
EXPORTS  Appl-Comm-Encoding;

Appl-Comm-Encoding ::=  SEQUENCE {
        constraint-name         [0] IMPLICIT Printable String
                OPTIONAL,
        external-data           [1] IMPLICIT OCTET STRING           OPTIONAL}

END
```

For SpecificBlock containing a content portion with a "type of coding" of 'tiled encoding', this DAP additionally requires that the encoding within th~~ate~~ "external-data" octet string be in accordance with the ASN.1 syntax specified in the following module definition.

```
NIST-_DAPSpecification
DEFINITIONS  ::=        BEGIN
EXPORTS ~~Object Appl Comm~~Octet-Offset-Encoding;

~~Object Appl Comm~~Octet-Offset-Encoding  ::=    SEQUENCE OF INTEGER
END
```

NOTE - Refer to 6.6 for description of encoding the Octet-Index-Encoding.

8.2 Interchange format SDIF

8.2.1 Interchange format

The document profile attribute "interchange format" does not apply for this interchange format. The SDIF encoding of ODA is defined in Annex E of ISO 8613-5. In addition, ISO 8613-6, -7, and -8 contain additional specifications for this encoding of ODA.

8.2.2 DAP identifier

The value for this attribute "document application profile" for this interchange format is represented by the following object identifier.

> **Editor's Note -** To be supplied.

8.2.3 Encoding of application comments

For SpecificBlock, the encoding of the attribute "application comments" is defined in a data stream conforming to this profile with the following DTD definition:

~~<!-- The following set of declarations may be invoked by using a public entity as follows:~~

~~<!DOCTYPE odaac Public "-//USA-OIW//DTD SGML ENCODING ODA APPLICATION COMMENTS//EN"> -->~~

~~<!-- NOTE: To parse the following Document Type Declaration Subset, place the Document Type declaration" <!DOCTYPE odaac [" at the beginning of the file and "]>" at the end of the file. -->~~

~~<!ELEMENT odaac (objappc)+ >~~

~~<!-- Object application comment -->~~
~~<!ELEMENT objappc O (#PCDATA)>~~

```
<!-- Public document type definition.  Typical invocation:
<!DOCTYPE fodapc PUBLIC "-//USA-OIW//DTD
                                    Application Comments//EN">
-->
<!ELEMENT fodapc    - O     (externl?)>
<!ATTLIST fodapc    consname CDATA  #IMPLIED>
<!ELEMENT externl   - O     (#PCDATA)>
<!ATTLIST externl   loc     ENTITY   #CONREF>
```

For example, a typical SUBDOC for representing the "application comments" of the tile offsets in the SpecificBlock then would look like:

```
<!DOCTYPE fodapc PUBLIC "-//USA-OIW//DTD                          Application Comments//EN">
<fodapc consname="30">
```

8.3 Encoding of raster content information

The encoding of raster content information in the bitmap encoding scheme is that specified in 9.3 of the raster graphics content architecture part of ISO 8613-7, that is, the first pel in the order of bits is allocated to the most significant bit of an octet. The encoding of the code words in the CCITT Recommendation T.4 and T.6 encoding schemes may be done in either the **up** or **down** bit order. The bit order is specified by the attributes "type of coding" or "tile types". The attribute "tile types" is used only when the value for "type of coding" is ‘tiled encoded’. For the **up** order, it is such that the first or only bit of the first code word shall be placed in the least significant bit of the first octet. Subsequent bits of the first and following code words are placed in the direction of more significant bits in the first and following octets. For the **down** order, it is such that the first or only bit of the first code word shall be placed in the most significant bit (MSB) of the first octet. Subsequent bits of the first and following code words are placed in the direction of least significant bits in the first and following octets.

Annex A (normative)

Amendments and corrigenda

A.1 Amendments

A.1.1 Amendments to the base standard

The amendments applicable to this DAP includes the ISO 8613 - Amendment 1: 1990. This amendment includes text to be included in ISO 8613-1 as the following annexes:

a) Annex E: Use of ISO/IEC 10021 (MOTIS) to interchange documents conforming to ISO 8613;

b) Annex F: Document application profile proforma and notation;

c) Annex G: Conformance testing methodology;

d) Annex H: Recording of documents conforming to ISO 8613 on flexible disk cartridges conforming to ISO 9293.

In addition, this amendment addresses the inclusion of the ISO 8613 Technical Corrigenda 1.

This DAP does not include the following features of the amendment:

a) Addendum on security;

b) Addendum on styles;

c) Addendum on alternative representation.

Additionally, this DAP includes features from the Tiled Raster Graphics Addendum to ISO 8613-7, ISO/IEC JTC1/SC18/WG5 901, dated September 1990, and the Additional Bit Order Mapping Addendum to CCITT Rec. T.417|ISO 8613-7, ISO/IEC JTC 1/WG 3, dated July 1991. A new version of [CCITT Rec. T.417 | ISO 8613-7] which also will incorporate the Colour Addendum is scheduled to be issued in 1993.

A.2 Corrigenda

A.2.1 Corrigenda to this DAP

There are no corrigenda to this DAP.

Annex B (informative)

Recommended practices

B.1 Transfer methods for ODA

B.1.1 Conveyance of ODA over CCITT X.400-1984

This recommendation describes how ODA body parts are to be encoded for transmission over a CCITT X.400-1984 service.

An ODA body part is encoded as OdaBodyPart in the definition given below:

```
OdaBodyPart ::= SEQUENCE { OdaBodyPartParameters, OdaData }
OdaBodyPartParameters ::= SET {
        document–application–profile
                [0] IMPLICIT OBJECT IDENTIFIER,
        document–architecture–class
                [1] IMPLICIT INTEGER {
                        formatted (0),
                        processable (1),
                        formatted–processable (2) }
OdaData ::=     SEQUENCE OF Interchange–Data–Element
```

NOTE - It is recommended to transfer an ODA document as a single body part with tag 12:

Oda [12] IMPLICIT OCTETSTRING

The content of the octet string is encoded as OdaBodyPart, defined above. However, this is out of the scope of this profile.

B.1.2 Conveyance of ODA over FTAM

This recommendation describes the File Transfer, Access, and Management (FTAM) Document Type to be used for minimal storage and transfer capabilities of ODA data streams. It is recognized that enhanced capabilities may at some point be added.

When using FTAM to transfer an ODA file, the FTAM-3, "ISO FTAM Unstructured Binary", document type should be specified. However, since files that do not contain ODA data streams can have the same document type, it is left up to the user of application programs that remotely access files using FTAM to know that a given file contains an ODA data stream.

B.1.3 Conveyance of ODA over DTAM

This recommendation provides for information concerning the interchange of ODA based documents with Document Transfer and Manipulation (DTAM) protocols.

DTAM is defined in the T.430-Series of recommendations and is, like ODA, an integral part of the T.400-Series of CCITT Recommendations named *Open Document Architecture, Transfer and Manipulation*.

The T.520-Series of recommendations contain *Communication Application Profiles (CAP)*. Recommendation T.522 describes the Communication Application Profile BT1 for document bulk transfer. Recommendation T.522 is applicable for the Office Document Format Profile (FOD) published in this ISP.

> **NOTE -** The use of BT1 within the end-to-end oriented Telematic Services Telefax 4 and Teletex is described in 7.1 of Recommendation T.561 and 7.1 of Recommendation T.562.

B.1.4 Conveyance of ODA over flexible disks

The recommended method for interchanging ODA documents between systems by the exchange of magnetically recorded Flexible Disk Cartridges is by the use of an annex to ISO 8613-1 (to be published), *Recoding of Documents Conforming to ISO 8613 on Flexible Cartridges Conforming to ISO 9293*. This annex provides for recording each ODA document as a separate file as defined by ISO 9293, *Volume and File Structure of Flexible Disk Cartridges for Information Interchange*.

> **NOTE -** Document encoded in ODL can be stored such that each SGML ENTITY is recorded in a separate file or in the case of an SDIF encoding, the file can be stored in a single file.

B.2 Font reference

The recommended method for specifying a font reference is to be based on ISO 9541. Such a reference is to be specified by the following ASN.1 encoding.

```
Fonts-Reference      ::=      SET {

user-visible-name             (0) IMPLICIT Comment-String OPTIONAL,
user-readable-comment         (1) IMPLICIT Comment-String OPTIONAL,
reference-attributes          (2) IMPLICIT SET OF SET {
          precedence-number             (0) IMPLICIT INTEGER OPTIONAL,
          attributes                    (1) IMPLICIT Font-Attribute-Set,
          user-readable-comment         (2) IMPLICIT Comment-String OPTIONAL }
}
```

Font sizes from 6 to 72 points (100 to 1200 BMU) are intended to be supported by implementation conforming to this informative recommendation. All other values of font sizes may additionally be supported, but implementations may also support using some form of "fallback".

The minimum font properties and values from ISO 9541 that are to be specified in a Font-Attribute-Set be those specified by the following document application profile notation.

```
Font-Attribute-Set   {

PERM      Fontname                              {ANY_VALUE},
```

```
PERM    Standardversion            {-- To be supplied --},
PERM    Dsnsource                  {ANY_VALUE},
PERM    Fontfamily                 {ANY_VALUE},
PERM    Posture                    {‘upright’ | ‘italic-forward’},
PERM    Weight                     {‘light’ | ‘medium’ | ‘bold’},
PERM    Propwidth                  {ANY_VALUE},
PERM    Glyphcomp                  {
        PERM #inclgyphcols                  {ANY_VALUE},
        PERM #exclgyphcols                  {ANY_VALUE},
        PERM #inclgyphs                     {ANY_VALUE},
        PERM #exclgyphs                     {ANY_VALUE} },
PERM    Dsnsize                    {ANY_VALUE},
PERM    Minsize                    {
        PERM #numerator                     {100 .. 1200},
        PERM #denominator                   {1} },
PERM    Maxsize                    {
        PERM #numerator                     {100 .. 1200},
        PERM #denominator                   {1} },
        -- BMU Units equivalent to range of 6..72 point sizes --
PERM    Dsngroup                   {
        PERM #group-code                    {ANY_VALUE},
        PERM #subgroup-code                 {ANY_VALUE},
        PERM #specific-group-code           {ANY_VALUE} },
PERM    Structure                  {ANY_VALUE},
PERM    Wrmodes                    {
        PERM #wrmodename                    {ANY_VALUE},
        PERM #nomescdir                     {‘0-degrees’ | ‘90-degrees’ | ‘180-degrees’ | ‘270-degrees’},
        PERM #esclass                       {ANY_VALUE},
        PERM #avgescx                       {ANY_VALUE},
        PERM #avgescy                       {ANY_VALUE} }
}
```

B.3 ISO 8632 (CGM) constraints for this DAP

It is recommended that geometric graphics content information contain only those elements listed in this portion of the document, in addition to the constraints imposed by ISO 8613-8. It is believed that this subset of the CGM is sufficiently implemented to enable interworking of geometric graphics for application conforming this document application profile.

Where an element has parameters, recommended constraints on the values are given. The "--" symbol indicates that there is no recommended constraint.

Requirements in ISO 8632 and ISO 8613-8 concerning mandatory elements, parameters must be fulfilled.

B.3.1 Delimeter elements

No-Op	See Note 1
Begin Metafile	See Note 2
End Metafile	
Begin Picture	See Note 2
Begin Picture Body	--
End Picture	

B.3.2 Metafile descriptor elements

Metafile Version	1
Metafile Description	See Notes 2, 3
VDC Type	--
Integer Precision	8, 16
Real Precision	(0,9,23), (1,16,16)
Index Precision	16
Colour Precision	8, 16
Colour Index Precision	8, 16
Maximum Colour Index	--
Colour Value Extent	--
Metafile Element List	--
Font List	--
Character Set List	See Note 5
Character Coding Announcer	0, (basic-7-bit), (basic-8-bit)

B.3.3 Picture descriptor elements

Scaling Mode	See Note 6
Colour Selection Mode	--
Line Width Specification Mode	--
Marker Size Specification Mode	--
Edge Width Specification Mode	--
VDC Extent	--
Background Colour	--

B.3.4 Control elements

VDC Integer Precision	16, 32
VDC Real Precision	(0,9,23), (1,16,16)
Auxiliary Colour	--
Transparency	--
Clip Rectangle	--
Clip Indicator	--

B.3.5 Graphical primitive elements

Polyline	See Note 7
Disjoint Polyline	See Note 7
Polymarker	See Note 7
Text	See Note 2

Restricted Text	See Notes 2, 8
Append Text	See Notes 2, 8
Polygon	See Note 7
Polygon Set	See Note 7
Cell Array	See Note 9
Rectangle	--
Circle	--
Circular Arc 3 Point	--
Circular Arc 3 Point Close	--
Circular Arc Centre	--
1Circular Arc Centre Close	--
Ellipse	--
Elliptical Arc	--
Elliptical Arc Close	--

B.3.6 Attribute elements

Line Bundle Index	1-5
Line Type	1-5
Line Width	positive
Line Colour	--
Marker Bundle Index	1-5
Marker Type	1-5
Marker Size	--
Marker Colour	--
Text Bundle Index	1-5
Text Font Index	--
Text Precision	--
Character Expansion Factor	--
Character Spacing	--
Text Colour	--
Character Height	positive
Character Orientation	--
Text Path	--
Text Alignment	--
Character Set Index	--
Alternate Character Set Index	--
Fill Bundle Index	1-5
Interior Style	--
Fill Colour	--
Hatch Index	1-6
Pattern Index	1 .. 8, nx 1-16, ny 1-16
Edge Bundle Index	1-5
Edge Type	1-5
Edge Width	positive
Edge Colour	--
Edge Visibility	--

Fill Reference Point	--
Pattern Table	See Notes 10, 11
Pattern Size	--
Colour Table Specification	See Notes 12, 13
Aspect Source Flags	--

B.3.7 External elements

Message	No action
Application Data	See Note 2

NOTE -

1. An arbitrary sequence of n octets. Where n=0, 1, .., 32767. The sequence of zero or more octets is for padding purposes.

2. The string ocurring in the parametric list of this element shall not contain more than 254 characters, except for data records where the string shall not contain more than 32767 characters.

3. There will be exactly one METAFILE DESCRIPTION element in the metafile. The METAFILE DESCRIPTION string parameter will be used to include the sub-string "ISO FCG13" to label the content information as conforming to this agreement. In addition, the METAFILE DESCRIPTION element should include a sub-string that identifies the generator of this metafile, including company, product, and product version.

4. The only character sets that may be specified are those specified for character content portions. Refer to 7.1, Document Profile Constraints, for further detail on which character sets are supported by this document application profile. The default character set for geometric graphics content is the same as the default character set for character content architecture.

5. The Scale Factor parameter of SCALING MODE element is always a 32-bit floating point value, even when the REAL PRECISION has selected fixed point for other real numbers. It is not apparent in ISO 8632 what the precision of this floating point value is when fixed point has been selected. Its precision shall be (0,9,23).

6. The maximum number of points of this element shall be 1024.

7. The complete restricted text string, including any appended text, shall be included in a metafile conforming to this agreement. The complete restricted text string shall be scaled isotropically such that the specified aspect ratio for the text is not distorted and the string fits into the text extent parallelogram. String of parameters shall not contain any control characters except as allowed by and necessary to implement the character set switching modes which can be selected by basic values of CHAR CODE ANNOUNCER.

8. The maximum number of colour values that can appear in the colour list parameter for the CELL ARRAY element shall be 1048576 (one 1024 x 1024 image).

9. The PATTERN TABLE element shall appear prior to any graphical primitive element to assure that interpreting systems without dynamic pattern update can render the intended effect. Once a given pattern representation is specified and used, it shall not be respecified.

10. Colour Array parameter for the PATTERN TABLE element is 2048. This will support 8 patterns of 16x16. The maximum number of colour values that can appear in a colour array parameter shall be 256 for each PATTERN TABLE element (one 16 x 16 pattern) and 2048 for the complete pattern table itself (eight 16 x 16 patterns).

11. The COLOUR TABLE element shall appear prior to any graphical primitive elements to assure that interpreting systems without dynamic colour update can render the intended effect. Once a given colour representation is

specified and used, it shall not be respecified. For indexed colour selection, either background colour or all colour indexes in the metafile shall have their representations specified or none shall. Colour indexes shall be specified by the COLOUR TABLE element. Background colour shall be specified either by the BACKGROUND COLOUR element or the the colour index 0. For direct colour selection, either the background colour or the colour of each displayed primitvie shall be explicitly specified, or none shall be specified. In other words, either all colours shall be defaulted or none shall be defaulted.

12. The maximum number of colour values that can appear in the Colour List parameter for the COLOUR TABLE element is 64. This will support a 63 entry colour table.

B.4 Interoperability with SGML applications

The recommended method for the exchange of documents between Standard Generalized Markup Language (ISO 8879, SGML) based systems and systems based on this ODA document application profile is by means of exchanging a document representation conforming to these agreements in an encoded form of the SGML language known as the Office Document Language (ODL). ODL is a standardized SGML application for representing documents conforming to the ODA base standard. Such a representation can be converted into the Office Document Interchange Format (ODIF) supported by this document application profile.

Annex C (informative)

References to other standards and registers

[**1**] CCITT Recommendation T.400 : 1988, Introduction to Document Architecture, Transfer and Manipulation;

[**2**] CCITT Recommendation T.411 : 1988, Open Document Architecture (ODA) and Interchange Format: Introduction and General Principles;

[**3**] CCITT Recommendation T.412 : 1988, Open Document Architecture (ODA) and Interchange Format: Document Structures;

[**4**] CCITT Recommendation T.414 : 1988, Open Document Architecture (ODA) and Interchange Format: Document Profile;

[**5**] CCITT Recommendation T.415 : 1988, Open Document Architecture (ODA) and Interchange Format: Open Document Interchange Format;

[**6**] CCITT Recommendation T.416 : 1988, Open Document Architecture (ODA) and Interchange Format: Character Content Architecture;

~~[7] CCITT Recommendation T.417 : 1988, Open Document Architecture (ODA) and Interchange Format: Raster Graphics Content Architecture;~~

[**8**] CCITT Recommendation T.418 : 1988, Open Document Architecture (ODA) and Interchange Format: Geometric Graphics Content Architecture;

[**9**] CCITT Recommendation T.502 : 1990, Document Application Profile PM-11 for the Interchange of Character Content Documents in Processable and Formatted Forms;

[**10**] CCITT Recommendation T.503 : 1984, Document Application Profile for the Interchange of Group 4 Facsimile Documents;

[**11**] CCITT Recommendation T.505 : 1990, Document Application Profile PM-26 for the Interchange of Enhanced Mixed Content Documents in Processable and Formatted Forms;

[**12**] ISO 8571 : 1988, Information processing systems - Open Systems Interconnection - File transfer, access and management;

[**13**] ISO 9070 : 1990, Information processing - SGML support facilities - Registration procedures for public owner identifiers;

[**14**] ISO/TR 9573 : 1988, Information processing - SGML technical report - Techniques for using SGML;

[**15**] ISO 10021 : (to be published), Information processing systems - Text communication - Message Oriented Text Interchange System;

[**16**] ISP FOD11 : (to be published), Office document format profile for the interchange of basic function character content document in processable and formatted forms;

[**17**] ISP ~~FOD26 : (to be published), Office document format profile for the interchange of enhanced function mixed content documents in processable and formatted forms;~~ 11181-1 : 1992, Information Technology - International Standardized Profile FOD26 - Office Document Format: Enhanced Document Structure - Character, Raster Graphics and Geometric Graphics content architecture;

[**18**] ISP ~~FOD36 : (to be published), Office document format profile for the interchange of extended function mixed content documents in processable and formatted forms;~~ 11182-1 : 1992, Information Technology - International Standardized Profile FOD36 - Office Document Format: Extended Document Structure - Character, Raster Graphics and Geometric Graphics content architecture;

[**19**] MIL-R-28002~~A~~B : 19~~90~~2, MILITARY SPECIFICATION, RASTER GRAPHICS REPRESENTATION IN BINARY FORMAT, REQUIREMENTS FOR.

Annex D (informative)

Supplementary information on attributes

Table D.1 - Content coding attributes

Attributes	**Basic values**	**Permissible default values ***	**Non-basic values**
Number-of-pels-per-line	any positive integer	~~None~~any value	None
Number-of-lines	any positive integer	~~None~~any value	None
Compression	compressed	any value	uncompressed
Number-of-pels-per-tile-line	512	512	Any non-negative integer except 512
Number-of-lines-per-tile	512	512	Any non-negative integer except 512
Tiling-offset **	(any non-negative integer < ~~512~~ number-of-pels-per-tile-line, any non-negative integer < ~~512~~ number-of-lines-per-tile)	~~(0,0)~~None	None
Tile-types **	T.6 encoded, bitmap encoded, null background, null foreground, T.6 encoded -MSB	~~T.6 encoded~~None	None
Type-of-coding	T.6 encoding (untiled), bitmap (untiled), tiled encoded, T.4 1D encoding, T.4 2D encoding, T.6 encoding - MSB (untiled), T.4 1D encoding - MSB, T.4 2D encoding - MSB	T.6 encoding, T.6 encoding - MSB, tiled encoding~~ **~~	None

Tutorial Note - * These are permissible default values which may be specified in the document profile. If no values specified in the document profile, then the default values stipulated in the base standard are to be used.

Tutorial Note - ** Attribute only used if "type of coding" is ‘tiled encoded’

~~**Tutorial Note -** ** As specified in the document profile~~

Table D.2 - Presentation attributes

Attributes	Basic values	Permissible default values	Non-basic values
Pel-path	0, 90 deg	~~0 deg~~any value	180, 270 deg
Line-progression	270 deg	~~270 deg~~any value	90 deg
Pel-spacing	16, 12, 8, 6, 5, 4, 3, 2, 1 BMU	~~4 BMU (300)~~any value except 'null'	Any value except 'null'
Spacing-ratio	1	any value	any value except 1
Clipping	Two Coordinate Pairs (any non-negative integer, any non-negative integer)	~~(0,0), (N-1, L-1)~~None	None

Table D.3 - Document profile attributes

Attribute	Class	Permissible values
Specific-layout-structure	m	present
Presentation-styles	nm	present
Document-characteristics	M	
Document-architecture-class	m	formatted
Document-application-profile	m	{-- See clause 8 for a definition of the permitted values for this attribute. --}
Content-architecture-classes	m	{2 8 2 7 2}
Interchange-format-class	m	A
ODA-version	m	ISO 8613, 199~~1-12-31~~2-05-01
Document-architecture-defaults	M	
Content-architecture-class	m	formatted processable raster graphics
Type-of-coding	m	T.6 encoding, tiled encoding, T.6 encoding - MSB
Page-dimensions	nm	See list in table 1, (Default value is ~~NA A,~~ 9240 x ~~13200~~12400 BMU)
Medium-types	nm	See list in table 1~~, (Default value is NA A, 9240 x 13200 BMU)~~
Page-position	nm	any coordinate pair within page
Raster-gr-content-defaults	NM	
Pel-path	nm	0, 90, 180, 270 degrees (0 is normal default)
Line-progression	nm	90, 270 degrees (270 is normal default)
Clipping	nm	any coordinate pair within page
Pel-spacing	nm	16, 12, 8, 6 5, 4, 3, 2, 1 BMU, (Normal default is 4 BMU)
Spacing Ratio	nm	Any value
Non-basic-doc-characteristics	NM	
Profile-character-sets	nm	See 6.7.3.1
Page-dimensions	nm	See table 1
Medium-types	nm	See table 1

Table D.3 - Document profile attributes (concluded)

Attribute	Class	Permissible values
Coding-attributes	NM	
Compression	nm	uncompressed
Number-of-pels-per-tile-line	nm	any value except 512
Number-of-lines-per-tile	nm	any value except 512
Raster-gr-presentation-features	NM	
Pel-path	nm	180, 270 degrees
Line-progression	nm	90 degrees
Pel-spacing	nm	Any value except 16, 12, 8, 6, 5, 4, 3, 2, or 1 BMU
Document-management-attributes *	M	
Document Reference	m	Any string of characters

The following notation is used in the class column of this table:

a) m mandatory attribute

b) nm non-mandatory attribute

c) d defaultable attribute

Capital letters (M, NM, and D) are used for groups of attributes.

Tutorial Note - * There are numerous other attributes (too many to list) that may optionally be used (nm).