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**TELEMATIC SERVICES**

**TERMINAL EQUIPMENTS AND PROTOCOLS  
FOR TELEMATIC SERVICES**

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**DOCUMENT APPLICATION PROFILE MM  
FOR THE INTERCHANGE OF FORMATTED  
MIXED MODE DOCUMENTS**

**ITU-T Recommendation T.501**

(Previously "CCITT Recommendation")

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## FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation T.501 was revised by the ITU-T Study Group VIII (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

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## NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

2 In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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## INTRODUCTION

This is the definition of an ODA document application profile (DAP) named MM. This DAP is suitable for interchanging mixed mode documents in formatted form. This DAP is defined in accordance with Recommendation T.411 and the format of this DAP is in accordance with the standardized proforma and notation defined in addendum to Annex F/T.411.

## **DOCUMENT APPLICATION PROFILE MM FOR THE INTERCHANGE OF FORMATTED MIXED MODE DOCUMENTS**

*(Melbourne, 1988; revised at Helsinki, 1993)*

### **1 Scope and field of application**

This DAP specifies the interchange format suitable for the interchange of mixed mode documents such as memoranda, letters and reports.

Mixed mode documents are interchanged only in a formatted form. The purpose of this DAP is to allow the transfer of the complete layout of the interchanged document.

Furthermore, two types of content are allowed within the same page, namely:

- a character content as used by word processing machines (e.g. basic teletex equipment);
- a raster graphics content as used by facsimile group 4 apparatus.

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

### **2 References**

- CCITT Recommendation T.411 (1988), *Open Document Architecture (ODA) and interchange format – Introduction and general principles.*
- CCITT Recommendation T.412 (1988), *Open Document Architecture (ODA) and interchange format – Document structures.*
- CCITT Recommendation T.414 (1988), *Open Document Architecture (ODA) and interchange format – Document profile.*
- CCITT Recommendation T.415 (1988), *Open Document Architecture (ODA) and interchange format – Open document interchange format.*
- CCITT Recommendation T.416 (1988), *Open Document Architecture (ODA) and interchange format – Character content architecture.*
- CCITT Recommendation T.417 (1988), *Open Document Architecture (ODA) and interchange format – Raster graphics content architecture.*
- CCITT Recommendation T.411.F (1991) (Annex F/T.411).
- ISO 8859-1, *Information Processing – 8-bit single-byte coded graphic character sets – Part 1: Latin Alphabet No. 1.*
- ISO 646: revised 1990, *Information Processing – ISO 7-bits coded character sets for information interchange.*
- ISO 6937-2, *Information Processing – Coded character sets for text communication – Part 2: Latin alphabet and non-alphabetic graphic characters.*
- ISO 2022, *Information Processing – ISO 7-bit and 8-bit coded character sets – Code extension techniques.*
- ISO 7350, *Text communication – Registration of graphic character subrepertoires.*
- CCITT Recommendation X.209 (1988), *Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1).*
- CCITT Recommendation T.511 (to be published), *Implementation requirements for document application profile MM.*

### **3 Definitions and abbreviations**

#### **3.1 Definitions**

The definitions defined in Recommendation T.411 are applicable to this DAP.

#### **3.2 Abbreviations**

DAP Document Application Profile

### **4 Relationships with other profiles**

This DAP does not have relationships with other DAPs.

### **5 Conformance**

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

This Recommendation does not define implementation or service requirements. These requirements are defined in other Recommendations that make use of this DAP.

#### **5.1 Data stream conformance**

The following requirements apply to the encoding of data streams which conform to this DAP.

- a) The data stream shall be encoded in accordance with the ASN.1 encoding rules defined in Recommendation X.209.
- b) The data stream shall be structured in accordance with the interchange format defined in clause 8.
- c) The document, as represented by the data stream, shall be structured in accordance with the document architecture class as defined in 6.1 and shall contain all mandatory constituents defined for that class; other constituents may be included, provided that they are permitted for that class, as defined in clause 7.
- d) Each constituent shall contain all those attributes defined as required for that constituent in this DAP; other attributes may be specified provided that they are permitted for that constituent.
- e) The attribute values defined shall be within the range or permissible values specified in this DAP.
- f) The encoded document shall be constructed in accordance with the abstract document architecture defined in Recommendation T.412.
- g) The document shall be structured in accordance with the characteristics and constraints defined in clause 6.

#### **5.2 Implementation conformance**

The implementation requirements associated with this DAP are defined in Recommendation T.511.

### **6 Characteristics supported by this document application profile**

This clause describes the characteristics of documents which can be represented by data streams conforming to this DAP.

#### **6.1 Overview**

This DAP allows documents to be interchanged only in a formatted form which facilitates the reproduction of a document as intended by the originator.

The generic layout structure allowed in this DAP is a “factor” structure. The purpose of a “factor” generic layout structure allowed in this DAP is to provide for factorization. That is, it provides for predefined attributes values of the object of type block and/or a generic content.

The form of document may be made up of the following constituents. Constituents defined as “required” must occur in any document that conforms to this DAP. Constituents defined as “optional” may or may not be present in the document depending on the requirements of the particular document.

a) *Required constituents:*

- a document profile;
- layout object descriptions representing a specific layout structure:
  - layout object description of type document layout root,
  - layout object description of type page,
  - layout object description of type block.

b) *Optional constituents:*

- layout object class description representing a “factor” generic layout structure:
  - layout object class description of type block;
- content portion description representing a specific layout structure;
- content portion description representing a generic layout structure.

Either content portion description representing a specific layout structure or content portion description representing a generic layout structure is required.

When the content portion description in the generic layout structure is present, layout object class description of the type block is required.

The combinations of constituents allowed in this DAP are illustrated in Figure 1. In this figure document profile is omitted. In the case of b), it provides only for predefined attribute values of the object of type block, for example some presentation attributes.

## **6.2 Logical characteristics**

No logical characteristics are applicable in this DAP.

## **6.3 Layout characteristics**

This subclause defines the layout constituent constraints provided by this DAP to represent the characteristics of documents.

### **6.3.1 Overview of the layout characteristics**

The specific layout structure has 3 hierarchical levels, i.e. a document layout root, pages and blocks. And the generic layout structure has only 1 hierarchical level, i.e. blocks.

Therefore, a mixed mode document is seen as a sequence of pages. The content of a page may be:

- a character content; or
- a raster graphics content; or
- both of them.

When different content types are used within the same page, this page must be composed of several blocks. Each block has a homogeneous content.

### **6.3.2 Document layout root**

Document layout root is a required constituent constraint and represents the top level in the specific layout structure. Its immediate subordinates consist of a sequence of one or more constituents of type page.

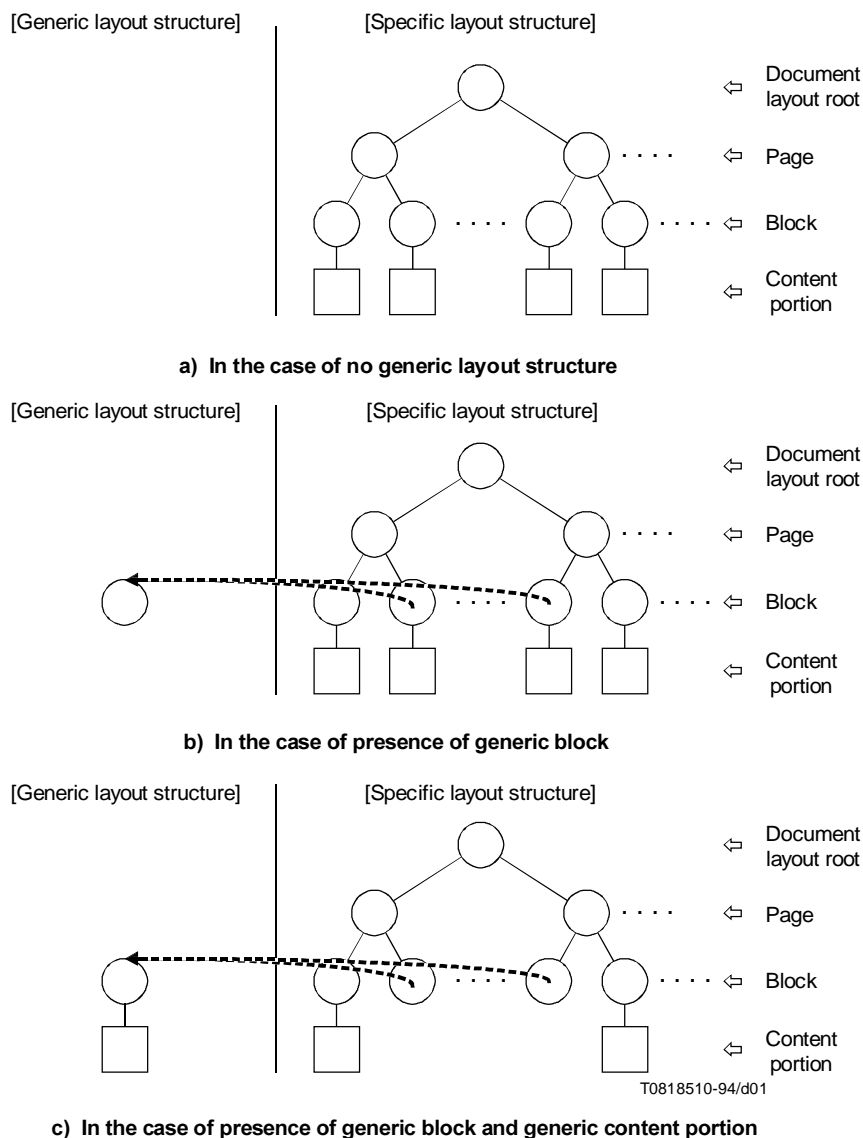


FIGURE 1/T.501  
Allowed combinations of constituents

### 6.3.3 Page

Page is a required constituent constraint in a specific layout structure. Its immediate subordinates consist of a sequence of one or more constituents of type block.

The page dimensions, which constrain the area made available for the positioning and display of the document content, can take any values (in BMUs) provided that the page size is no longer than ISO A3 nominal page size in portrait orientation.

Furthermore, when the page size is no longer than the ISO A4 nominal page size in portrait orientation, the corresponding page dimensions are basic values; otherwise, the page dimensions are non-basic values and must be indicated in the document profile. The allowed page dimensions are listed in Table 1.

The page dimensions are specified using the attribute “dimension” of the layout objects of type page. Any default page dimensions may be specified in the document profile subject to the maximum dimensions defined above.



TABLE 1/T.501

**Page dimensions**

Page type	Size in inches or millimeters	Nominal size in BMUs	ARA in BMUs
ISO A4	210 mm × 297 mm	9 920 × 14 030	9 240 × 13 200
ISO A3	297 mm × 420 mm	14 030 × 19 840	13 200 × 18 480
ANSI A (NAL)	8.5 inches × 11 inches	10 200 × 13 200	9 240 × 12 400
Japanese legal	257 mm × 364 mm	12 141 × 17 196	11 200 × 15 300
Japanese letter	182 mm × 257 mm	8 598 × 12 141	7 600 × 10 200

**6.3.4 Block**

Block is a required constituent constraint in the specific layout structure and an optional constituent constraint in the generic layout structure.

Block may refer to only one content portion. Each block is positioned in the page and has its own dimensions (independently of the other blocks).

Within a page, blocks may be positioned in such a way that they intersect partially or fully, i.e. they share common areas. All blocks are “transparent”, which means that the contents of the intersecting area are combined.

The number of objects of type block per page is restricted. If more than 31 objects of type block are included in one page, the maximum number in a document must be indicated using the attribute “number of objects per page” in the document profile. This number does not contain the number of object class of block.

Three block layout types are allowed by this DAP. Each block layout specifies how the character content can be presented within a block. These three types are referred to as block layout A, B and C and are illustrated in Figure 2.

Block layout A is used when the character content is laid out horizontally from left to right or right to left and vertically from top to bottom within the block. This block layout is typically used for documents written in Latin based, Hebrew and Arabic languages.

Block layout B is used when the character content is laid out vertically from bottom to top or top to bottom and horizontally from left to right within a block. This block layout is typically used for documents written in Latin based, Hebrew and Arabic languages in which it is required to lay out the content in landscape orientation within the block of the page.

Block layout C is used when the character content is laid out vertically from top to bottom and horizontally from right to left within the block. This block layout is typically used for documents written in languages which use ideograms, such as Japanese and Chinese characters.

**6.3.5 Content portion**

Content portion is an optional constituent constraint in the specific and generic layout structure. However, if a content portion description in the specific layout structure is not present, a content portion description in the generic layout structure is required. This means that when the content portion is not directly associated with the object of type block, then the content must be derived from the content portion associated with the referenced object class of type block.

**6.4 Document layout characteristics**

No document layout characteristics are applicable in this DAP.

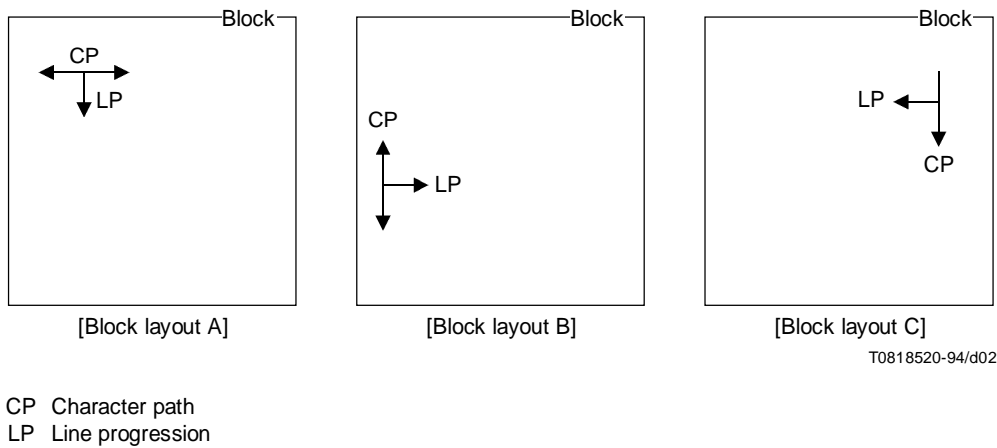


FIGURE 2/T.501  
**Block layout**

## 6.5 Content layout and imaging characteristics

A document may contain character content and raster graphics content.

### 6.5.1 Character content

#### 6.5.1.1 Introduction

This subclause defines the features that are applicable to the character content contained in a document. These features apply to a content associated with a block component, i.e. the object or object class of type block.

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

- graphic character sets;
- graphic character subrepertoire;
- code extension announcers;
- line spacing;
- line progression;
- character spacing;
- character path;
- character orientation;
- graphic rendition, including the parameters:
  - normal rendition, bold, italicized, underlined, not bold, not italicized, not underlined;
- initial point.

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

#### 6.5.1.2 Character content architecture class

Only the formatted character content architecture class is allowed in a document that conforms to this DAP. This is specified using the attribute “content architecture class”.

The default content architecture class which specifies formatted character content may be specified in the document profile using the attribute “content architecture class”.

### 6.5.1.3 Character repertoire

The basic character repertoire defined in this DAP is composed of the 94 characters of the IRV of ISO 646 (revised 1990) plus the character space.

Any other graphic character set which is registered in accordance with ISO 2375 is designated and invoked at any point in the document provided its use is indicated in the document profile as a non-basic value using the character presentation feature “graphic character sets”. No locking shift functions are specified in this presentation feature.

The code extension techniques allowed for the designation and invocation of character sets to the left hand side and right hand side of the 8-bit code table (GL and GR respectively) are defined in 6.5.1.4.

Using these code extension techniques, the graphic character sets designated and/or invoked at the beginning of a content portion containing character content are specified by the presentation attribute “graphic character sets”. The graphic character sets can be changed at any point within a content portion.

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”.

If the character set defined in ISO 6937-2 is designated and invoked, then the use of any subrepertoire registered according to ISO 7350 is specified using the presentation attribute “graphic character subrepertoire”. All subrepertoires are non-basic and their use must be indicated in the document profile. The subrepertoire shall not be changed within a content portion.

#### NOTES

1 The basic character repertoire defined in this DAP is not the standard default value defined in Recommendation T.416; hence it is necessary to specify, in the document profile of a particular document, that this is the default value being used for that document.

2 Revised Recommendations T.50 and T.51 and new Recommendation T.52 are under preparation. Recommendations T.50 and T.51 are intended to be completely compatible with ISO 646 (revised 1990) and ISO 6937 (under revision), respectively.

### 6.5.1.4 Code extension techniques

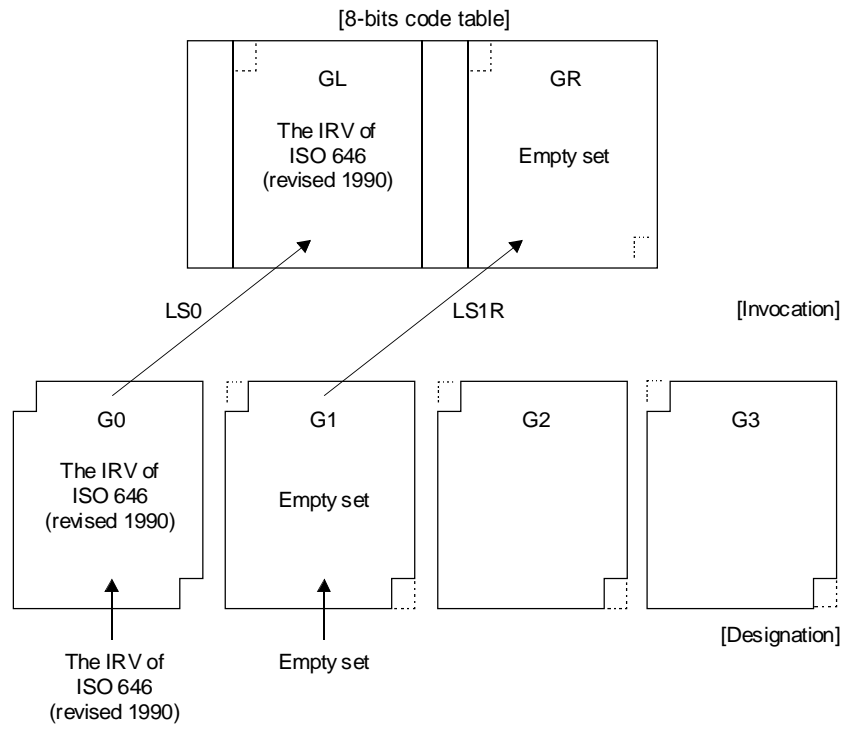
The code extension techniques defined in ISO 2022 are used subject to the following restrictions:

- i) *G0 set* – Only the IRV of ISO 646 (revised 1990), the primary set of ISO 6937-2 and a version of ISO 646 can be designated for this set; these character sets may only be invoked in GL.
- ii) *G1, G2, G3 sets* – No restrictions are placed on the character sets that can be designated for these sets; these character sets can only be invoked in GR.
- iii) The locking and single shift functions allowed are as follows:
  - 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.

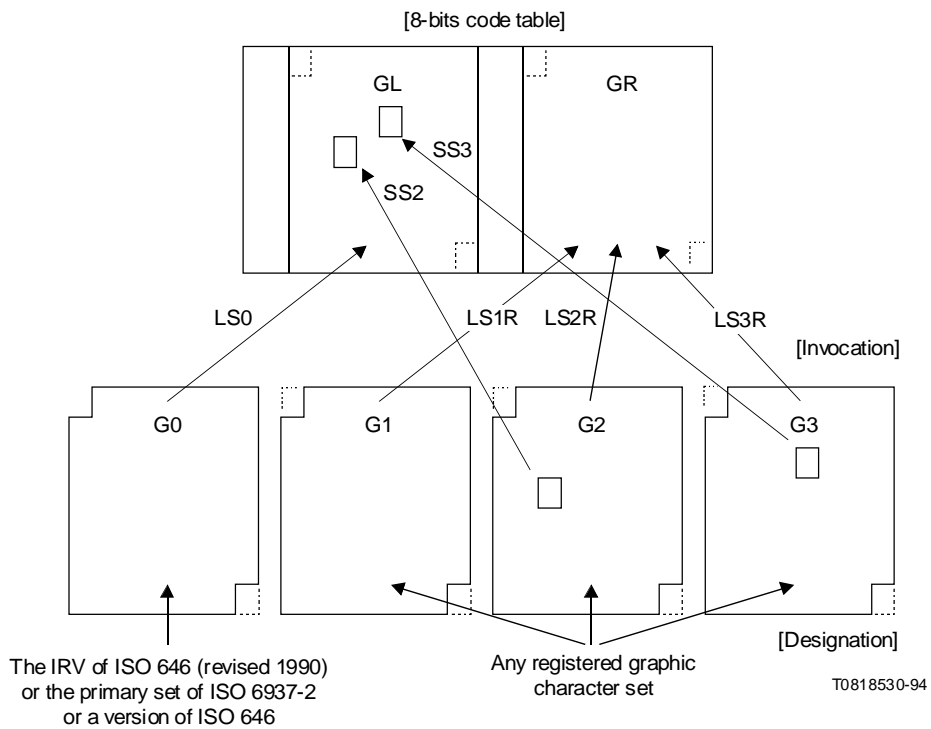
(Here GL and GR refer to the left and right hand parts respectively of the 8-bit code table.)

- iv) When specifying the presentation attribute “graphic character sets”, it is necessary to invoke character sets for both GL and GR. Thus an allowed character set must be designated into G0 [see item i) above] and invoked into GL. It is also necessary to invoke a character set into GR which has been designated into G1, G2 or G3 set.
- v) The empty set must be designated into G1 and invoked into GR if no other specific character set is invoked into GR.

The code extension techniques allowed are illustrated in Figure 3.



a) In the case of basic character set



b) In the case of all possible character sets

FIGURE 3/T.501  
Code extension features

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

The code extension techniques that are used or may be used in a content are specified by the presentation attribute “code extension announcers”. The default code extension announcers used throughout a document may be specified in the document profile using the presentation attribute “code extension announcers”.

NOTE – In accordance with Recommendation T.416, there is no restriction concerning the number of graphic character sets which are 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 the previous designation to that set, and invocation to GL or GR overrides the previous invocation to GL or GR, respectively. Thus the sequential order of designation and/or invocation sequences in the attribute “graphic character sets” is significant.

#### **6.5.1.5 Line spacing**

Line spacing values of 100, 150, 200, 300 and 400 BMUs are specified. The values of 100, 200, 300 and 400 BMUs are basic; the use of the value of 150 BMUs in a document is non-basic and must be indicated in the document profile.

The line spacing is specified at the beginning of the content using the presentation attribute “line spacing”. The value can be changed anywhere within the content portion using the control function SVS.

#### **6.5.1.6 Character spacing**

Character spacing values of 80, 100, 120 and 200 BMUs are specified. The value of 120 BMUs is basic; the use of any other value in a document is non-basic and must be indicated in the document profile.

The character spacing is specified at the beginning of the content using the presentation attribute “character spacing”. The value can be changed anywhere within the content portion using the control function SHS.

#### **6.5.1.7 Character path and line progression**

Both horizontal writing and vertical writing directions can be used within a document. In the case of horizontal writing, the characters progress either from left to right or right to left across the block and line progression is from the top of the block to bottom. In the case of vertical writing, the characters progress from the top of the block to the bottom and line progression is from the right to the left. The use of these writing directions is restricted by the block layout type used.

For block layout A, only horizontal writing is used. Thus, in this case the character path and line progression is specified either as 0 degree and 270 degrees respectively or 180 degrees and 90 degrees respectively.

For block layout B, again horizontal writing is used. However, in this case the character content in the block is presented for viewing with the page in landscape orientation. Thus, character path and line progression is specified either as 90 degrees and 270 degrees respectively or 270 degrees and 90 degrees respectively.

For block layout C, only vertical writing is used. Thus, in this case the character path and line progression is specified as 270 degrees and 270 degrees respectively.

The character path values of 0 degree and 90 degrees are basic. The character path values of 180 degrees and 270 degrees are non-basic and must be indicated in the document profile.

The values of character path are specified at the beginning of the content using the presentation attribute “character path”. The value cannot be changed within a content portion.

The line progression value of 270 degrees is basic. The line progression value of 90 degrees is non-basic and must be indicated in the document profile.

The value of line progression is specified at the beginning of the content using the presentation attribute “line progression”. The value cannot be changed within a content portion.

#### **6.5.1.8 Character orientation**

The character orientation is specified as 0 degree, 90 degrees and 180 degrees depending on the writing direction (see 6.5.1.7).

When from left to right horizontal writing is used, characters is orientated at 0 degree. When from right to left horizontal writing is used, characters is orientated at 180 degrees.

When vertical writing is used, characters is orientated at 90 degrees or 0 degree. The character orientation value of 0 degree in the case of vertical writing is typically used when it is required to mix diagram characters with Latin characters. In order to achieve this, character strings orientated at 0 degree and 90 degrees must be defined in separate blocks.

The character orientation value of 0 is basic. The value of 90 degrees and 180 degrees are non-basic and must be indicated in the document profile.

The values of character orientation are specified at the beginning of the content using the presentation attribute “character orientation”. The value can not be changed within a content portion.

The allowed combinations of character path, line progression and character orientation in this DAP are shown in Table 2.

TABLE 2/T.501

**Allowed combinations of character path, line progression and character orientation**

Block layout type	Character path (degrees)	Line progression (degrees)	Character orientation (degrees)	Remarks
A	0	270	0	Left to right horizontal writing
	180	90	180	Right to left horizontal writing
B	90	270	0	Left to right horizontal writing (landscape)
	270	90	180	Right to left horizontal writing (landscape)
C	270	270	90	Top to bottom vertical writing
	270	270	0	Top to bottom vertical writing

**6.5.1.9 Emphasis**

The following modes of emphasizing graphic characters are specified as basic:

- normal rendition (cancel);
- bold (increase intensity);
- not bold (normal intensity);
- italicized;
- not italicized;
- underlined;
- not underlined.

If no default mode is explicitly specified in the document profile, then the default mode is normal rendition.

The mode of emphasis is specified at the beginning of the content using the presentation attribute “graphic rendition”. The mode can be changed anywhere within the content using the control function SGR.

The mode of emphasis remains in effect within the content associated with a block component until changed into a mutually exclusive mode or by the specification or “normal rendition”. Mutually exclusive modes are bold/not bold, italicized/not italicized and underlined/not underlined. One mode from each mutually exclusive set can be in operation at any point in the document content.

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

#### **6.5.1.10 Reverse character string**

Bidirectional writing is supported by this DAP (see 6.5.1.7). Hence, a string of characters in a content portion associated with a block can be specified to be imaged in the reverse direction of the immediately preceding character string. Such strings are specified by the control function SRS.

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.

#### **6.5.1.11 Initial point**

The initial point which is applicable to a block components is specified by the presentation attribute “initial offset”. Any values are specified as basic.

#### **6.5.1.12 Superscripts and subscripts**

Superscripts and subscripts are specified anywhere within the content by using the control functions PLU and PLD. The use of these control functions shall be in accordance with Recommendation T.416.

#### **6.5.1.13 Substitution of characters**

The control functions 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 DAP.

#### **6.5.1.14 Use of control functions**

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

SHS	select character spacing (allowed parameter values: 0, 1, 2, 3)
SVS	select line spacing (allowed parameter values: 0, 1, 2, 3, 4)
SGR	select graphic rendition (allowed parameter values: 0, 1, 3, 4, 22, 23, 24)
SRS	set reverse string (allowed parameter values: any)
PLD	partial line down
PLU	partial line up
SUB	substitute character
BS	backspace
SP	space
CR	carriage return
LF	line feed
	code extension control functions (see 6.5.1.4).

## **6.5.2 Raster graphics content**

### **6.5.2.1 Introduction**

This subclause defines the features that are applicable to the raster graphics content contained in a document. These features apply to a content associated with a block component, i.e. the object or object class of type block.

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

- type of coding;
- compression;
- pel density;
- initial point.

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

### **6.5.2.2 Raster graphics content architecture class**

The formatted raster graphics content architecture class is allowed in a document that conforms to this DAP. This is specified using the attribute “content architecture class”.

The default content architecture class which specifies formatted raster graphics content may be specified in the document profile using the attribute “content architecture class”.

### **6.5.2.3 Raster graphics encoding method**

The raster graphics content must be encoded in accordance with the encoding method scheme defined in Recommendation T.6. The T.6 encoding used is specified as basic by the common coding attribute “type of coding”. This attribute is also used to specify the character encoding.

The default content architecture class which indicates T.6 encoding or character encoding may be specified in the document profile using the common coding attribute “type of coding”.

The use of the common coding attribute “type of coding” is non-mandatory. Thus, if this attribute is not specified for a particular content portion and if the content architecture class specified corresponds to the formatted raster graphics content architecture class, then the default encoding method is assumed to be T.6.

In a content portion, it is required that the coding attribute “number of pels per line” is specified and any value of this attribute is specified. The coding attribute “compression” which specifies “uncompressed” mode of T.6 encoding is specified as a non-basic feature.

### **6.5.2.4 Pel density**

Pel density values of 200, 240, 300, 400, 600 and 1200 pels per 1200 BMUs are specified. The values of 240 and 300 pels per 1200 BMUs are basic; the use of other values in a document is non-basic and must be indicated in the document profile.

The pel density is specified at the beginning of the content using the presentation attribute “pel transmission density”. The value cannot be changed within a content portion.

### **6.5.2.5 Initial point**

The initial point which is applicable to a block components is specified by the presentation attribute “initial offset”. Any values are specified as basic.

### **6.5.2.6 Pel path and line progression**

The pel path supported by this DAP is 0 degree only which is the standard default value specified in Recommendation T.416. Thus, the pel path may not be specified.

The line progression supported by this DAP is 270 degrees only which is the standard default value specified in Recommendation T.416. Thus, the line progression may not be specified.



## **6.6 Miscellaneous features**

### **6.6.1 Alternative representation**

The content information in a content portion may be replaced by a string of characters specified in the attribute “alternative representation”. This attribute is specified in content portions.

The string of characters specified must belong to the character repertoires indicated in the document profile attribute “alternative representation character sets” (see 6.7.4.2). 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 CR and LF are also used within the character string but no other control function is allowed; hence graphic character set cannot be changed in the attributes “alternative representation”.

## **6.7 Document management features**

Information relating to the document as a whole is specified in the document profile which is represented by the constituent of type document profile. This constituent must be specified in every document.

The information in the document profile is classified into the following categories:

- i) document constituent information;
- ii) document identification information;
- iii) document default information;
- iv) non-basic characteristics information;
- v) document management information.

The information in the document profile may be of interest to the user or may be used for machine processing of the document.

### **6.7.1 Document constituent information**

This information specifies which constituents are used to represent the document.

#### **6.7.1.1 Presence of document constituents**

This information indicates which constituents are included in the document. That is, this information indicates whether or not the document contains a generic layout structure and a specific layout structure. It is mandatory to specify this information in the document profile.

### **6.7.2 Document identification information**

This information relates to the identification of the document. This information is divided into six categories.

#### **6.7.2.1 Document application profile information**

This information indicates the document application profile to which the document belongs. It is mandatory to specify this information using the attribute “document application profile”.

#### **6.7.2.2 Document architecture class information**

This information indicates the document architecture class to which the document belongs (see 6.1). It is mandatory to specify this information using the attribute “document architecture class”.

#### **6.7.2.3 Content architecture class information**

This information indicates the content architecture class used in the document (see 6.5.1.2 and 6.5.2.2). It is mandatory to specify this information using the attribute “content architecture class”.

#### **6.7.2.4 Interchange format class information**

This information indicates the interchange format class used to represent the document (see clause 8). It is mandatory to specify this information using the attribute “interchange format class”.

#### **6.7.2.5 ODA version information**

This information indicates the CCITT Recommendation to which the document conforms. It also specifies a calendar data, which indicates that the document conforms to the version of the CCITT Recommendation and any addenda that are current on that date. It is mandatory to specify this information using the attribute “ODA version”.

#### **6.7.3 Document default information**

This information specifies various default values for attributes used in the document. The default values that are allowed are specified in the various subclauses of clause 6. The specification of this information is only required when it is required to specify a default value which is other than the standard default value specified in the T.410-Series Recommendations.

Default values for the following groups of attributes can be specified:

- document architecture attributes;
- character content attributes;
- raster graphics content attributes.

#### **6.7.4 Non-basic characteristics information**

This information specifies the non-basic attribute values specified in the document. It is mandatory to specify a non-basic attribute in the document profile when such a value is used in the document.

The following types of non-basic attributes can be specified:

- profile character sets;
- alternative representation character sets;
- page dimensions;
- character presentation features;
- raster graphics presentation features;
- raster graphics coding attributes;
- number of objects per page.

Further information concerning profile and alternative representation character sets is given below.

##### **6.7.4.1 Profile character sets**

Some document profile attributes have values consisting of character strings, for example, the attribute “document reference”. The character sets assumed to be designated and invoked at the beginning of these character strings is specified by the document profile attribute “profile character sets”.

The character sets that are designated and invoked by the attribute “profile character sets” are subject to the following restrictions:

- i) *GO set* – Only the IRV of ISO 646 (revised 1990), the primary set of ISO 6937-2 and a version of ISO 646 can be designated for this set; these graphic character sets may only be invoked in GL.
- ii) *G1, G2, G3 sets* – No restrictions are placed on the graphic character sets that can be designated for these sets; these graphic character sets can only be invoked in GR.
- iii) The empty set must be designated into G1 and invoked into GR if no further specific character set is invoked into GR.

If the attribute “profile character sets” is not specified, then the character set designated and invoked is assumed to be the minimum subrepertoire of ISO 6937-2.

When the Teletex subrepertoire of ISO 6937-2 is needed, the primary set and the supplementary set of Recommendation T.61 is designated and invoked in this attribute.

#### 6.7.4.2 Alternative representation character sets

This attribute specifies the graphic character sets designated and invoked at the beginning of the attribute "alternative representation" other than the standard default graphic character sets.

The restriction on graphic character sets described in 6.7.4.1 is also applied. If this attribute is not explicitly specified in the document profile, the minimum subrepertoire of ISO 6937-2 is used in the attribute "alternative representation".

When the Teletex subrepertoire of ISO 6937-2 is needed, the primary set and the supplementary set of Recommendation T.61 is designated and invoked in this attribute.

#### 6.7.5 Document management information

##### 6.7.5.1 Document reference

This information serves to identify the document. Typically this information is allocated to the document by the creator of the document. The identifier consists of an ASN.1 object identifier or string of characters. It is mandatory to specify this information using the attribute "document reference".

## 7 Specification of constituent constraints

This clause specifies the definitions of the constituent constraints which can be represented by data streams conforming to this DAP.

### 7.1 Document profile constraints

#### 7.1.1 Macro definitions

```
DEFINE(FC, "ASN.1 { 2 8 2 6 0 }" -- formatted character content --)
DEFINE(FR, "ASN.1 { 2 8 2 7 0 }" -- formatted raster graphics content --)
DEFINE(CE, "ASN.1 { 2 8 3 6 0 }" -- character encoding --)
DEFINE(RE, "ASN.1 { 2 8 3 7 0 }" -- T.6 encoding --)
```

```
DEFINE(BasicPageDimensions, "
    { REQ #horizontal-dimension
      { REQ #fixed-dimension      { <=9920 } } },
    REQ #vertical-dimension
      { REQ #fixed-dimension      { <=14030 } } }")
```

-- Any size equal to or smaller than nominal page size of ISO A4.  
-- Only portrait may be specified --

```
DEFINE(NonBasicPageDimensions, "
    { { REQ #horizontal-dimension
      { REQ #fixed-dimension      { <= 14030 } } },
      REQ #vertical-dimension
        { REQ #fixed-dimension    { 14031..19840 } } }
    | { REQ #horizontal-dimension
      { REQ #fixed-dimension      { 9921..14030 } } },
      REQ #vertical-dimension
        { REQ #fixed-dimension    { <= 19840 } } }")
```

-- Any size equal to or smaller than nominal page size of ISO A3  
-- and larger than the range of basic value. --

```
DEFINE(PermissiblePageDimensions, "$BasicPageDimensions
    $NonBasicPageDimensions")
```

-- Macro defining permissible values of graphic renditions.  
-- All the values are basic --

```
DEFINE(GRAPHICRENDITIONS, "
    { 'cancel' | 'increased-intensity' | 'italicized'
      | 'underlined' | 'normal-intensity' | 'not-italicized'
      | 'not underlined' } ... ")
```

-- Macro defining permissible code extension announcer.  
-- All the values are basic --

```
DEFINE(CDEXTAN, " ESC 02/00 05/00, -- Use G0 & LS0 --  
[ ESC 02/00 05/03 ], -- Use G1 & LS1R --  
[ ESC 02/00 05/05 ], -- Use G2 & LS2R --  
[ ESC 02/00 05/07 ], -- Use G3 & LS3R --  
[ ESC 02/00 05/10 ], -- Use G2 & SS2 --  
[ ESC 02/00 05/11 ], -- Use G3 & SS3 --")
```

-- Macros defining final character for designation --

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

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

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

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

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

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

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

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

```
DEFINE(REV, "-- A revision number of character set from 04/00 to 07/14 --")
```

-- Macros defining designation sequences --

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

```
DEFINE(DEG-646-G0, "ESC 02/08 $F646")  
-- Designate any version of ISO 646, except 04/02, to G0 --
```

```
DEFINE(DEG-ANY-G1, "{ [ESC 02/06 $REV],  
{ ESC 02/09 $F94S  
| ESC 02/04 02/09 $F94M  
| ESC 02/13 $F96S  
| ESC 02/04 02/13 $F96M } }")
```

-- Designate any character set to G1 --

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

-- Macros defining shift functions --

```
DEFINE(LS0,      "00/15")    -- Locking shift invoking G0 -> GL --
DEFINE(LS1R,    "ESC 07/14") -- Locking shift invoking G1 -> GR --
DEFINE(LS2R,    "ESC 07/13") -- Locking shift invoking G2 -> GR --
DEFINE(LS3R,    "ESC 07/12") -- Locking shift invoking G3 -> GR --
DEFINE(SS2,     "08/14")     -- Single shift invoking G2 -> GL --
DEFINE(SS3,     "08/15")     -- Single shift invoking G3 -> GL --
```

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

```
DEFINE(BASIC-GRCHAR,     "$DEG-CORE-G0 $LS0, $DEG-EMPTY-G1 $LS1R ")
```

-- Macro defining non-basic character sets --

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

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

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

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

```
DEFINE(ALTCHAR, "$PROFCHAR") -- Same constraint as PROFCHAR --
```

-- Macro defining character presentation attributes --

```
DEFINE(CharacterPreAttributes,    " {
    PERM  #character-path          { '0-degrees' | '90-degrees' ,
                                    | '180-degrees' | '270-degrees' } ,
    PERM  #character-orientation  { '0-degrees' | '90-degrees' ,
                                    | '180-degrees' } ,
    PERM  #initial-offset         { ANY_VALUE } ,
    PERM  #character-spacing      { 80 | 100 | 120 | 200 } ,
    PERM  #line-spacing           { 100 | 150 | 200 | 300 | 400 } ,
    PERM  #line-progression       { '90-degrees' | '270-degrees' } ,
    PERM  #graphic-rendition      { $GRAPHICRENDITIONS } ,
    PERM  #graphic-character-subrepertoire, { ANY_VALUE } ,
    PERM  #graphic-character-sets { $PERMIT-GRCHAR } ,
    PERM  #code-extension-announcers { $CDEXTAN } } ")
```

-- Macro defining raster graphics presentation attributes --

```
DEFINE(RasterGraphicsPreAttributes,    " {
    PERM #pel-transmission-density { 'P1' | 'P2' | 'P3' | 'P4' | 'P5' | 'P6' } ,
    PERM #initial-offset          { ANY_VALUE } } ")
```

-- Macro defining raster graphics content defaults --

```
DEFINE(RasterGraphicsDefaults, " {  
    PERM # pel-transmission-density { 'P1' | 'P2' | 'P3' | 'P4' | 'P5' | 'P6' },  
    PERM # initial-offset { ANY_VALUE },  
    PERM # compression { ANY_VALUE } }")
```

## 7.1.2 Constituent constraints

### 7.1.2.1 DocumentProfile {

```
PERM Generic-layout-structure { 'factor-generator-set' },  
REQ Specific-layout-structure { 'present' },
```

-- Document characteristics --

```
REQ Document-application-profile { ASN.1 { 0 0 20 501 0 } },  
PERM Document-application-profile-defaults {  
    PERM #content-architecture-class { $FC | $FR },  
    PERM #page-dimensions { $PermissiblePageDimensions },  
    PERM #type-of-coding { $CE | $RE },  
    PERM #character-content-defaults { $CharacterPreAttributes },  
    PERM #raster-graphics-content-  
        defaults { $RasterGraphicsDefaults } },  
REQ Document-architecture-class { 'formatted' },  
REQ Content-architecture-classes { [$FC], [$FR] },  
REQ Interchange-format-class { 'if-a' },  
REQ Oda-version { REQ #standard-or-recommendation  
    { "CCITT Recommendation T.410" },  
    REQ #publication-date  
    { "1992-04-23" },
```

-- Non-basic document characteristics --

```
PERM Profile-character-sets { $PROFCHAR },  
PERM Alternative-representation-  
    character-sets { $ALTCHAR },  
PERM Page-dimensions { PMUL { $NonBasicPageDimensions } },  
PERM Coding-attributes {  
    PERM #raster-graphics-coding-attributes {  
        PERM #compression { 'uncompressed' } } },  
PERM Presentation-features {  
    PERM #character-presentation-features {  
        PERM #character-path { '180-degrees' | '270-degrees' },  
        PERM #character-orientation { '90-degrees' | '180-degrees' },  
        PMUL #character-spacing { 80 | 100 | 200 },  
        PERM #line-spacing { 150 },  
        PERM #line-progression { '90-degrees' },  
        PMUL #graphic-character-  
            subrepertoire { ANY_VALUE },  
        PMUL #graphic-character-sets { $NON-BASIC-GRCHAR } },  
    PERM #raster-graphics-presentation-features {  
        PMUL #pel-transmission-density { 'P6' | 'P3' | 'P2' | 'P1' } } },  
PERM Number-of-objects-per-page { > 31 },
```

-- Document management attributes --

```
REQ Document-reference { ANY_VALUE }
```

## 7.2 Logical constituent constraints

No logical constituent constraints are applicable in this DAP.

## 7.3 Layout constituent constraints

### 7.3.1 Macro definitions

No macro definitions are applicable in this subclause.

### 7.3.2 Factor constraints

No factor constraints are applicable in this subclause.

### 7.3.3 Constituent constraints

#### 7.3.3.1 DocumentLayoutRoot {

SPECIFIC:

REQ	Object-type	{ 'document-layout-root' },
REQ	Object-identifier	{ ANY_VALUE },
REQ	Subordinates	{ SUB_ID_OF (Page) + },
PERM	Default-value-lists	{
PERM	#page-attributes	{
PERM	Dimensions	{ \$PermissiblePageDimensions },
PERM	#block-attributes	{
PERM	Position	{ REQ #fixed-position
		{ REQ #horizontal-position
		{ ANY_INTEGER },
		REQ #vertical-position
		{ ANY_INTEGER } } },
PERM	Dimensions	{ REQ #horizontal-dimension
		{ REQ #fixed-dimension
		{ ANY_INTEGER } },
		REQ #vertical-dimension
		{ REQ #fixed-dimension
		{ ANY_INTEGER } } },
PERM	Presentation-attributes	{
PERM	#character-attributes	{ \$CharacterPreAttributes },
PERM	#raster-graphics-attributes	{ \$RasterGraphicsPreAttributes } } } }

#### 7.3.3.2 Page {

SPECIFIC:

REQ	Object-type	{ 'page' },
REQ	Object-identifier	{ ANY_VALUE },
REQ	Subordinates	{ SUB_ID_OF (Block) + },
PERM	Dimensions	{ \$PermissiblePageDimensions },
PERM	Default-value-lists	{
PERM	#block-attributes	{
PERM	Position	{ REQ #fixed-position
		{ REQ #horizontal-position
		{ ANY_INTEGER },
		REQ #vertical-position
		{ ANY_INTEGER } } },
PERM	Dimensions	{ REQ #horizontal-dimension
		{ REQ #fixed-dimension
		{ ANY_INTEGER } },
		REQ #vertical-dimension
		{ REQ #fixed-dimension
		{ ANY_INTEGER } } },
PERM	Presentation-attributes	{
PERM	#character-attributes	{ \$CharacterPreAttributes },
PERM	#raster-graphics-attributes	{ \$RasterGraphicsPreAttributes } } }

### 7.3.3.3 Block {

#### GENERIC:

REQ Object-class-identifier { ANY\_VALUE }

#### SPECIFIC:

REQ Object-identifier { ANY\_VALUE },

PERM Object-class { OBJECT\_CLASS\_ID\_OF (Block) }

#### GENERIC\_AND\_SPECIFIC:

REQ Object-type { 'block' },

PERM Content-portions { CONTENT\_ID\_OF  
(Character-content-portion)  
| CONTENT\_ID\_OF  
(Raster-graphics-content-portion) },

PERM Position { REQ #fixed-position  
{ REQ #horizontal-position  
{ ANY\_INTEGER },  
REQ #vertical-position  
{ ANY\_INTEGER } } },

PERM Dimensions { REQ #horizontal-dimension  
{ REQ #fixed-dimension  
{ ANY\_INTEGER } },  
REQ #vertical-dimension  
{ REQ #fixed-dimension  
{ ANY\_INTEGER } } },

PERM Content-architecture-class { \$FC | \$FR },

PERM Presentation-attributes {  
PERM #character-attributes { \$CharacterPreAttributes },  
PERM #raster-graphics-attributes { \$RasterGraphicsPreAttributes } }

-- The attribute "content portion" must be specified

-- in either object or object class of type block --

## 7.4 Layout style constraints

No layout style constraints are applicable in this DAP.

## 7.5 Presentation style constraints

No presentation style constraints are applicable in this DAP.

## 7.6 Content portion constraints

### 7.6.1 Macro definitions

No macro definitions are applicable in this subclause.

### 7.6.2 Factor constraints

No factor constraints are applicable in this subclause.

### 7.6.3 Content portion constraints

#### 7.6.3.1 Character-content-portion {

REQ Content-identifier-layout { ANY\_VALUE },

PERM Type-of-coding { \$CE },

PERM Alternative-representation { ANY\_VALUE },

REQ Content-information { CHARACTER,  
{ #SHS { 80 | 100 | 120 | 200 }  
| #SGR { \$GRAPHICRENDITIONS }  
| #SVS { 100 | 150 200 | 300 | 400 }  
| #SRS { ANY\_VALUE }  
| #BS  
| #CR



```

| #LF
| #PLD
| #PLU
| #SP
| #SUB
| #LS0
| #LS1R
| #LS2R
| #LS3R
| #SS2
| #SS3
| #DEG-CORE-G0
| #DEG-646-G0
| #DEG-ANY-G1
| #DEG-ANY-G2
| #DEG-ANY-G3
| #DEG-EMPTY-G1 } ... }

```

```

7.6.3.2 Raster-graphics-content-portion {
REQ Content-identifier-layout { ANY_VALUE },
PERM Type-of-coding { $RE },
REQ Coding-attributes {
REQ #number-of-pels-per-line { ANY_VALUE },
PERM #compression { ANY_VALUE }},
PERM Alternative-representation { ANY_VALUE },
REQ Content-information { RASTER }}

```

## 8 Interchange format

Interchange format class “A” is to be used in this DAP, as defined in Recommendation T.415.