INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 15124-1

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Information technology — International Standardized Profile FOD126 — Open Document Format: Image Applications — Enhanced document structure — Character, raster graphics, and geometric graphics content architecture —
Part 1:
Document Application Profile (DAP)

Technologies de l'information — Profil normalisé international FOD126 — Format de document ouvert: Applications d'image — Structure de document améliorée — Architecture du contenu des caractères, des graphiques à raster et des graphiques géométriques —

Partie 1: Profil d'application de document

Reference number
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Foreword

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

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. In addition to developing International Standards, ISO/IEC JTC 1 has created a Special Group on Functional Standardization for the elaboration of International Standardized Profiles.

An International Standardized Profile is an internationally agreed, harmonized document which identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or set of functions.

Draft International Standardized Profiles are circulated to national bodies for voting. Publication as an International Standardized Profile requires approval by at least 75 % of the national bodies casting a vote.

International Standardized Profile ISO/IEC ISP 15124-1 was prepared with the collaboration of

- Asia-Oceania Workshop (AOW);

- European Workshop for Open Systems (EWOS);

- Open Systems Environment Implementors' Workshop (OIW).

ISO/IEC ISP 15124 consists of the following part, under the general title *Information technology - International Standardized Profile FOD126 - Open Document Format: Image Applications - Enhanced document structure - Character, raster graphics, and geometric graphics content architecture:*

– *Part 1: Document Application Profile (DAP)*

Further parts may be added.

Annex A forms an integral part of this part of ISO/IEC 15124. Annexes B and C are for information only.

Introduction

This part of ISO/IEC ISP 15124 is defined within the context of Functional Standardization, in accordance with the principles specified by ISO/IEC TR 10000, "Framework and Taxonomy of International Standardized Profiles". The context of Functional Standardization is one part of the overall field of Information Technology (IT) standardization activities, covering base standards, profiles and registration mechanisms. An International Standardized Profile defines a combination of base standards that collectively perform a specific well-defined IT function. Profiles standardize the use of options and other variations in the base standards, and provide a basis for the development of uniform, internationally recognized conformance test suites.

One of the most important roles for an ISP is to serve for the development (by organizations other than ISO and IEC) of internationally recognized tests and test centres. ISPs are produced not simply to "legitimize" a particular choice of base standards and options, but to promote real systems interoperability. The development and widespread acceptance of tests based on this and other ISPs is crucial to the successful realization of this goal.

Development of this document application profile has been done in close cooperation between several organizations. These include ODA expert groups within the Asia-Oceania Workshop (AOW), ITU-T Study Group 8, European Workshop for Open Systems (EWOS) and OSE Implementors' Workshop (OIW). The liaison between these organizations has occurred within meetings of the Profile Alignment Group for ODA (PAGODA). These meetings have focused on the development of a single set of internationally aligned ODA document application profiles. This part of ISO/IEC ISP 15124 is harmonized among the three workshops and has been ratified by the three workshops' plenary assemblies.

The purpose of ISO/IEC ISP 15124 is to facilitate the interworking of basic image applications interchanging documents based on ITU-T Rec. T.410 series | ISO/IEC 8613, Open Document Architecture (ODA) and Interchange Format. This part of ISO/IEC ISP 15124 is suitable for interchanging documents in formatted form and has been defined in accordance with ITU-T Rec. T.411 | ISO/IEC 8613-1. The documents contain primarily raster graphics images but may also contain character and geometric graphics portions. The format of this part of ISO/IEC ISP 15124 is in accordance with ISO/IEC TR 10000-1 and with the standardized proforma and notation defined in Annex F of ITU-T Rec. T.411 | ISO/IEC 8613-1.

Information technology — International Standardized Profile FOD126 — Open Document Format: Image Applications — Enhanced document structure — Character, raster graphics, and geometric graphics content architecture —

Part 1:
Document Application Profile (DAP)

1 Scope

This part of ISO/IEC ISP 15124 specifies an interchange format suitable for transfer of structured documents between equipment designed for raster processing. The documents supported by ISO/IEC ISP 15124 are based on a paradigm of an electronic engineering drawing or illustration. Such documents contain one or more pages. Each page consists of a base image in the form of a bi-tonal raster graphics, character, or geometric graphics content. This base image may be further annotated with character, raster graphics or geometric graphics content. These latter content portions serve to provide revision control for the engineering drawing or illustration. There is no restriction on the minimum size of the base image.

ISO/IEC ISP 15124 allows large format raster documents to be interchanged in a formatted form in accordance with ISO/IEC 8613.

It is assumed that, when negotiation is performed by the service using this part of ISO/IEC ISP 15124, all non-basic values are subject to negotiation.

This part of ISO/IEC ISP 15124 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 part of ISO/IEC ISP 15124 fall into the following categories:

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

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

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

There are two DAP object identifiers supporting this part of ISO/IEC ISP 15124 with the only difference being in the encoding of the data stream. One uses the ASN.1 based ODIF encoding. The other uses the SGML/SDIF based ODL encoding. When this document refers to this profile, it is referring to this specification regardless of which DAP identifier may be selected to create the data stream.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 15124. At the time of publication, the editions indicated were valid. All documents are

subject to revision, and parties to agreements based on this part of ISO/IEC ISP 15124 are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by ISPs to such documents is that they may be specific to a particular edition. members of IEC and ISO maintain registers of currently valid International Standards and ISPs, ITU-T maintains published editions of its current Recommendations.

2.1 Identical Recommendations | International Standards

- ITU-T Recommendations T.411 (1993) | ISO/IEC 8613-1 : 1994, *Information technology - Open Document Architecture (ODA) and interchange format : Introduction and general principles.*

- ITU-T Recommendations T.412 (1993) | ISO/IEC 8613-2 : 1994, *Information technology - Open Document Architecture (ODA) and interchange format : Document structures.*

- ITU-T Recommendations T.414 (1993) | ISO/IEC 8613-4 : 1994, *Information technology - Open Document Architecture (ODA) and interchange format : Document profile.*

- ITU-T Recommendations T.415 (1993) | ISO/IEC 8613-5 : 1994, *Information technology - Open Document Architecture (ODA) and interchange format : Open document interchange format.*

- ITU-T Recommendations T.416 (1993) | ISO/IEC 8613-6 : 1994, *Information technology - Open Document Architecture (ODA) and interchange format : Character content architectures.*

- ITU-T Recommendations T.417 (1993) | ISO/IEC 8613-7 : 1994, *Information technology - Open Document Architecture (ODA) and interchange format : Raster graphics content architectures.*

- ITU-T Recommendations T.418 (1993) | ISO/IEC 8613-8 : 1994, *Information technology - Open Document Architecture (ODA) and interchange format : Geometric graphics content architectures.*

2.2 Paired Recommendations|International Standards equivalent in technical content

- CCITT Rec. X.208 (1988), *Specification of Abstract Syntax Notation One (ASN.1).*

  ISO/IEC 8824 : 1990, *Information technology - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1).*

- CCITT Rec. X.209 (1988), *Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1).*

  ISO/IEC 8825 : 1990, *Information technology - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1).*

- CCITT Rec. T.502, *Document Application Profile PM-11 for the Interchange of Character Content Documents in Processable and Formatted Forms.*

  ISO/IEC ISP 10610-1: 1993, *Information technology - International Standardized Profile FOD11 - Open Document Format: Simple document structure - Character content architecture only - Part 1: Document Application Profile (DAP).*

– CCITT Rec. T.505, *Document Application Profile PM-26 for the Interchange of Mixed Content Documents in Processable and Formatted Forms.*

ISO/IEC ISP 11181-1: 1993, *Information technology - International Standardized Profile FOD26 - Open Document Format: Enhanced document structure - Character, raster graphics and geometric graphics content architectures - Part 1: Document Application Profile (DAP).*

– CCITT Rec. T.506, *Document Application Profile PM-36/ISO/IEC ISP 11182-1 - Open Document Format: Extended document structure - Character, raster graphics and geometric graphics content architectures.*

ISO/IEC ISP 11182-1: 1993, *Information technology - International Standardized Profile FOD36 -Open Document Format: Extended document structure - Character, raster graphics and geometric graphics content architectures - Part 1: Document Application Profile (DAP).*

2.3 Additional references

– CCITT Rec. T.4 (1988), *Standardization of Group 3 Facsimile Apparatus for Document Transmission.*

– CCITT Rec. T.6 (1988), *Facsimile Coding Schemes and Coding Control Functions for Group 4 Facsimile Apparatus.*

– CCITT Rec. T.400 (1988), *Introduction to Document Architecture, Transfer and manipulation.*

– ISO/IEC 646 : 1991, *Information technology - ISO 7-bit coded character set for information interchange.*

– ISO/IEC 2022 : 1994, *Information technology - Character code structure and extension techniques.*

– ISO 2375 : 1985, *Data processing - Procedure for registration of escape sequences techniques.*

– ISO/IEC 6937 : 1994, *Information technology - Coded graphic character set for text communication - Latin alphabet.*

ISO 7350 : 1991, *Information technology - Registration of repertoires of graphic characters from ISO/IEC 10367.*

– ISO/IEC 8632-1 : 1992, *Information technology - Computer graphics - Metafile for the storage and transfer of picture description information - Part 1: Functional specification.*

– ISO/IEC 8632-3 : 1992, *Information technology - Computer graphics - Metafile for the storage and transfer of picture description information - Part 3: Binary encoding.*

– ISO 8859-1 : 1987, *Information processing - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No. 1.*

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

- ISO 8879 : 1986 / Amd.1 : 1988, *Information processing - Text and office systems - Standard Generalized Markup Language (SGML), Amendment 1.*

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

- ISO/IEC 9293 : 1994, *Information technology - Volume and file structure of disk cartridges for information interchange.*

- ISO/IEC 9541 (all parts), *Information technology - Font information interchange.*

- ISO/IEC TR 10000-1 : 1995, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 1: General principles and documentation framework.*

- ISO/IEC TR 10000-2 : 1995, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 2: Principles and Taxonomy of ISO profiles.*

- ISO/IEC ISP 12064-1: 1995, *Information technology - International Standardized Profile FOD112 - Open Document Format: Image Applications - Simple Document Structure -Raster Graphics content architecture - Part 1: Document Application Profile (DAP).*

3 Definitions and terminology

3.1 Definitions

The definitions given in ISO/IEC 8613-1 are applicable to this part of ISO/IEC ISP 15124.

3.2 Constituent names

Each constituent that may be included in a document that conforms to this part of ISO/IEC ISP 15124 has been given a unique name which serves to identify that constituent throughout ISO/IEC ISP 15124.

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 ISO/IEC ISP 15124 are CompositePage, DocumentLayoutRoot, and SpecificBlock.

In clause 6, each constituent provided by this part of ISO/IEC ISP 15124 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 part of ISO/IEC ISP 15124.

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

Although the constituent names relate to the purpose of the constituents, the semantics of constituents shall 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 part of ISO/IEC ISP 15124, the constituents may be known to the user by different names (e.g. in different languages).

3.3 Conventions

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

4 Relationship to other International Standardized Profiles

The raster graphics content portion of this part of ISO/IEC ISP 15124 closely aligns with ISO/IEC ISP 11182-1. The primary exception is that ISO/IEC ISP 15124 supports tiled raster graphics and the additional bit order mapping.

The features supported by ISO/IEC ISP 15124 are a superset of the features supported by the International Standardized Profile FOD112 and thus all data streams that are conformant to FOD112 are also conformant to ISO/IEC ISP 15124, apart from the document application profile identifier.

Apart from the use of the tiling addendum and the use of Most Significant Bit encoding the features supported by this part of ISO/IEC ISP 15124 are a subset of the features supported by the International Standardized Profile ISO/IEC ISP 11182-1 and thus all data streams conformant to this part of ISO/IEC ISP 15124 are also conformant to ISO/IEC ISP 11182-1, apart from the document application profile identifier.

5 Conformance

In order to conform to ISO/IEC ISP 15124, a data stream representing a document shall meet the requirements specified in 5.1.

The requirements for implementations that originate and/or receive data streams conforming to ISO/IEC ISP 15124 are specified in 5.2.

5.1 Data stream conformance

The following requirements apply to the encoding of data streams that conform to ISO/IEC ISP 15124:

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

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

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

d) Each constituent shall contain all those attributes specified as required for that constituent in this part of ISO/IEC ISP 15124. 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 part of ISO/IEC ISP 15124;

f) The encoded document shall be structured in accordance with the abstract document architecture defined in ITU-T Rec. T.412 | ISO/IEC 8613-2;

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

5.2 Implementation conformance

This clause states the requirements for implementations claiming conformance to ISO/IEC ISP 15124.

A conforming receiving implementation shall be capable of receiving *either* any data streams conforming to this part of ISO/IEC ISP 15124 structured in accordance with ODIF *or* any data streams conforming to this part of ISO/IEC ISP 15124 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 part of ISO/IEC ISP 15124

This clause describes the characteristics of documents that can be represented by data streams conforming to this part of ISO/IEC ISP 15124. This clause also describes how these characteristics are represented in terms of divisional components of the data streams.

6.1 Overview

This part of ISO/IEC ISP 15124 describes the features of ITU-T Rec. T.400 series | ISO/IEC 8613 that are needed to support the interchange of documents containing raster graphic images. It specifies interchange formats for the transfer of structured documents with simple layout structures.

This part of ISO/IEC ISP 15124 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) is of content type formatted processable raster graphics.

The content allowed within the document to annotate revisions to the base image(s) may also be formatted processable raster graphics, or may be formatted processable geometric graphics, and/or formatted character. This is intended to facilitate the reproduction of the corrections or annotations as intended by the originator or allow the reformatting of the corrections or annotations.

This clause describes the layout features that can be represented in documents conforming to this part of ISO/IEC ISP 15124. 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.

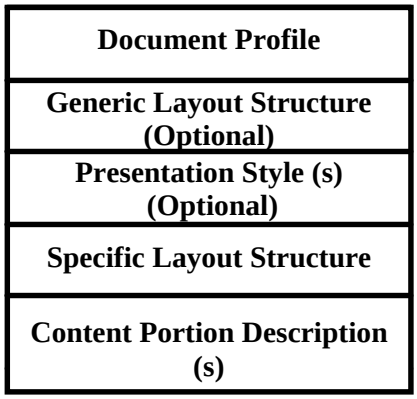

Figure 1 - Constituents

Constituents defined as **required** shall occur in any document that conforms to ISO/IEC ISP 15124. Constituents listed as **optional** may or may not be present in the document, depending on the requirements of the particular document.

The required constituents include:

a) a document profile;

b) layout object descriptions representing a specific layout structure;

c) content portion descriptions.

The only optional constituents are presentation style and layout object class descriptions representing a generic layout structure.

6.2 Logical constituents

Not applicable.

6.3 Layout constituents

This clause describes the features of the layout constituents that can be represented in documents conforming to ISO/IEC ISP 15124.

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 image. 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 raster graphics image 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 or annotations. The composite pages consist of frames which in turn contain blocks containing the content associated with the base image and the revisions or annotations.
Figure 2 is an illustration of the features of the document layout structure supported by ISO/IEC ISP 15124.

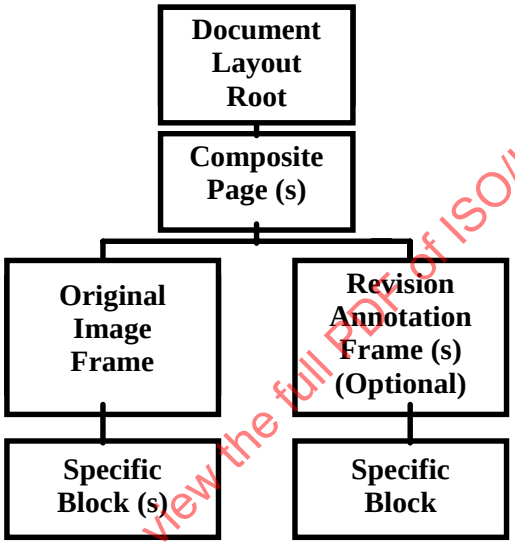

Figure 2 - Document layout structure

6.3.2 DocumentLayoutRoot

A DocumentLayoutRoot is the top level in a document layout structure. Its immediate subordinates consists of a sequence of one or more constituents of type CompositePage.

6.3.3 Page characteristics

A document consists of a sequence of one or more composite pages. In each composite page, two types of frames may be 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 blocks containing raster graphics content portions. The second frame type is used to position blocks containing 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 same document.

6.3.3.1 CompositePage

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

6.3.3.2 Page dimensions

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

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

The default dimensions of the layout object page are the CARA of ISO A4 and North American Letter (ANSI-A). The "page position" attribute may be used to specify the position of the layout object page on the nominal page. Although actual page dimensions may be used allowing for the layout object page to completely fill a nominal page leaving no borders, it is advised that the assured reproduction area (ARA) listed in table 1 be used whenever feasible. Any value of the attribute "page position" may be specified as the default value in the document profile.

See 7.3 of ITU-T Rec. T.412 | ISO/IEC 8613-2 for general rules for positioning pages on presentation surfaces.

6.3.3.3 Nominal page sizes

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

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

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

6.3.4 OriginalImage

An 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 raster graphics content portion. There shall be exactly one OriginalImage frame on each page.

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

6.3.5 RevisionAnnotation

A RevisionAnnotation is a constituent constraint which defines the lowest level frame used for laying out a revision annotation associated with the original image. This frame contains one or more SpecificBlocks, each

containing either a character content portion, a raster graphics content portion or a geometric graphics content portion.

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

6.3.6 SpecificBlock

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

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

6.3.7 GenericBlock

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

Table 1 - Dimensions for various page sizes

Page type	Size	Size (BMU)	ARA (BMU)
- Metric			
ISO-A5	148mm x 210mm	7015 x 9920	6600 x 9240
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	378 x 54283
- ANSI			
ANSI-A	8.5in x 11in	10200 x 13200	9240 x 12400
ANSI-B	11in x 17in	13200 x 20400	12744 x 19656
ANSI-C	17in x 22in	20400 x 26400	19500 x 25800
ANSI-D	22in x 34in	26400 x 40800	25800 x 39600
ANSI-E	34in x 44in	40800 x 52800	39600 x 52200
ANSI-F	28in x 40in	33600 x 48000	32400 x 47400
ANSI-G	11in x 90in	13200 x 108000	12400 x 106800
ANSI-H	28in x 143in	33600 x 171600	31400 x 170400
ANSI-I	34in x 176in	40800 x 211200	39600 x 210000
ANSI-J	40in x 143in	48000 x 171600	47400 x 170400
ANSI-K	8.5in x 14in	10200 x 16800	9240 x 15480
- Foldouts			
Small	11in x 14in	13200 x 16800	12744 x 15480
Small-open	11in x open	13200 x open	12744 x open
- Japan			
Legal	257mm x 364mm	12141 x 17196	11200 x 15300
Letters	182mm x 257mm	8598 x 12141	7600 x 10200

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

Table 2 - Layout attributes

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

Tutorial Note - See table 1 **

Table 3 - Content coding attributes

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

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

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

Table 4 - Presentation attributes

Attributes	Basic values	Permissible default values	Non-basic values
Pel-path	d0, d90	any value	d180, d270
Line-progression	d270	any value	d90
Pel-spacing	16, 12, 8, 6, 5, 4, 3, 2, 1 BMU	any value except ‘null’	Any value except 'null', and 16, 12, 8, 6, 5, 4, 3, 2, 1 BMU
Spacing-ratio	1	any value	any value except 1
Clipping	Two Coordinate Pairs (any non-negative integer, any non-negative integer)	None	None

Table 5 - Document profile attributes

Attribute	Class	Permissible values
Specific-layout-structure	m	present
Presentation-styles	nm	present
Document-characteristic	M	
Document-architecture-class	m	formatted
Document-application-profile	m	{-- See clause 8 for a definition of the permitted values for this attribute. --)
Content-architecture-classes	m	{2 8 2 7 2}
Interchange-format-class	m	A
ODA-version	m	ISO/IEC 8613, 1994-12-15
Document-architecture-defaults	M	
Content-architecture-class	m	formatted processable raster graphics
Type-of-coding	m	T.6 encoding, tiled encoding, T.6 encoding - MSB
Page-dimensions	nm	See list in table 1, (Default value is 9240 x 12400 BMU)
Medium-types	nm	See list in table 1
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)
Pel-spacing	nm	16, 12, 8, 6, 5, 4, 3, 2, 1 BMU, (Normal default is 4 BMU)
Spacing-ratio	nm	Any value
Non-basic-doc-characteristics	NM	
Profile-character-sets	nm	See 6.7.3.1
Page-dimensions	nm	See table 1
Medium-types	nm	See table 1
Coding-attributes	NM	
Compression	nm	uncompressed
Number-of-lines-per-tile-line	nm	any value except 512
Number-of-lines-per-tile	nm	any value except 512
Raster-gr-presentation-features	NM	
Pel-path	nm	180, 270 degrees
Line-progression	nm	90 degrees
Pel-spacing	nm	Any value except 16, 12, 8, 6, 5, 4, 3, 2 or 1 BMU
Document-management-attributes *	M	
Document-Reference	m	Any string of characters

The following notation is used in the class column of this table:
m mandatory attribute
nm non-mandatory attribute
d defaultable attribute

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

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

6.4 Document layout characteristics

This part of ISO/IEC ISP 15124 provides only for formatted documents. Hence, no provision is made for constraining the document layout process other than as implied in the formatted documents supported by this part of ISO/IEC ISP 15124. In particular, these formatted documents are characterised by the following:

a) Documents containing only composite pages;

b) Documents may contain one or more pages;

c) Pages may vary by size and orientation within a document;

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

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

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

6.5 Content layout and imaging control

A document is modelled as an original image with optional revision annotation(s). The original image is represented by raster graphics content portions and the revision annotation(s) may be represented by either character, raster graphics, or geometric graphics content portions. These content portions are as specified in ITU-T Rec. T.416 | ISO/IEC 8613-6, ITU-T Rec. T.417 | ISO/IEC 8613-7 and ITU-T Rec. T.418 | ISO/IEC 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 default specified by the document profile is formatted processable raster graphics content.

6.5.1 Raster graphics content

6.5.1.1 Introduction

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

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

a) type of coding (required);

b) compression;

c) pel path;

d) line progression;

e) pel spacing;

f) spacing ratio;

g) number of pels per tile line;

h) number of lines per tile;

i) tiling offset;

j) tiling type.

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

6.5.1.2 Raster graphics content architecture

The formatted processable raster graphics content architecture is supported by this part of ISO/IEC ISP 15124 and will frequently be the primary content architecture in a document.

In a composite page, multiple content portions may be associated with the original image, or with a revision annotation.

6.5.1.3 Raster graphics encoding methods

The content may be encoded in accordance with the encoding schemes defined in ITU Recommendations T.4 and T.6. In the case of T.4, either the one dimensional or two dimensional encoding scheme may be used. Also the 'bit-map encoding' scheme defined in ITU-T Rec. T.417 | ISO/IEC 8613-7 may be used. All these forms of encoding may be used in a single document and all are basic values. 'Uncompressed' mode of encoding may also be used but only as a non-basic value.

In a content portion, it is required that the coding attribute "number of pels per line" is specified. The coding attribute "number of lines" may also be specified. No restriction is placed on the values that may be specified for these coding attributes. This part of ISO/IEC ISP 15124 places no constraints on the size of the pel arrays that may be used.

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

When the tiled encoding method is used and if the default value of 512 for the "number of pels per tile line" and "number of lines per tile" is to be used, these two attributes do not need to be specified. All other values are non-basic. If the "tile types" attribute is not present, then all tiles will be T.6 encoded. If it is present, then there shall be a value specified for each tile in which case only 'null background', 'null foreground', 'T.6 encoded', 'T.6 encoded - MSB', or 'bitmap encoded' values are supported. The T.4 encodings are not supported. There are no restrictions on the use of the "tiling offset" attribute other than that specified in ITU-T Rec. T.417 | ISO/IEC 8613-7.

See table 3 for a tabulated list of the attributes and their basic, default, and non-basic values.

6.5.1.4 Raster presentation

Raster presentation is controlled by the presentation attributes specified in ITU-T Rec. T.417 | ISO/IEC 8613-7. This part of ISO/IEC ISP 15124 provides for additional constraints on these presentation attributes as specified below.

The basic values for the attribute "pel path" supported by this part of ISO/IEC ISP 15124 are 0 and 90 degrees. The "pel path" values of 180 and 270 degrees are non-basic.

The basic values for the attribute "line progression" supported by this part of ISO/IEC ISP 15124 is 270 degrees. The "line progression" value of 90 degrees is non-basic.

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

NOTES

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

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

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

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

The presentation attributes may have default values specified in the document profile.

See table 4 for a tabulated list of the attributes and their basic, default, and non-basic values.

NOTE - In accordance with the content imaging process for formatted processable raster graphics content defined in the ODA base standard, the values for pel spacing and spacing ratio will be determined from the dimensions of the SpecificBlock and the values for the number of pels per line and the number of lines. They will have no effect on documents interchanged using this ISP.

6.5.2 Character content

The formatted character content is permitted in this part of ISO/IEC ISP 15124 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 shall be indicated in the document profile.

The presentation attributes may have default values specified in the document profile.

6.5.2.1 Character content architecture class

When using character content, one or more content portions may be associated with a basic component. The content information in a content portion shall be present.

6.5.2.2 Character repertoires

The basic character set supported by this part of ISO/IEC ISP 15124 is the primary character set of ISO 8859-1. This shall 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 shall be indicated in the document profile.

6.5.2.3 Code extension techniques

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

a) G0 set: only the primary character sets of ISO 6937-2, ISO 8859-X (where ISO 8859-X corresponds to any finalised part of ISO 8859) and a version of ISO/IEC 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, to invoke the G0 set into GL;

LS1R, to invoke the G1 set into GR;

LS2R, to invoke the G2 set into GR;

LS3R, to invoke the G3 set into GR;

SS2, to invoke one character from the G2 set into GL;

SS3, to invoke one character from the G3 set into GL;

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 shall be designated into G0, as specified above (see item (a)), and invoked into GL. 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 code extension techniques allowed are illustrated in Figures 3 and 4.

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

The code extension techniques that are used or may be used in a basic component shall be specified by the presentation attribute "code extension announcers." The default code extension announcers used throughout a document may be specified in the document profile, also using the presentation attribute "code extension announcers".

NOTE - In accordance with CCITT Rec. T.416 | ISO/IEC 8613-6, there is no restriction concerning the number of graphic character sets which may be designated and/or invoked in the presentation attribute "graphic character sets" providing the restrictions defined in this subclause are applied. Hence designation to a particular G set overrides a previous designation to that set and invocation to GL or GR overrides the previous invocation to the GL or GR respectively. Thus the sequential order of designation and/or invocation sequences in the attribute "graphic character sets" is significant.

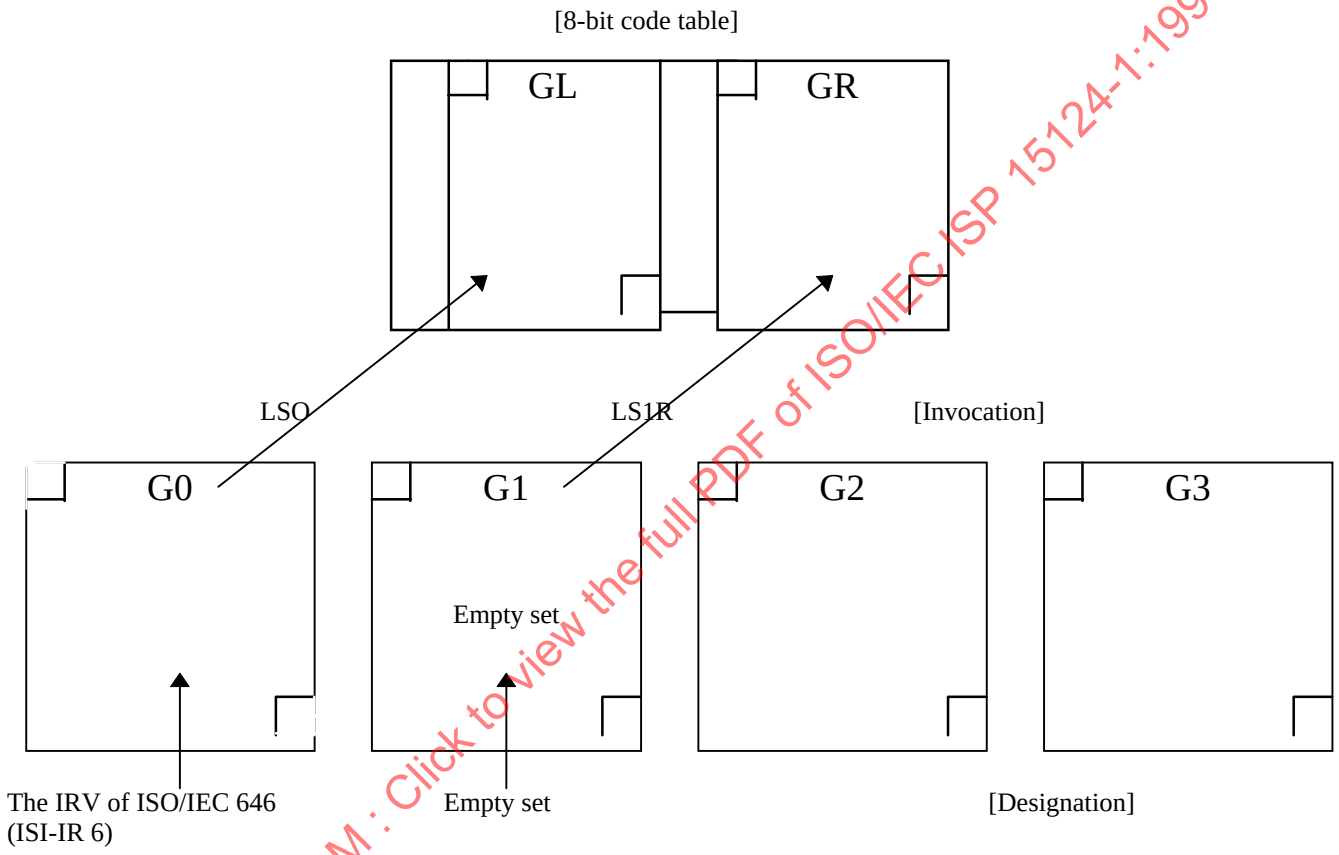

Figure 3 - Code extension features (basic case)

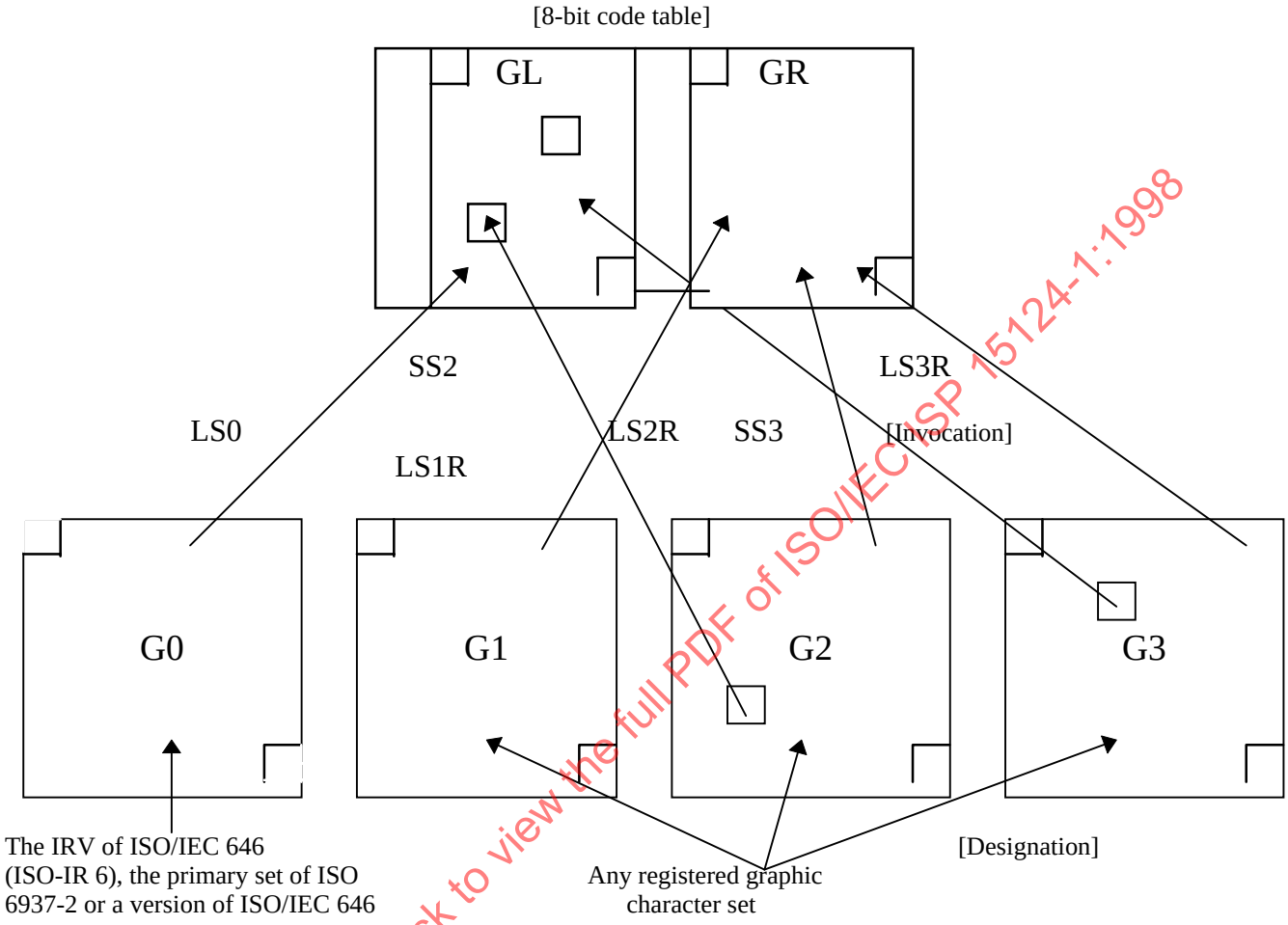

Figure 4 - Code extension features (all possible cases)

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 shall be indicated in the document profile. The line spacing may be specified at the beginning of the content associated with a basic component using the presentation attribute "line spacing". The value may be changed anywhere within the content portion using the control functions SVS and SLS.

6.5.2.5 Character spacing

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

6.5.2.6 Character path and line progression

Both horizontal and vertical writing directions may be used within a character content. In the case of horizontal writing, the characters progress either from left to right or from right to left across the page and the line progression is from the top of the page to the bottom. In the case of vertical writing, the characters progress from the top of the page to the bottom and the line progression is from the right to the left. A value of 0 degrees is basic for character path; values of 90, 180 and 270 degrees are non-basic and use of these in a document shall be indicated in the document profile. A value of 270 degrees is basic for line progression; a value of 90 degrees is non-basic and the use of this value shall be indicated in the document profile. The values of character path and line progression may be specified at the beginning of the content associated with a basic component using the presentation attributes "character path" and "line progression", respectively. These values cannot be changed within a content portion.

6.5.2.7 Character orientation

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

6.5.2.8 Emphasis

The following modes of emphasising graphic characters may be distinguished:

a) default rendition;

b) normal intensity;

c) increased intensity (bold);

d) italicized;

e) not italicized;

f) underlined;

g) doubly underlined;

h) not underlined;

i) crossed-out;

j) not crossed-out.

All these 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/doubly 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.

Default rendition cancels the effect of all methods of emphasis that are currently in operation and specifies that the text should be displayed in accordance with the default rendition parameters set for the presentation device. Thus, for example, if it is required to ensure that the content is not underlined, then it is necessary to explicitly specify that underlined is not to be used.

6.5.2.9 Tabulation

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

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

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

start aligned;

end aligned;

centered;

aligned around.

These alignment qualifiers are defined in ITU-T Rec. T.416 | ISO/IEC 8613-6. If the alignment qualifier is not explicitly specified, then it is assumed that start aligned is to be used. Only one set of tabulation stops can be specified to be applicable to the content associated with a basic component. No limit is placed on the number of tabulation stops that can be specified within a given set. The set of tabulation stop positions associated with the content of a basic component are specified using the presentation attribute "line layout table". Tabulation stop positions are invoked within the content using the control function STAB.

6.5.2.10 Alignment

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

a) start aligned;

b) end aligned;

c) centred;

d) justified.

The semantics of these values are as defined in ITU-T Rec. T.416 | ISO/IEC 8613-6. The presentation attribute "alignment" is used to specify the alignment that is applicable to the content associated with a basic component. The alignment value cannot be changed within a content portion.

6.5.2.11 Fonts

Any number of fonts may used within a document. The fonts used in a particular document are specified in the document profile using the attribute "font list". Further information concerning the specification of font

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

6.5.2.12 Reverse character strings

Bi-directional writing is supported by this part of ISO/IEC ISP 15124. 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 ITU-T Rec. T.416 | ISO/IEC 8613-6. This control function is provided for cases in which the text belongs to different languages and the character content is written, for example, from left to right or from right to left within the same line of characters, dependent upon the language and/or character set being used.

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

6.5.2.13 Superscripts and subscripts

Superscripts and subscripts may be specified anywhere within the content associated with a basic component by using the control functions PLU and PLD. The scope of superscripts and subscripts is limited to a line. The use of these control functions shall be in accordance with ITU-T Rec. T.416 | ISO/IEC 8613-6.

6.5.2.14 Substitution of characters

The control function SUB is provided to represent characters produced by a local system that cannot be represented by a character within a character set supported by this part of ISO/IEC ISP 15124.

6.5.2.15 Use of control functions

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

a) SHS - set horizontal spacing;

b) SCS - set character spacing;

c) SVS - set vertical spacing;

d) SLS - set line spacing;

e) SGR - set graphic rendition;

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

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

h) PLD - partial line down;

i) PLU - partial line up;

j) SUB - substitute character;

k) SP - space;

l) CR - carriage return;

m) LF - line feed;

n) - code extension control functions.

6.5.3 Geometric graphics content

The formatted processable graphics content is permitted in this part of ISO/IEC ISP 15124 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/IEC 8632 and ITU-T Rec. T.418 | ISO/IEC 8613-8. Each CGM figure shall consist of a single picture only.

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

6.6 Miscellaneous features

6.6.1 Resource documents

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

6.6.2 Application comments

Specification of the attribute "application comments" is mandatory for all object classes contained in a document that conforms to this part of ISO/IEC ISP 15124. Specification of this attribute is mandatory for all objects that do not refer to an object class. Specification of this attribute is optional for all objects that refer to object classes.

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

Layout constituent constraints	Constituent constraint numeric identifier
a) DocumentLayoutRoot	0
b) CompositePage	2
c) OriginalFrame	46
d) RevisionAnnotation	47
e) SpecificBlock	30
f) GenericBlock	29

The second field, "external-data", is optional. It is used to contain any type of data outside the scope of ODA, e.g., tile offsets. When used in a SpecificBlock in conjunction with the attribute "type of coding" with value 'tiled encoding', it contains a sequence of positive integers, one for each tile in the content portion. The sequence of integers contains the octet offsets to the beginning of the respective tiles. The beginning of the "content information" is an offset of zero (0). An octet offset of zero(0) indicates that the respective tile is null. The integers will be sequenced in the same order as the tiles. The tiles will be sequenced primarily in the pel path and secondarily in the line progression direction as defined by the presentation attributes.

6.7 Document management features

Every document interchanged in accordance with this part of ISO/IEC ISP 15124 shall 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 ITU-T Rec. T.414 | ISO/IEC 8613-4.

6.7.1 Document constituent information

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

a) specific layout structure;

b) generic layout structure (optional);

c) presentation styles (optional);

d) resource-document (optional).

6.7.2 Document characteristics

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

a) document application profile;

b) document application profile defaults;

c) document architecture class;

d) content architecture class;

e) interchange format class;

f) ODA version.

6.7.3 Non-basic document characteristics

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

a) profile character sets;

b) comments character sets;

c) alternative representation character sets;

d) page dimensions;

e) medium types;

f) raster graphics presentation features;

g) character presentation features;

h) raster graphics coding attributes.

6.7.3.1 Profile character sets

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

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

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

b) G0 set: only ISO-IR 6 (the IRV of ISO/IEC 646:1991), ISO-IR2 (the primary set of ISO 6937-2), or any other version of ISO 646 may be designated for this set; these graphic character sets are implicitly invoked in GL.

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

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

If the attribute "profile character sets" is not specified, then the default defined in ITU Rec. T.410 series | ISO/IEC 8613 is assumed.

6.7.4 Document management attributes

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

a) document description (see note 1);

b) dates and times;

c) originators;

d) other user information;

e) external references;

f) local file references;

g) content attributes;

h) security information.

NOTE 1 - The document description includes the specification of the document reference.

The attributes that may be used to specify this information are defined in ITU Rec. T.414 | ISO/IEC 8613-4.

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

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

NOTE 2 - The attributes applicable to the document profile are defined in table 5.

7 Specification of constituent constraints

This clause specifies the definition of the constituent constraints which may be represented by data streams conforming to this part of ISO/IEC ISP 15124.

7.1 Notation

This clause is written in accordance with the Document Application Profile Proforma and Notation (DAPPN) of ITU-T Rec. T.411 | ISO/IEC 8613-1, Annex F. The following clarifications and minor extensions apply:

a) [Clarification]
The value 'ANY_STRING' may include code extension control functions as well as graphic characters.

b) [Extension]
In order to write the specification of the usage of character sets and code extension control functions precisely, the following extensions are applied:

1) Table 6 defines the symbols that are introduced to denote shift functions.

Table 6 - Symbols to denote shift functions

Symbol	Shift Function	Coded representation
LSO	Locking Shift Zero	00/15
LS1R	Locking Shift one right	ESC 07/14
LS2R	Locking Shift two right	ESC 07/13
LS3R	Locking Shift three right	ESC 07/12
SS2	Single shift two	08/14
SS3	Single shift three	08/15

2) <escape-sequence> is extended to include functions:
<escape-sequence>::='ESC'<octet>...[<invocation-control-function>];
<invocation-control-function>::='LS0'|'LS1R'|'LS2R'|'LS3R'|'SS2'|'SS3';

3) Data type specification for #ESC in content information is extended as:
<escape-sequence>...

c) [Clarification]
When an attribute value is specified by a set of production rules, a non-terminal symbol which occurs first is its start symbol. Note that start symbols other than <object-id-expr>, <string-expr> and <construction-expr> are used.

d) [Extension]
Data type specifications other than those specified in the tables in DAPPN are applied for some attributes within the range that the base standard permits.

e) [Clarification]
'|' is used in CASE SUPERIOR expressions in the following format in order to shorten the text:
CASE SUPERIOR ({const1|const2|...|constn}(aaaa)) OF {.....}
where “const1”, “const2”, ..., “constn” are names of constituent constraints, and "aaaa" is the name of an attribute.

This expression is equivalent to the following expression:

CASE SUPERIOR (const1(aaaa)) OF {.....}
CASE SUPERIOR (const2(aaaa)) OF {.....}
.....
CASE SUPERIOR (constn(aaaa)) OF {.....}

When CASE SUPERIOR is evaluated, constituents are searched from the immediate superior to the root. Only the first one which satisfies one of the constituent constraints const1, const2, ... and constn is selected, and the attribute "aaaa" in it is tested.

7.2 Document profile constituent constraints

7.2.1 Macro definitions

```
-- General macros --

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

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

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

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

-- Non-basic page dimensions. --
DEFINE(NonBasicPageDimensions,"
        {REQ #horizontal-dimension {REQ #fixed-dimension {1..39680}},
        REQ #vertical-dimension {REQ #fixed-dimension {12401..56120}}}
        | {REQ #horizontal-dimension {REQ #fixed-dimension {9241..39680}},
        REQ #vertical-dimension {REQ #fixed-dimension {1..56120}}}
                -- up to ISO A0 portrait  --
        | {REQ #horizontal-dimension {REQ #fixed-dimension {1..56120}},
        REQ #vertical-dimension {REQ #fixed-dimension {9241..39680}}}
        | {REQ #horizontal-dimension {REQ #fixed-dimension {12401..56120}},
        REQ #vertical-dimension {REQ #fixed-dimension {1..39680}}}
                --  up to ISO A0 landscape  --
        | {REQ #horizontal-dimension {REQ #fixed-dimension {1..48000}},
        REQ #vertical-dimension {REQ #fixed-dimension {12401..211200}}}
        | {REQ #horizontal-dimension {REQ #fixed-dimension {9241..48000}},
        REQ #vertical-dimension {REQ #fixed-dimension {1..211200}}}
                -- up to ANSI J/K portrait  --
        | {REQ #horizontal-dimension {REQ #fixed-dimension {1..211200}},
        REQ #vertical-dimension {REQ #fixed-dimension {9241..48000}}}
         {REQ #horizontal-dimension {REQ #fixed-dimension {12401..211200}},
        REQ #vertical-dimension {REQ #fixed-dimension {1..48000}}}
                --  up to ANSI J/K landscape  --
        | {REQ #horizontal-dimension {REQ #fixed-dimension {1..12141}},
        REQ #vertical-dimension {REQ #fixed-dimension {12401..17196}}}
        | {REQ #horizontal-dimension {REQ #fixed-dimension {9241..12141}},
```

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

DEFINE(PermissiblePageDimensions,"
        {REQ #horizontal-dimension {REQ #fixed-dimension {1..39680}},
        REQ #vertical-dimension {REQ #fixed-dimension {1..56120}}}
                -- up to ISO A0 portrait  --
        | {REQ #horizontal-dimension {REQ #fixed-dimension {1..56120}},
        REQ #vertical-dimension {REQ #fixed-dimension {1..39680}}}
                --  up to ISO A0 landscape  --
        | {REQ #horizontal-dimension {REQ #fixed-dimension {1..48000}},
        REQ #vertical-dimension {REQ #fixed-dimension {1..211200}}}
                -- up to ANSI J/K portrait  --
        | {REQ #horizontal-dimension {REQ #fixed-dimension {1..211200}},
        REQ #vertical-dimension {REQ #fixed-dimension {1..48000}}}
                --  up to ANSI J/K landscape  --
        | {REQ #horizontal-dimension {REQ #fixed-dimension {1..12141}},
        REQ #vertical-dimension {REQ #fixed-dimension {1..17196}}}
                -- up to Japanese legal portrait --
        | {REQ #horizontal-dimension {REQ #fixed-dimension {1..17196}},
        REQ #vertical-dimension {REQ #fixed-dimension {1..12141}}}
                --  up to Japanese legal landscape  --
        ")

DEFINE(NominalPageSizes,"

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

```
                -- ISO A0 Portrait --
        | REQ #horizontal-dimension {56120},  REQ #vertical-dimension {39680}
                -- ISO A0 Landscape --

-- ANSI Page Sizes --

        | REQ #horizontal-dimension {10200},  REQ #vertical-dimension {13200}
                -- ANSI A Portrait --
        | REQ #horizontal-dimension {13200},  REQ #vertical-dimension {10200}
                -- ANSI A Landscape --
        | REQ #horizontal-dimension {10200},  REQ #vertical-dimension {16800}
                -- ANSI Legal Portrait --
        | REQ #horizontal-dimension {16800},  REQ #vertical-dimension {10200}
                -- ANSI Legal Landscape --
        | REQ #horizontal-dimension {13200},  REQ #vertical-dimension {20400}
                -- ANSI B Portrait --
        | REQ #horizontal-dimension {20400},  REQ #vertical-dimension {13200}
                -- ANSI B Landscape --
        | REQ #horizontal-dimension {20400},  REQ #vertical-dimension {26400}
                -- ANSI C Portrait --
        | REQ #horizontal-dimension {26400},  REQ #vertical-dimension {20400}
                -- ANSI C Landscape --
        | REQ #horizontal-dimension {26400},  REQ #vertical-dimension {40800}
                -- ANSI D Portrait --
        | REQ #horizontal-dimension {40800},  REQ #vertical-dimension {26400}
                -- ANSI D Landscape --
        | REQ #horizontal-dimension {40800},  REQ #vertical-dimension {52800}
                -- ANSI E Portrait --
        | REQ #horizontal-dimension {52800},  REQ #vertical-dimension {40800}
                -- ANSI E Landscape --
        | REQ #horizontal-dimension {33600},  REQ #vertical-dimension {48000}
                -- ANSI F Portrait --
        | REQ #horizontal-dimension {48000},  REQ #vertical-dimension {33600}
                -- ANSI F Landscape --
        | REQ #horizontal-dimension {13200},  REQ #vertical-dimension {108000}
                -- ANSI G Portrait --
        | REQ #horizontal-dimension {108000},  REQ #vertical-dimension {13200}
                -- ANSI G Landscape --
        | REQ #horizontal-dimension {33600},  REQ #vertical-dimension {171600}
                -- ANSI H Portrait --
        | REQ #horizontal-dimension {171600},  REQ #vertical-dimension {33600}
                -- ANSI H Landscape --
        | REQ #horizontal-dimension {40800},  REQ #vertical-dimension {211200}
                -- ANSI J Portrait --
        | REQ #horizontal-dimension {211200},  REQ #vertical-dimension {40800}
                -- ANSI J Landscape --
        | REQ #horizontal-dimension {48000},  REQ #vertical-dimension {171600}
                -- ANSI K Portrait --
        | REQ #horizontal-dimension {171600},  REQ #vertical-dimension {48000}
                -- ANSI K Landscape --

-- Japanese --

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

```
-- Foldouts --

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

-- Macro defining permitted graphic renditions  --
DEFINE(GRAPHICRENDITIONS "
            {'cancel'|'increased-intensity'
             |'italicized'|'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-italizised'|'not-underlined'|'not-crossed-out'}...
")

-- Macro defining permissible code extension announcers.
   Note that all the values are basic. --

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 code extension announcers for document application profile  defaults --

DEFINE(DAP-DEFAULT-CDEXTEN, "$CDEXTEN")
```

```
-- Macros defining final character for designation --

DEFINE(FCORE,  "04/02 -- A final character designating ISO-IR 6
                (the IRV of ISO/IEC 646, i.e ASCII) --")

DEFINE(F646,   "-- A final character designating any version of ISO/IEC 646 except, ISO-IR 6 --")

DEFINE(F94S,   "-- A final character designating any registered 94 single byte graphic character set,
                optionally preceded by one or more intermediate characters as defined in Annex C
                of ISO 2022 --")

DEFINE(F94M,   "-- A final character designating any registered 94 multi byte graphic character set,
                optionally preceded by one or more intermediate characters as defined in Annex C
                 of ISO 2022 --")

DEFINE(F96S,   "-- A final character designating any registered 96 single byte graphic character set,
                optionally preceded by one or more intermediate characters as defined in Annex C
                of ISO 2022 --")

DEFINE(F96M,   "-- A final character designating any registered 96 multi byte graphic character set,
                optionally preceded by one or more intermediate characters as defined in Annex C
                of ISO 2022 --")

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

-- Macro defining a revision number of a character set --

DEFINE (REV, "-- An octet between 04/00 and 07/14 which represents a revision number as defined in ISO
                2022 --")
-- Macro defining designation sequences --

DEFINE(DEG-CORE-G0,  "ESC 02/08 $FCORE")
                -- Designate the 94 characters of ISO-IR 6 (the IRV of ISO/IEC 646) to G0 --

DEFINE(DEG-646-G0,   "ESC 02/08 $F646")
                -- Designate any version of ISO/IEC 646, except ISO-IR 6, to GO --

DEFINE(DEG-ANY-G1,   "{[ESC 02/06 $REV] {ESC 02/09 $F94S
                                |ESC 02/04 02/09 $F94M
                                |ESC 02/13 $F96S
                                |ESC02/04 02/13 $F96M}}")
                -- Designate any character set to G1 --

DEFINE(DEG-ANY-G2,   "{[ESC 02/06 $REV] {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 02/06 $REV] {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 --

 -- Macro defining permissible graphic character sets. --
DEFINE(PERMIT-GRCHAR,  "  {$DEG-CORE-G0 LS0|$DEG-646-G0 LS0},
                  {{$DEG-ANY-G1 LS1R
```

```
                    |$DEG-ANY-G2 LS2R
                    |$DEG-ANY-G3 LS3R}...
                    |$DEG-EMPTY-G1 LS1R}  ")
 -- Macro defining graphic character sets for document application profile defaults --

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 used in any other part of this document application profile specification. --

DEFINE(BASIC-GRCHAR, "  $DEG-CORE-G0 LS0,
                $DEG-EMPTY-G1 LS1R  ")
 -- Macro defining non-basic graphic 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, "
 ESC 02/00 04/03          -- announcement of use of G0 and G1, and invocation into GL and GR respectively.
                        (no shift function are necessary.) --
 {$DEG-CORE-G0|$DEG-646-G0}  -- designate G0 --
 {$DEG-ANY-G1|$DEG-EMPTY-G1} -- designate G1 --
            ")
 -- Macro defining comments character sets --

DEFINE(COMCHAR,"
 -- in the case to use both GL and GR without shift functions --
 ESC 02/00 04/03          -- announcement of use of G0 and G1, and invocation into GL and GR respectively.
                      (no shift functions are necessary.) --
 {$DEG-CORE-G0|$DEG-646-G0}  -- designate G0 --
 {$DEG-ANY-G1|$DEG-EMPTY-G1} -- designate G1 --

 -- in the case of use of various character sets (shift functions are necessary) --
 {ESC 02/00 05/00,        -- announcement to use G0 and LS0 --
 [ESC 02/00 05/03],       -- announcement to use G1 and LS1R --
 [ESC 02/00 05/05],       -- announcement to use G2 and LS2R --
 [ESC 02/00 05/07],       -- announcement to use G3 and LS3R --
 [ESC 02/00 05/10],       -- announcement to use G2 and SS2 --
 [ESC 02/00 05/11]   }    -- announcement to use G3 and SS3 --
 {$DEG-CORE-G0|$DEG-646-G0}  -- designate G0 --
 {{$DEG-ANY-G1            -- designate G1 --
 |$DEG-ANY-G2             -- designate G2 --
 |$DEG-ANY-G3}...         -- designate G3 --
 |$DEG-EMPTY-G1}
            ")
 -- Macro defining character sets used for alternative representation --

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

7.2.2 Constituent constraints

7.2.2.1 DocumentProfile

```
{

-- Presence of document constituents --

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

-- Document characteristics --

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

REQ   Document-application-profile-defaults         {

-- Document architecture defaults --

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

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

        REQ   #type-of-coding               {ASN.1{2 8 3 7 0} -- T6 encoding --
                                            | ASN.1 {2 8 3 7 5} -- tiled encoding --
                                            | ASN.1 (2 8 3 7 6}  -- T6 encoding - MSB -- },
        PERM  #page-position                {ANY_VALUE},
        PERM  #raster-graphics-contents-defaults  {
              PERM  #pel-path                   {ANY_VALUE},
              PERM  #line-progression           {ANY_VALUE},
              PERM  #pel-spacing          {REQ #length {ANY_VALUE},
                                          REQ #pel-spaces {ANY_VALUE}},
              PERM  #spacing-ratio
                    {REQ  #line-spacing-value  {ANY_VALUE},
                     REQ  #pel-spacing-value          {ANY_VALUE}},
              PERM   #compression                    {ANY_VALUE},
              PERM  #number-of-pels-per-tile-line    {ANY_VALUE},
              PERM  #number-of-lines-per-tile        {ANY_VALUE}
              PERM  #tiling-offset              { ANY_VALUE },
              PERM  #tiling-type                { 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           {'d0' | 'd90' },
              PERM  #character-path                  {'d0' | 'd90' | 'd180' | 'd270'},
              PERM  #code-extension-announcers       {$CDEXTEN},
              PERM  #graphic-character-sets          {$PERMIT-GRCHAR},
              PERM  #graphic-character-subrepertoire {ANY_VALUE},
              PERM  #graphic-rendition          {$GRAPHICRENDITIONS},
```

```
                PERM #line-progression              {'d90' | 'd270'},
                PERM #line-spacing                  {ANY_VALUE},
                PERM #line-layout-table             {ANY_VALUE}},

                -- End of document architecture defaults --

REQ   Document-architecture-class           {$FDA},
REQ   Content-architecture-classes          {{$FPR | $FPG | $FC}...},
REQ   Interchange-format-class              {-- This attribute required only for ODIF interchange.
                                             See clause 8 for a definition of the permitted values for
                                             this attribute. --},
REQ   ODA-version
        {REQ #standard-or-recommendation {'
                ITU Rec. T.410 series (1993) | ISO/IEC 8613:1994;  version 2.00'},
        REQ #publication-date       {'1997-06-25'}},
                -- This date represents the date that this part of ISO/IEC ISP 15124 was approved.
                -- This is the only approved value, however, the date will be changed if this part of
                -- ISO/IEC ISP 15124 is significantly revised.  If the date is revised, use of the new
                -- date is required only when the additional functionality is being used.
                -- That is, legacy products may continue to support the earlier version of
                -- this part of ISO/IEC ISP 15124.

-- Non-basic document characteristics --

PERM Profile-character-sets                 {$PROFCHAR},
PERM Comments-character-sets                {$COMCHAR},
PERM Alternative-representation-character-sets  {$ALTCHAR},
PERM Page-dimensions                        {MUL {$NonBasicPageDimensions}},
PERM Medium-types                           {MUL{
        PERM #nominal-page-size             {$NominalPageSizes},
        PERM #side-of-sheet                 {ANY_VALUE}}},
        -- All values of "medium type" are non-basic --
PERM Coding-attributes              {
        REQ #raster-graphics-coding-attributes {
                PERM #compression           {'uncompressed'},
                        PERM #number-of-pels-per-tile-line      {ANY_VALUE} EXCEPT {512 },
                        PERM #number-of-lines-per-tile          {ANY_VALUE} EXCEPT {512},

PERM Presentation-features                  {
        PERM #character-presentation-features   {  MUL {
                PERM #character-orientation     {'d90'}
                | PERM #character-path          {'d90', 'd180', 'd270'}
                | PMUL {PERM #character-spacing     {<100}
                | PERM #graphic-character-sets  {ANY_VALUE} EXCEPT {$BASIC-GRCHAR}
                | PERM #graphic-character-subrepertoire {>0}
                | PERM #line-spacing            {ANY_VALUE} EXCEPT {150,200,300,400}
                | PERM #line-progression    {'d90'}}}
        PERM  #Raster-graphics-presentation-features    { PMUL {
                REQ   #pel-path      {'d180' | 'd270'}
                | REQ  #line-progression     {'d90'}
                | REQ          #pel-spacing         {ANY_VALUE} EXCEPT {16,12,8,6,5,4,3,2,1}
                                -- Any value of #pel-spaces is permitted as basic --
                                -- Basic values of #length are multiples of #pel-spaces as listed --
                | REQ  #spacing-ratio
                                {REQ #line-spacing-value   {ANY_VALUE} EXCEPT {1},
                                 REQ #pel-spacing-value    {ANY_VALUE} EXCEPT {1}}}}},

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

```
-- Additional document characteristics --

PERM Fonts-list       {MUL {REQ #font-identifier {ANY_VALUE},
                            REQ #font-reference {ANY_VALUE}}},
-- The format of the parameter "font-reference" is defined in annex B --


-- Document management attributes --

        -- Document description --
PERM Title                          {ANY_STRING},
PERM Subject                              {ANY_STRING},
PERM Document-type                        {ANY_STRING},
PERM Abstract                             {ANY_STRING},
PERM Keywords                       {ANY_STRING...},
REQ  Document-reference             {ANY_VALUE},

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

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

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

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

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

        -- Content attributes --
PERM Document-size                        {ANY_INTEGER},
PERM Number-of-pages                      {ANY_INTEGER},
PERM Languages                      {ANY_STRING...}

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

}
```

7.3 Logical constituent constraints

No logical constituents applicable in this clause.

7.4 Layout constituent constraints

7.4.1 Macro definitions

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

7.4.2 Factor constraints

```
FACTOR:    ANY-LAYOUT          {

GENERIC:
REQ   Object-type              {VIRTUAL},
REQ   Object-class-identifier      {ANY_VALUE},
REQ   Application-comments         {VIRTUAL},

SPECIFIC:
PERM  Object-type              {VIRTUAL},
REQ   Object-identifier            {ANY_VALUE},
PERM  Object-class             {VIRTUAL},
PERM  Subordinates             {VIRTUAL},
PERM  Application-comments         {VIRTUAL},

SPECIFIC_AND_GENERIC:
PERM  User-visible-name        {ANY_VALUE},
PERM  User-readable-comments       {ANY_VALUE}
}
```

7.4.3 Constituent constraints

7.4.3.1 DocumentLayoutRoot

DocumentLayoutRoot: ANY-LAYOUT {

GENERIC:
REQ Object-type {'document-layout-root'},
REQ Application-comments {REQ #constraint-name {"0"},
PERM #external-data {ANY_VALUE}},

SPECIFIC:
PERM Object-type {'document-layout-root'},
PERM Object-class {OBJECT_CLASS_ID_OF (DocumentLayoutRoot)},
REQ Subordinates {{SUB_ID_OF(CompositePage)}...},
PERM Application-comments {REQ #constraint-name {"0"},
PERM #external-data {ANY_VALUE}}
}

7.4.3.2 CompositePage

CompositePage: ANY-LAYOUT {

GENERIC:
REQ Object-type {'page'},
REQ Application-comments
{REQ #constraint-name {"2"},
PERM #external-data {ANY-VALUE}},

SPECIFIC:
PERM Object-type {'page'},
PERM Object-class {OBJECT_CLASS_ID_OF (CompositePage)},
REQ Subordinates {{SUB_ID_OF(OriginalImage),
[SUB_ID_OF(RevisionAnnotation)...]}...},
PERM Imaging-order {ANY_VALUE},
PERM Application-comments {{REQ #constraint-name {"2"},
PERM #external-data {ANY_VALUE}}

SPECIFIC_AND_GENERIC:
PERM Dimensions {$PermissiblePageDimensions},
PERM Page-position {ANY_VALUE},
PERM Medium-type {REQ #nominal-page-size {$NominalPageSizes},
REQ #side-of-sheet {ANY_VALUE}},
}

7.4.3.3 OriginalImage

```
OriginalImage:                  ANY-LAYOUT      {

GENERIC:
REQ   Object-type               {'frame'},
REQ   Application-comments              {REQ #constraint-name{"46"},
                                PERM #external-data {ANY_VALUE}},

SPECIFIC:
PERM  Object-type               {'frame'},
PERM  Object-class              {OBJECT_CLASS_ID_OF (OriginalImage)},
REQ   Subordinates              {{SUB_ID_OF(SpecificBlock)}...},
PERM  Application-comments              {REQ #constraint-name{"46"},
                                PERM #external-data {ANY_VALUE}},

SPECIFIC_AND_GENERIC:
PERM  Position                  {REQ #fixed-position
                                        {REQ #horizontal-position {ANY_VALUE},
                        REQ #vertical-position      {ANY_VALUE}}},
PERM  Dimensions                {REQ #horizontal-dimension
                                        {REQ #fixed-dimension     {ANY_VALUE}},
                                REQ #vertical-dimension
                                        {REQ #fixed-dimension     {ANY_VALUE}}}
}
```

7.4.3.4 RevisionAnnotation

```
RevisionAnnotation:             ANY-LAYOUT      {

GENERIC:
REQ   Object-type                       {'frame'},
REQ   Application-comments                      {REQ #constraint-name {"47"},
                                        PERM "external-data {ANY_VALUE}},

SPECIFIC:
PERM  Object-type                       {'frame'},
PERM  Object-class                      {OBJECT_CLASS_ID_OF (RevisionAnnotation)},
REQ   Subordinates                      {SUB_ID_OF(SpecificBlock)},
PERM  Application-comments                      {REQ #constraint-name {"47"},
                                        PERM #external-data {ANY_VALUE}},

SPECIFIC_AND_GENERIC:
PERM  Position                          {REQ #fixed-position
                                                {REQ #horizontal-position {ANY_VALUE},
                                                REQ #vertical-position {ANY_VALUE}}},
PERM  Dimensions                        {REQ #horizontal-dimension
                                                {REQ #fixed-dimension {ANY_VALUE}},
                                        REQ #vertical-dimension
                                                {REQ #fixed-dimension {ANY_VALUE}}}

}
```

7.4.3.5 SpecificBlock

```
SpecificBlock:                  {

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

 CASE SpecificBlock(Content-portions) OF {

{$CHAR}:
        {PERM  #character-attributes                    {
                PERM #alignment         {ANY_VALUE},
                PERM #character-spacing {ANY_VALUE},
                PERM #character-fonts   {ANY_VALUE},
                PERM #character-orientation     {'d0' | 'd90'},
                PERM #character-path            {'d0' | 'd90' | 'd180' | 'd270'},
                PERM #code-extension-announcers {$CDEXTEN},
                PERM #graphic-character-sets    {$PERMIT-GRCHAR},
                PERM #graphic-character-subrepertoire {ANY_VALUE},
                PERM #graphic-rendition {$GRAPHICRENDITIONS},
                PERM #line-progression  {'d90' | 'd270'},
                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}}
}}
        -- raster graphics and geometric graphics content portions are only permitted when
            subordinate to RevisionAnnotation --
}}}
```

7.4.3.6 GenericBlock

```
GenericBlock            {

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

 CASE GenericBlock(Content-portions) OF {

{$CHAR}:
    {PERM  #character-attributes        {
        PERM #Alignment             {ANY_VALUE},
        PERM #character-spacing     {ANY_VALUE},
        PERM #character-fonts           {ANY_VALUE},
        PERM #character-orientation     {'d0' | 'd90'},
        PERM #character-path            {'d0' | 'd90' | 'd180' | 'd270'},
        PERM #code-extension-announcers {$CDEXTEN},
        PERM #graphic-character-sets {$PERMIT-GRCHAR},
        PERM #graphic-character-subrepertoire {ANY_VALUE},
        PERM #graphic-rendition     {$GRAPHICRENDITIONS},
        PERM #line-progression          {'d90' | 'd270'},
        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}}
}}
}}}
```

Note: [Whenever a resource-document is referenced, the classification of attributes as REQ or PERM in the generic structure is to be interpreted to specify that the attribute is required or permitted in the object class or in the referenced object class in the resource-document.]

7.5 Layout style constraints

No layout style constraints applicable in this clause.

7.6 Presentation style constraints

7.6.1 Macro definitions

No macro definitions are applicable to this clause.

7.6.2 Factor constraints

```
FACTOR:     ANY-PRESENTATION-STYLE   {

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

7.6.3 Presentation style constituent constraint

7.6.3.1 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        {'d0' | 'd90'},
                PERM #character-path               {'d0' | 'd90' | 'd180' | 'd270'},
                PERM #code-extension-announcers {$CDEXTEN},
                PERM #graphic-character-sets {$PERMIT-GRCHAR},
                PERM #graphic-character-subrepertoire {ANY_VALUE},
                PERM #graphic-rendition    {$GRAPHICRENDITIONS},
                PERM #line-progression             {'d90' | 'd270'},
                PERM #line-spacing         {ANY_VALUE},
                PERM #line-layout-table            {ANY_VALUE}}}
}
```

7.6.3.2 PStyle2

```
PStyle2:        ANY-PRESENTATION-STYLE   {

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

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

7.6.3.3 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}}}
}
```

7.7 Content portion constraints

7.7.1 Macro definitions

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

7.7.2 Factor constraints

No factor constraints are applicable to this clause.

7.7.3 Constituent constraints

7.7.3.1 Character content portion

```
Character-content-portion    {
REQ   Content-identifier-layout              {ANY_VALUE},
PERM Type-of-coding                                {ASN.1{2 8 3 6 0}},
PERM Alternative-representation                {ANY_STRING},
PERM Content-information
          {CHARACTER, {#STAB  {ANY_VALUE}
                    |#SHS   {ANY_VALUE}
                    |#SGR   {$GRAPHICRENDITIONS}
                    |#SVS   {ANY_VALUE}
                    |#SLS   {ANY_VALUE}
                    |#SCS   {ANY_VALUE}
                    |#SRS   {ANY_VALUE}
                    |#CR
                    |#LF
                    |#PLD
                    |#PLU
                    |#SP
                    |#SUB
                    |#LS0
                    |#LS1R
                    |#LS2R
                    |#LS3R
                    |#SS2
                    |#SS3
                    |#$DEG-CORE-G0
                    |#$DEG-646-G0
                    |#$DEG-ANY-G1
                    |#$DEG-ANY-G2
                    |#$DEG-ANY-G3
                    |#$DEG-EMPTY-G1
                     }...}
}
```

7.7.3.2 Raster graphics content portion

```
Raster-graphics-content-portion     {
REQ   Content-identifier-layout              {ANY_VALUE},
PERM Type-of-coding                                 { ASN.1{2 8 3 7 0}  -- T.6 encoding--
                                                  | ASN.1{2 8 3 7 1}  -- T.4 one dimensional --
                                                  | ASN.1{2 8 3 7 2}  -- T.4 two dimensional --
                                                  | ASN.1{2 8 3 7 3}  -- bitmap encoding --
                                                  | ASN.1{2 8 3 7 5}  -- tiled encoding --
                                                  | ASN.1{2 8 3 7 6}  -- T.6 encoding - MSB --
                                                  | ASN.1{2 8 3 7 7}  -- T.4 one dimensional - MSB --
                                                  | ASN.1{2 8 3 7 8}  -- T.4 two dimensional - MSB -- },
```

```
PERM Coding-attributes                  {
     REQ  #raster-graphics-coding-attributes      {
          PERM #compression                       {ANY_VALUE},
          PERM #number-of-lines              {>0},
          REQ  #number-of-pels-per-line      {>0},
          CASE Raster-graphics-content-portion (Type-of-coding) OF {

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

7.7.3.3 Geometric graphics content portion

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