Working Implementation Agreements for Open Systems Interconnection Protocols: Part 22 - ODA RASTER DAP (EXTENDED)

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Contact: **Jim Wing, IBM**
SIG Editor: **Frank Spielman, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Office Document Architecture (ODA) Special Interest Group (SIG) of the National Institute of Standards and Technology (NIST) Workshop for Implementors of Open Systems Interconnection (OSI). 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): Addenda and errata;

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 ~~strike~~out. New and replacement text will be shown as shaded.

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Part 22 - ODA Raster DAP (Extended)

0 Introduction

This is the definition of a single specification for two Open Document Architecture (ODA) Document Application Profiles (DAPs) named ODA Raster DAP. The two DAPs differ only 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 either of the DAPs defined by this specification.

This DAP is suitable for interchanging documents in formatted form. The documents contain primarily raster graphics images. However, the raster images can be annotated with character, raster graphics or geometric graphics content portions. This DAP has been prepared by the ODA Special Interest Group of the National Institute of Standards and Technology (NIST) Open Systems Interconnection (OSI) Implementors Workshop. 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 Tiling Addendum to ISO 8613, Part 7.

1 Scope

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 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 features 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; and

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:

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

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

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

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

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

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

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

ISO 8613-1 : (to be published), Information processing - Text and Office Systems; Office Document Architecture (ODA) and Interchange Format - Part 1: DAD - A Document Application Profile Proforma and Notation;

ISO 8613-7 : (to be published), Information processing - Text and Office Systems; Office Document Architecture (ODA) and Interchange Format - Part 7: DAD - Tiled Raster Graphics Addendum to ISO 8613, Part 7;

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

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

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

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

ISO 7350 : 1984, Text communication - Registration of graphic character subrepertoires;

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

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

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

ISO 9069 : 1988, Information processing - SGML support facilities - SGML Document Interchange Format (SDIF);

CCITT Recommendation T.6 : 1988, Facsimile Coding Schemes and Coding Control Functions for Group 4 Facsimile Apparatus.

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 of this profile, 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 of this profile 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.

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 encoding rules defined in ISO 8879;

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

c) The document shall be structured in accordance with only the formatted document architecture class specified in clause 7 of this DAP. 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 of this DAP 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 facilitates the revision 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.

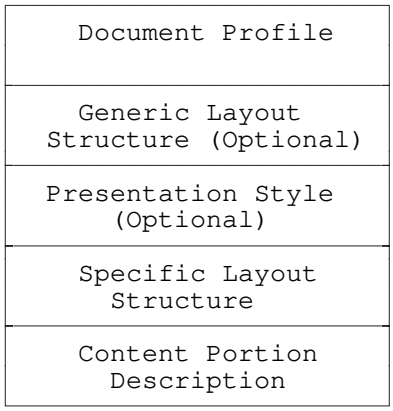

Figure 1 - Constituents

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 document profile,
- layout object descriptions representing a specific layout structure, and
- 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:

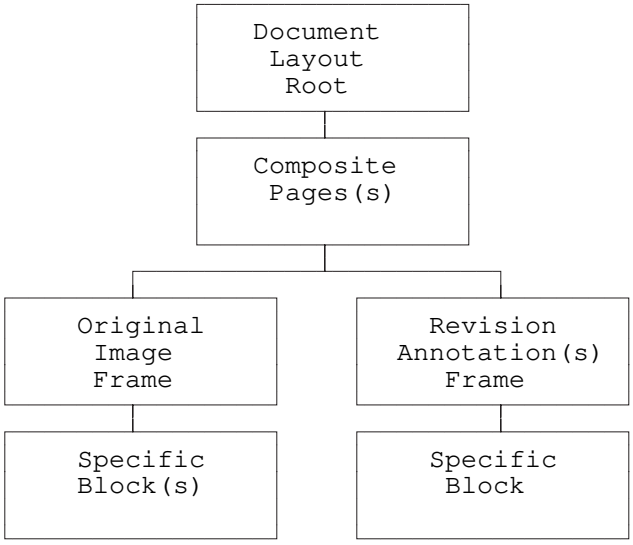

Figure 2 - Document Layout Structure

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.

Dimensions equivalent to or less than the actual (nominal) page sizes of ANSI E in both portrait and landscape orientations are basic values. Larger dimensions (F-K) including those produced from roll paper are non-basic and their use must be indicated in the document profile. Although ISO A0-A4 sizes are not generally used, the A1-A4 sizes do fall within the range of the ANSI E sizes and therefore could be considered basic values (See table 2). A0 size is a non-basic value.

The default dimensions are the Common Assured Reproduction Area (CARA) of 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 ISO 8613-2, clause 7.3, 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. These may be specified in portrait or landscape orientations. All values of nominal page size up to ANSI E size are basic. All sizes larger than ANSI E size and roll paper are non-basic and their use 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 assured reproduction area (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.

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

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

Table 2 Layout Attributes

Attributes	Basic Values	Default Values	Non-Basic Values
Page Dimensions **	CARA NA A-F, CARA NA-Legal, ISO A4-A1, Small Foldout	CARA NA-A	ARA NA G-K, ISO A0, 11" Roll
Medium-type ** (Nominal page size)	NA A-F, NA-Legal, ISO A4-A1, Small Foldout	NA-A	NA G-K, ISO A0, 11" roll

Tutorial Note - See Table 1 **

6.3.4OriginalImage

An OriginalImage 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, defaluts 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.

6.3.5RevisionAnnotation

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.

6.3.6SpecificBlock

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.

6.3.7GenericBlock

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.

6.4Document Layout Characteristics

This DAP provides for only 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.

6.5Content 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. The formatted processable raster graphics is the only content that may be specified as the default in the document profile.

6.5.1Raster Graphics Content

6.5.1.1Introduction

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:

- type of coding (required);

- compression;

- pel path;

- line progression;

- pel spacing;

- spacing ratio;

- clipping.

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

6.5.1.2Raster 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. This is the only default content architecture class that can be specified in the document profile.

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.

6.5.1.3Raster Graphics Encoding Methods

Three encoding methods, CCITT T.6 (untiled), Tiled, and Bitmap are supported by this profile as basic values. Neither the CCITT T.4 one dimensional method nor the CCITT T.4 two dimensional method is supported.

The CCITT Recommendation T.6 Group 4 compression algorithm shall be used in all cases, tiled and untiled, except where it is more efficient to retain an image or tile image in bitmap format or to specify a tile as being either all background or all foreground.

'Uncompressed' mode of encoding may also be used but only as a non-basic feature.

In a content portion, it is required that the Number-of-pels-per-line and Number-of-lines parameters of the Coding-attributes attributes be specified. The value of these parameters shall be a positive number. Otherwise, no constraints are placed on these parameters by this profile. This profile places no

constraints on the size of the pel arrays that may be used as long as the size does not exceed the page dimension size.

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) 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 the Tiled encoding method is used, the default value of 512 for the Number-of-pels-per-tile-line and Number-of-lines-per-tile must be used. No other values are supported, therefore these two attributes do not need to be specified. 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, or bitmap encoded values are supported. T.4 one dimensional and T.4 two dimensional encodings are not supported. There are no restrictions on the use of the Tiling-offset 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.

6.5.1.4Raster 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 Pel-path values supported by this profile are 0 and 90 degrees. The Pel-path values of 180 and 270 degrees are non-basic.

The basic Line-progression value supported by this profile is 270 degrees. The Line-progression value of 90 degrees is non-basic.

The basic Pel-spacing values supported by this profile are the ratios equal to 6 and 4 BMUs between adjacent pels. This corresponds to equivalent resolutions of 200 and 300 pels per 25.4mm (1 in.), respectively when the BMU is interpreted as 1/1200 inch. Values for Pel-spacing other than these ratios are non-basic, i.e., 5, 3, 2, and 1 BMU. These correspond to equivalent resolutions of 240, 400, 600, and 1200 pels per 25.4mm (1 in.).

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 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.

6.5.2Character 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.

6.5.2.1Character 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.

6.5.2.2Character 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.

6.5.2.3Code 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.

6.5.2.5Character 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.

6.5.2.6Character 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.

6.5.2.7Character 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.

6.5.2.8Emphasis

The following modes of emphasising graphic characters may be distinguished:

- normal rendition;

- normal intensity;

- increased intensity (bold);

- italicised;

- not italicised;

- underlined;

- doubly underlined;

- not underlined;

- crossed-out;

- 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.

6.5.2.9Tabulation

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.

6.5.2.10Alignment

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:

- start aligned;
- end aligned;
- centred;
- 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.

6.5.2.11Fonts

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*.

6.5.2.12Reverse 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.

6.5.2.13Superscripts 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.

6.5.2.14Substitution 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.

6.5.2.15Use 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 (see 6.5.4.3)

6.5.3Geometric 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.

6.6Miscellaneous Features

6.6.1Resource 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 doucment. These are the only constituents that may appear in a resource document.

6.6.2Application Comments

Specification of the attribute Application-comments is optional. When used in conjunction with the Type-of-coding of 'Tiled', 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 the octet offsets to the beginning of the respective tiles, starting from the beginning of the "content-information". A tile index 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.

6.7Document 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.

Document constituent information:

a) specific layout structure;

b) generic layout structure;

c) presentation styles (optional);

d) resource document information (optional);

Document characteristics:

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.

Non-basic document characteristics:

a) page dimensions;

b) medium type;

c) raster graphics presentation features.

Document management attributes:

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 applicable to the document profile are defined in Table D.3, Annex D.

7Specification of Constituent Constraints

7.1Document Profile Constraints

7.1.1Macro 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 { <=40800 }},
  REQ #vertical-dimension {REQ #fixed-dimension { <=52800}}}
  --  Any size equal to or smaller than the actual page size of
              ISO A1 and ANSI E portrait.  --
 {REQ #horizontal-dimension {REQ #fixed-dimension { <=52800 }},
  REQ #vertical-dimension {REQ #fixed-dimension { <=40800 }}}
  --  Any size equal to or smaller than the actual page size of
```

```
                ISO A1 and ANSI E landscape.  --
                ")

                -- Non-basic page dimensions. --
                DEFINE(NonBasicPageDimensions,"
        { REQ #horizontal-dimension {REQ #fixed-dimension
                        {40801..48000}},
  REQ #vertical-dimension {REQ #fixed-dimension {52801..211200}}}
    --  Any size larger than the range of basic values in ANSI E
portrait and equal to or smaller than the       full size of ANSI
                        K portrait.  --
        | {REQ #horizontal-dimension {REQ #fixed-dimension
                        {52801..211200}},
  REQ #vertical-dimension {REQ #fixed-dimension {40801..48000}}}
    --  Any size larger than the range of basic values in ANSI E
  landscape and equal to or smaller than       the full size of
                    ANSI K landscape.  --
    | {REQ #horizontal-dimension {REQ #fixed-dimension {13200}},
     REQ #vertical-dimension {REQ #fixed-dimension {>= 16801}}}
      --  Any portrait size larger than the typical foldout size
          (11in x 14in) 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
            (14in x 11in) including 11 in. roll paper --
                ")

                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 {19843}    --  ISO A3 Portrait -- }
              | {REQ #horizontal-dimension {19843},
   REQ #vertical-dimension {14030}    --  ISO A3 Landscape -- }
              | {REQ #horizontal-dimension {19843},
    REQ #vertical-dimension {28063}    --  ISO A2 Portrait -- }
              | {REQ #horizontal-dimension {28063},
   REQ #vertical-dimension {19843}    --  ISO A2 Landscape -- }
              | {REQ #horizontal-dimension {28063},
    REQ #vertical-dimension {39732}    --  ISO A1 Portrait -- }
              | {REQ #horizontal-dimension {39732},
```

```
  REQ #vertical-dimension {28063}    --  ISO A1 Landscape -- }
              | {REQ #horizontal-dimension {39732},
   REQ #vertical-dimension {56173}    --  ISO A0 Portrait -- }
              | {REQ #horizontal-dimension {56173},
  REQ #vertical-dimension {39732}    --  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 -- }

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

    |'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")
```

7.1.2Constituent Constraints

7.1.2.1DocumentProfile

```
{

-- Presence of document constituents --

REQSpecific-layout-structure{'present'},
PERMGeneric-layout-structure{'factor-set'},
PERMPresentation-styles{'present'},
PERMResource-document{ANY_VALUE},
PERMResources{MUL {REQ #resource-identifier {ANY_VALUE},
REQ #resource-object-class-identifier {ANY_VALUE}}},

-- Document characteristics --

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

REQDocument-application-profile-defaults{

-- Document architecture defaults --

REQ#content-architecture-class{$FPR},
PERM#dimensions{$BasicPageDimensions |
$NonBasicPageDimensions},
PERM#medium-type{
PERM #nominal-page-size{$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 -- },
PERM#page-position{ANY_VALUE},
PERMraster-graphics-contents-defaults{
PERM #pel-path{ANY_VALUE},
PERM #line-progression{ANY_VALUE},
PERM #pel-spacing{REQ #length {6 | 4},
REQ #pel-spaces {1}},
PERM #spacing-ratio
{REQ #line-spacing-value{ANY_VALUE},
REQ #pel-spacing-value{ANY_VALUE}},
PERM #compression{'compressed' | 'uncompressed'},
PERM #clipping{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 {$CDEXTAN},
           PERM#graphic-character-sets {$PERMIT-GRCHAR},
    PERM#graphic-character-subrepertoire {$GRAPHICRENDITIONS},
           PERM#graphic-rendition{$GRAPHICRENDITIONS},
        PERM#line-progression{'90-degrees' | '270-degrees'},
                  PERM#line-spacing{ANY_VALUE},
               PERM#line-layout-table{ANY_VALUE}},


              REQDocument-architecture-class{$FDA},
    REQ Content-architecture-classes{[$FPR], [$FPG], [$FC]},
 REQInterchange-format-class{-- See clause 8 for a definition of
          the permitted values for this attribute. --},
                        REQODA-version

          {REQ #standard-or-recommendation {'ISO 8613'},
              REQ #publication-date{"1989-07-04"}},

             -- Non-basic document characteristics --

              PERMProfile-character-sets{$PROFCHAR},
              PERMComments-character-sets{$COMCHAR},
    PERMAlternative-representation-character-sets{$ALTCHAR},
      PERMPage-dimensions{PMUL {$NonBasicPageDimensions}},
                    PERMMedium-types{PMUL{
           PERM#nominal-page-size{$NominalPageSizes},
                PERM#side-of-sheet{ANY_VALUE}}},
                   PERMPresentation-features{
           PERM#character-presentation-features     {
           PERM #character-orientation{'90-degrees'},
 PMUL #character-path{'90-degrees', '180-degrees', '270-degrees'},
     PMUL #graphic-character-sets{ANY_EXCEPT $BASIC-GRCHAR},
        PMUL #graphic-character-subrepertoire {ANY_VALUE},
         PMUL #line-spacing{ANY_EXCEPT 150,200,300,400},
              PERM #line-progression{'90-degrees'}},
       PERM  #Raster-graphics-presentation-features    {
                 PMUL#pel-path{'180-degrees' |
                          '270-degrees'},
              PERM#line-progression{'90-degrees'},
         PMUL#pel-spacing{REQ #length {ANY_EXCEPT 6, 4}
                REQ #pel-spaces {ANY_EXCEPT 1}},
                       PMUL#spacing-ratio
```

```
{REQ #line-spacing-valueANY_EXCEPT {1},
REQ #pel-spacing-valueANY_EXCEPT {1}}}},



-- Additional document characteristics --

PERMFonts-list{PMUL{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 --
       PERMTitle{ANY_STRING},
      PERMSubject{ANY_STRING},
    PERMDocument-type{ANY_STRING},
       PERMAbstract{ANY_STRING},
      PERMKeywords{ANY_VALUE},
 REQ  Document-reference{ANY_VALUE},

     -- Dates and times --
  PERMDocument-date-and-time{ANY_STRING},
  PERMCreation-date-and-time{ANY_STRING},
PERMLocal-filing-date-and-time{ANY_STRING},
   PERMExpiry-date-and-time{ANY_STRING},
   PERMStart-date-and-time{ANY_STRING},
   PERMPurge-date-and-time{ANY_STRING},
  PERMRelease-date-and-time{ANY_STRING},
     PERMRevision-history{ANY_VALUE},

     --Originators --
   PERMOrganizations{ANY_STRING},
     PERMPreparers{ANY_VALUE},
      PERMOwners{ANY_VALUE},
     PERMAuthors{ANY_VALUE},

    -- Other user information --
      PERMCopyright{ANY_VALUE},
      PERMStatus{ANY_STRING},
  PERMUser-specific-codes{ANY_STRING},
    PERMDistribution-list{ANY_VALUE},
  PERMAdditional-information{ANY_VALUE},

     -- External references --
PERMReferences-to-other-documents{ANY_VALUE},
```

```
PERMSuperseded-documents{ANY_VALUE},

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

    -- Content attributes --
PERMDocument-size{ANY_INTEGER},
PERMNumber-of-pages{ANY_INTEGER},
PERMLanguages{ANY_STRING},

    -- Security information --
PERMAuthorization{ANY_VALUE},
PERMSecurity-classification{ANY_STRING},
PERMAccess-rights{ANY_STRING}

}
```

7.2Logical Constituent Constraints

No logical constituents applicable in this clause.

7.3Layout Constituent Constraints

7.3.1 Macro Definitions

```
DEFINE(CHAR,"  CONTENT_ID_OF(CHARACTER)")
DEFINE(RAST,"       CONTENT_ID_OF(RASTER)")
DEFINE(GEOM,"  CONTENT_ID_OF(GEOMETRIC)")
```

7.3.2 Factor Constraints

```
FACTOR:   ANY-LAYOUT          {

SPECIFIC:
PERM Object-type                    {VIRTUAL},
PERM 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                  {'composite-page'},
REQ  Subordinates                 {SUB_ID_OF(OriginalImage),
                             [SUB_ID_OF(RevisionAnnotation)+]},
PERM Dimensions                   {REQ #horizontal-dimension
                                  {REQ    #fixed-dimension
                                  {$BasicPageDimensions    |
                                  $NonBasicPageDimensions}},
                             REQ #vertical-dimension
                                  {REQ    #fixed-dimension
                                  {$BasicPageDimensions    |
                                  $NonBasicPageDimensions}}},
PERM Page-position                {ANY_VALUE},
PERM Medium-type                  {REQ    #nominal-page-size
{$NominalPageSizes},
                             REQ #side-of-sheet {ANY_VALUE}},
PERM Imaging-order                {ANY_VALUE},
PERM Application-comments              {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_INTEGER},
                                  REQ #vertical-position
{ANY_INTEGER}}},
```

```
PERM Dimensions                      {REQ #horizontal-dimension
                                     {REQ #fixed-dimension
{ANY_INTEGER}},
                                   REQ #vertical-dimension
                                     {REQ #fixed-dimension
{ANY_INTEGER}}},
PERM Application-comments                 {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_INTEGER},
                                     REQ #vertical-position
{ANY_INTEGER}}},
PERM Dimensions                      {REQ #horizontal-dimension
                                     {REQ #fixed-dimension
{ANY_INTEGER}},
                                   REQ #vertical-dimension
                                     {REQ #fixed-dimension
{ANY_INTEGER}}},
PERM Application-comments                 {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_INTEGER}
                                     REQ #vertical-position
{ANY_INTEGER}}},
PERM Dimensions                      {REQ #horizontal-dimension
                                     {REQ #fixed-dimension
{ANY_INTEGER}},
                                   REQ #vertical-dimension
                                     {REQ #fixed-dimension
```

```
{ANY_INTEGER}}},
PERM Object-class                    {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                 {ANY_VALUE},
                         -- See clause 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 Content-portions OF {

$CHAR:
     PERM  #character-attributes          {
           PERM      #alignment           {ANY_VALUE},
           PERM      #character-spacing   {ANY_VALUE},
           PERM      #character-fonts     {ANY_VALUE},
           PERM      #character-orientation   {'0-degrees'     |
'90-degrees'},
           PERM      #character-path          {'0-degrees'     |
                                              '90-degrees'     |
                                              '180-degrees'    |
                                              '270-degrees'},
           PERM      #code-extension-announcers {$CDEXTAN},
           PERM      #graphic-character-sets {$PERMIT-GRCHAR},
           PERM      #graphic-character-subrepertoire
{$GRAPHICRENDITIONS},
           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  Object-identifier              {ANY_VALUE},
REQ  Content-portions               {$CHAR | $RAST | $GEOM},
PERM Position                  {REQ #fixed-position{
                                    REQ    #horizontal-position
{ANY_INTEGER}
                                    REQ #vertical-position
{ANY_INTEGER}}},
PERM Dimensions                     {REQ #horizontal-dimension
                                    {REQ #fixed-dimension
{ANY_INTEGER}},
                               REQ #vertical-dimension
                                    {REQ #fixed-dimension
{ANY_INTEGER}}},
REQ  Object-class-identifier                {ANY_VALUE},
PERM Resource                  {ANY_VALUE},
PERM Content-architecture-class          {$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                {ANY_VALUE},
                         -- See clause 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 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 {$CDEXTAN},
           PERM      #graphic-character-sets {$PERMIT-GRCHAR},
           PERM      #graphic-character-subrepertoire
{$GRAPHICRENDITIONS},
           PERM      #graphic-rendition  {$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 {$CDEXTAN},
          PERM      #graphic-character-sets {$PERMIT-GRCHAR},
          PERM      #graphic-character-subrepertoire
{$GRAPHICRENDITIONS},
          PERM      #graphic-rendition  {$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          { P E R M    # f o n t s -
list{ANY_VALUE},
                              P E R M    # c h a r a c t e r - s e t -
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 Content Portion Constraints

7.6.3.1 Character Content Portion

```
{
PERM Content-identifier-layout          {CONTENT_ID_OF(CHARACTER)},
PERM Type-of-coding                  {ASN.1{2 8 2 6 0}},
PERM Alternative-representation          {ANY_STRING},
PERM Content-information
               {CHARACTER, {#STAB   {ANY_VALUE}
                           |#SHS    {0,1,2,3,4}
                           |#SGR    {$GRAPHICRENDITIONS}
                           |#SVS    {0 1 2 4}
                           |#SLS    {ANY_VALUE}
                           |#SCS    {ANY_VALUE}
                           |#SRS    {ANY_VALUE}
                           |#CR
                           |#LF
                           |#PLD
                           |#PLU
                           |#SP
                           |#SUB
                           |#$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

```
{
PERM Content-identifier-layout          {CONTENT_ID_OF(RASTER)},
PERM Coding-attributes                {
     PERM Compression                 {ANY_VALUE},
     REQ  Number-of-lines                  {>0},
     REQ  Number-of-pels-per-line          {>0},
     PERM Type-of-coding              {ASN.1{2  8  3  7  0}    --  T.6
encoding --
                                      |ASN.1{2  8  3  7  3} -- bitmap
encoding --
                                      |  ASN.1{2  8  3  7  5} -- tiled
encoding --},
     CASE Raster-graphics-content-portion (Type-of-coding) OF {

     $TILED:   PERM Number-of-pels-per-tile-line  {512},
               PERM Number-of-lines-per-tile      {512},
               PERM Tiling-offset                    {ANY_VALUE},
               PERM Tile-types                       {'null background' |
                                                  'null foreground' |
                                                  'T.6 encoded' |
                                                  'bitmap encoded'}}},
PERM Alternative-representation          {ANY_STRING},
PERM Content-information                {RASTER}
}
```

7.6.3.3 Geometric Graphics Content Portion

```
{
PERM Content-identifier-layout          {CONTENT_ID_OF(GEOMETRIC)},
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 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 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. For SpecificBlock, this DAP requires that the encoding within that octet string be in accordance with the ASN.1 syntax specified in the following module definition.

```
NISTDAPSpecification
DEFINITION                    ::=  BEGIN
EXPORTS Object-Appl-Comm-Encoding;

Object-Appl-Comm-Encoding  ::=  IMPLICIT SEQUENCE OF
                      INTEGER
```

```
END
```

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:

```
<!DOCTYPE odaac [
<!--
<!DOCTYPE doc PUBLIC "-//USA-OIW//SGML ENCODED ODA APPLICATION
COMMENTS//EN"> -->

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

Editor's Note - The above DTD definitions must be verified by a SGML expert and modified as required.

8.3 Encoding of Raster Content Information

The encoding of raster content information in the bitmap encoding scheme is that specified in clause 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 Group 4 facsimile encoding scheme 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.

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 Draft Addendum (DAD) to ISO 8613-7, Tiled Raster Graphics Addendum, dated January 1990. The DAD has been balloted and the disposition of all comments has been processed by ISO/IEC JTC1/SC 18/WG5. The document was distributed as a CCITT Study Group VIII document (CCITT/SGVIII/Q.27). A new ISO 8613-7 will be issued after the Colour Addendum is incorporated which is anticipated to be in March 1991.

A.2 Corrigenda

A.2.1 Corrigenda to this DAP

An earlier version of this document (September 1990) incorporated all the changes approved at the September 1990 ODA SIG meeting. A summary of these changes are listed below:

a) A technical change to add an option for using SGML/SDIF based data stream encoding. This

required changes to the following clauses: 0, 2, 5.1, 6.7 (table 5), 7.1.2.1 and 8;

b) Editorial changes to clauses 0-6 resulting from a preliminary DOD review and comment period;

c) Editorial changes to clauses 7 and 8 resulting from review and comments by the ODA SIG members at the September 1990 meeting.

The previous version of this document (December 1990) incorporated all the changes approved at the December 1990 ODA SIG meeting. A summary of these changes are listed below:

a) Editorial changes to align with the approved proforma and notation for ODA DAPs;

b) Editorial changes to align with the format for ODA DAP ISPs;

c) Technical changes to provide support for revision annotation on the base, raster scanned image.

The previous version of this document (March 1991) incorporateed all the changes approved at the March 1991 ODA SIG meeting. A summary of these changes are listed below:

a) Editorial changes to correct typographical and grammatical errors;

b) Editorial change to clarify text in "Page Characteristics" paragraph permitting a mixture of nominal page sizes and orientations;

c) Technical changes to provide support for the 'compression' attribute used for CCITT T.6 encodings;

d) Technical changes to remove support of the BasicPage constituent;

e) Technical changes to provide support for ODIF data stream 'A' interchange format, removing support of 'B' interchange format.

This version of the document (June 1991) incorporates all the changes approved at the June 1991 ODA SIG meeting. A summary of these changes are listed below:

a) Editorial changes to correct typographical and grammatical errors;

b) Technical changes to add raster, text, and graphics to 'OriginalImage';

c) Technical changes to add an external resource reference;

d) Technical changes to allow variable image size and position;

e) Technical changes to add all the document management features;

f) Technical changes to remove VPR, VPB, kerning offset, and kerning pairs;

g) Technical changes to require both number-of-lines and number-of-pels-per-line be present and

require both be positive;

h) Technical changes to add generic content;

i) Technical changes to align CGM content with SC24 comments.

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 IDENTIFER,
        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 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

DTAM (Document Transfer and Manipulation) 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 Recommendation T.561, clause 7.1 and Recommendation T.562, clause 7.1.

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.

5. The only character sets that may be specified are those specified for character content portions. Refer to Section 16.7.1, Document profile, 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.

6. 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).

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

8. 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.

9. 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).

10. 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.

11. 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).

12. 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.

13. 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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ISP FOD11 : (to be published), Office document format profile for the interchange of basic function

character content document in processable and formatted forms;

ISP FOD26 : (to be published), Office document format profile for the interchange of enhanced function mixed content documents in processable and formatted forms;

ISP FOD36 : (to be published), Office document format profile for the interchange of extended function mixed content documents in processable and formatted forms;

MIL-R-28002A : 1990, 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	Default Values	Non-Basic Values
Number-of-pels-per-line	any positive integer	None	None
Number-of-lines	any positive integer	None	None
Tiling-offset*	(any non-negative integer < 512, any non-negative integer < 512)	(0,0)	None
Tile-types*	T.6 encoded, bitmap encoded, null background, null foreground	T.6 encoded	None
Type-of-coding	T.6 encoding (untiled), bitmap (untiled), tiled	T.6 encoding	None

Tutorial Note - * Only used if Type-of-coding is "tiled"

Table D.2 Presentation Attributes

Attributes	Basic Values	Default Values	Non-Basic Values
Pel-path	0, 90 deg	0 deg	180, 270 deg
Line-progression	270 deg	270 deg	90 deg
Pel-spacing	6 BMU (200), 4 BMU (300)	4 BMU (300)	5,3,2,1 BMU
Clipping	Two Coord. Pairs (any non-negative integer, any non-negative integer)	(0,0), (N-1, L-1)	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}, {2 8 2 8 0}, {2 8 2 6 0}
Interchange-format-class	m	A
ODA-version	m	ISO 8613, 1989-07-04
Document-architecture-defaults	M	
Content-architecture-class	m	formatted processable raster graphics
Type-of-coding	nm	T.6 Encoding (default) Tiled Encoding
Page-dimensions	nm	See list in table 1, (Default value is NA-A, 9240 x 13200 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	6 BMU (200 pels/in.), 5 BMU (240 pels/in.), 4 BMU (300 pels/in.), 3 BMU (400 pels/in.), 2 BMU (600 pels/in.), 1 BMU (1200 pels/in.), (Normal default is 4 BMU)
Non-basic-doc-characteristics	NM	
Page-dimensions	nm	See table 1, NA-F through NA-K, roll paper
Medium-types	nm	See table 1, NA-F through NA-K, roll paper
Raster-gr-presentation-features	NM	

Pel-path	nm	180, 270 degrees
Line-progression	nm	90 degrees
Pel-spacing	nm	5 BMU (240 pels/in.), 3 BMU (400 pels/in.), 2 BMU (600 pels/in.), 1 BMU (1200 pels/in.)
Document-management-attributes	M	
Document Reference	m	Any string of characters

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

o m mandatory attribute
o nm non–mandatory attribute
o d defaultable attribute
Capital letters (M, NM, and D) are used for groups of attributes.