

INTERNATIONAL STANDARD

ISO/IEC
8613-7

Second edition
1994-11-01

Information technology — Open Document Architecture (ODA) and Interchange Format: Raster graphics content architectures

*Technologies de l'information — Architecture des documents ouverts
(ODA) et format d'échange: Architecture des contenus des caractères
graphiques à raster*



Reference number
ISO/IEC 8613-7:1994(E)

CONTENTS

	<i>Page</i>
1 Scope	1
2 Normative references	2
2.1 Identical Recommendations International Standards	2
2.2 Paired Recommendations International Standards equivalent in technical content	2
2.3 Additional references	2
3 Definitions	2
4 Abbreviations	2
5 Conventions	3
6 General principles	3
6.1 Content architecture classes	3
6.1.1 Formatted content architecture class	3
6.1.2 Formatted processable content architecture class	3
6.2 Content	4
6.2.1 Binary mode	4
6.2.2 Colour mode	4
6.3 Presentation attributes	4
6.4 Content portion attributes	4
6.5 Coding of content information	4
6.6 Picture element (pel) array	4
6.7 Colour spaces applicable to the raster graphics content architecture	5
7 Principles of positioning pels	5
7.1 Basic concepts	6
7.1.1 Measurement units and directions	6
7.1.2 Coordinate systems	6
7.2 Pel image model	6
7.3 Positioning of pels	6
7.3.1 The clipped pel array	7
7.3.2 Discarded pels	7
7.4 Tiling	7
7.5 Positioning of pels in a basic layout object	9
7.5.1 Positioning parameters	9
7.5.2 Positioning rules for formatted content	10
7.5.3 Positioning rules for formatted processable content	10

© ISO/IEC 1994

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

ISO/IEC Copyright Office • Case postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

8	Definition of raster graphics presentation attributes	10
8.1	Shared presentation attributes	11
8.1.1	Clipping	11
8.1.2	Line progression.....	12
8.1.3	Pel path	12
8.2	Layout presentation attributes	12
8.2.1	Initial offset	12
8.2.2	Pel transmission density	13
8.3	Logical presentation attributes	14
8.3.1	Image dimensions	14
8.3.2	Pel spacing	15
8.3.3	Spacing ratio	15
8.4	Content architecture class attributes.....	15
8.4.1	Content architecture class	15
9	Definition of raster graphics content portion attributes.....	16
9.1	Common coding attributes	16
9.1.1	Type of coding	16
9.2	Other coding attributes.....	17
9.2.1	Compression	17
9.2.2	Number of lines.....	18
9.2.3	Number of pels per line.....	18
9.2.4	Number of discarded pels	19
9.2.5	Number of lines per tile	19
9.2.6	Number of pels per tile line.....	19
9.2.7	Tiling offset.....	19
9.2.8	Tile types.....	20
9.2.9	Bits per colour component	20
9.2.10	Interleaving format.....	21
9.3	Content information attributes	21
9.4	Interactions with document architecture attributes	21
10	Formal definitions of raster graphics content architecture dependent data types.....	21
10.1	Introduction.....	21
10.2	Representation of presentation attributes	22
10.3	Representation of coding attributes.....	23
10.4	Representation of non-basic features and non-standard defaults	24
11	Coding schemes	25
11.1	CCITT Rec. T.6 encoding scheme.....	25
11.2	CCITT Rec. T.4 encoding schemes	25
11.3	Bitmap encoding scheme	26
11.4	Tiled encoding scheme.....	26
11.5	Direct value encoding scheme	27
11.6	Octet run-length encoding scheme.....	27
11.7	Packed index encoding scheme.....	27
12	Content layout process	28
12.1	Introduction.....	28
12.1.1	Purpose	28
12.1.2	Available area	28
12.1.3	Presentation attributes	28
12.1.4	Coding attributes.....	28
12.1.5	Raster graphics content architecture classes	28
12.1.6	Layout of the content	29
12.2	Notation	29
12.3	The fixed dimension content layout method.....	29
12.4	The scalable dimension content layout method	30

13	Content imaging process	31
13.1	Introduction.....	36
13.2	Content imaging process for formatted form	36
13.3	Content imaging process for formatted processable form	36
14	Definition of raster graphics content architecture classes	36
14.1	Summary of raster graphics presentation attributes	36
14.2	Summary of raster graphic content portion attributes.....	37
Annex A	– Summary of raster graphics content architecture classes.....	38
A.1	Formatted raster graphics content architecture class.....	38
A.1.1	Presentation attributes.....	38
A.1.2	Content portion attributes.....	38
A.2	Formatted processable raster graphics content architecture class	39
A.2.1	Presentation attributes.....	39
A.2.2	Content portion attributes.....	40
Annex B	– Summary of ASN.1 object identifiers	41
Annex C	– SGML representation of raster graphics content-specific attributes for ODL	42
C.1	Introduction.....	42
C.2	Names and public identifiers.....	42
C.3	Representation of attribute values.....	42
C.3.1	Constructed parameters.....	42
C.3.2	String parameters	42
C.3.3	Keyword parameters	43
C.3.4	Integer parameters.....	43
C.4	Presentation attributes	43
C.4.1	Shared presentation attributes (format attribute-directives).....	43
C.4.2	Layout presentation attributes (formal attributes).....	43
C.4.3	Logical presentation attributes (format directives)	43
C.5	Coding attributes.....	44
Index		45

LIST OF TABLES

	<i>Page</i>
Table 1 – Raster graphics presentation attributes	11
Table 2 – Default values of the presentation attribute “initial offset” (position of initial point).....	13
Table 3 – Relation of pel spacing and line spacing to resolution	13
Table 4 – Default value of the presentation attribute “number of pels per line”	18
Table 5 – Dimensions of basic layout object.....	29
Table 6 – Raster graphics presentation attributes	37
Table 7 – Raster graphics content portion attributes	37
Table A.1 – Formatted raster graphics content architecture class presentation attributes	38
Table A.2 – Formatted processable raster graphics content architecture class content portion attributes.....	38
Table A.3 – Formatted processable raster graphics content architecture class presentation attributes	39
Table A.4 – Formatted processable raster graphics content architecture class content portion attributes.....	40
Table B.1 – Summary of ASN.1 object identifiers.....	41

LIST OF FIGURES

	<i>Page</i>
Figure 1 – Relationships among the colour spaces for the Raster Graphics Content Architecture	5
Figure 2 – Example of direction	6
Figure 3 – Example of clipping a content portion	7
Figure 4 – Location of the pel array in the set of tiles	8
Figure 5 – Example of the tile content ordering	8
Figure 6 – Positioning of pels of the clipped pel array within a basic layout object	9
Figure 7 – Diagrams used to illustrate the process of determining the basic layout object dimensions	32
Figure 8 – Layout process for the presentation attribute “image dimensions” when a value is specified for the parameter “automatic”	33
Figure 9 – Layout process for the presentation attribute “image dimensions” when a value is specified for the parameter “width controlled” or “height controlled”	34
Figure 10 – Layout process for the presentation attribute “image dimensions” when a value is specified for the parameter “area controlled”	35

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. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 8613-7 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 18, *Document processing and related communication*, in collaboration with ITU-T. The identical text is published as ITU-T Recommendation T 417.

This second edition cancels and replaces the first edition (ISO 8613-7:1989), which has been technically revised.

ISO/IEC 8613 consists of the following parts, under the general title *Information technology — Open Document Architecture (ODA) and interchange format*:

- *Part 1: Introduction and general principles*
- *Part 2: Document structures*
- *Part 3: Abstract interface for the manipulation of ODA documents*
- *Part 4: Document profile*
- *Part 5: Open document interchange format*
- *Part 6: Character content architectures*
- *Part 7: Raster graphics content architectures*
- *Part 8: Geometric graphics content architectures*
- *Part 9: Audio content architectures*
- *Part 10: Formal specifications*
- *Part 11: Tabular structures and tabular layout*
- *Part 12: Identification of document fragments*
- *Part 13: Spreadsheet*
- *Part 14: Temporal relationships and non-linear structures*

INTRODUCTION

This ITU-T Recommendation | International Standard was prepared as a joint publication by ITU-T Study Group 8 and ISO/IEC Joint Technical Committee 1.

At present, the ITU-T Recommendation T.410-Series | ISO/IEC 8613 consists of:

- Introduction and general principles;
- Document structures;
- Document profile;
- Open document interchange formats;
- Character content architectures;
- Raster graphics content architectures;
- Geometric graphics content architectures;
- Formal Specification of the Open Document Architecture (FODA)

NOTE – The use of FODA is applicable to ISO/IEC only.

Further Specifications may be added to this set of ITU-T Recommendations | International Standard.

Development of these Recommendations | International Standard was originally in parallel with ECMA 101:1989, Open Document Architecture.

This set of ITU-T Recommendations | International Standard replaces the CCITT T.410-Series of Recommendations (1988) and ISO 8613:1989.

Significant technical changes are the inclusion in this Recommendation | International Standard of the following amendments as agreed by ITU-TS and ISO/IEC JTC 1:

- Tiled raster graphics;
- Colour.

In addition, a number of technical corrigenda have been applied to the Specification.

This part contains three annexes:

- Annex A (integral) contains a summary of the raster graphics content architecture classes;
- Annex B (non-integral) lists the ASN.1 object identifiers used by the raster graphics content architecture;
- Annex C (integral to ISO/IEC only) contains ODL, the SGML representation of the attributes specific to raster graphics content architectures.

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

**INFORMATION TECHNOLOGY –
OPEN DOCUMENT ARCHITECTURE (ODA) AND INTERCHANGE FORMAT:
RASTER GRAPHICS CONTENT ARCHITECTURES**

1 Scope

The purpose of the ITU-T Rec. T.410-Series | ISO/IEC 8613 is to facilitate the interchange of documents.

In the context of these Recommendations | International Standards, documents are considered to be items such as memoranda, letters, invoices, forms and reports, which may include pictures and tabular material. The content elements used within the documents may include graphic characters, geometric graphics elements and raster graphics elements, all potentially within one document.

NOTE – These Recommendations | International Standards are designed to allow for extensions, including hypermedia features, spreadsheets and additional types of content such as audio and video.

In addition to the content types defined in these specifications, ODA also provides for arbitrary content types to be included in documents.

These Recommendations | International Standards apply to the interchange of documents by means of data communications or the exchange of storage media.

These Recommendations | International Standards provide for the interchange of documents for either or both of the following purposes:

- to allow presentation as intended by the originator;
- to allow processing such as editing and reformatting.

The composition of a document in interchange can take several forms:

- formatted form, allowing presentation of the document;
- processable form, allowing processing of the document;
- formatted processable form, allowing both presentation and processing.

These Recommendations | International Standards also provide for the interchange of ODA information structures used for the processing of interchanged documents.

This ITU-T Recommendation | International Standard defines:

- the raster graphics content architectures that can be used in conjunction with the document architecture defined in ITU-T Rec. T.412 | ISO/IEC 8613-2;
- the internal structure of content portions that are structured according to a raster graphics content architecture;
- those aspects of positioning and imaging applicable to the presentation of raster graphics contents in a basic layout object;
- a content layout process which, together with the document layout process defined in ITU-T Rec. T.412 | ISO/IEC 8613-2, specifies the method for determining the dimensions of basic layout objects for raster graphics content portions;
- the presentation and content portion attributes applicable to raster graphics content architectures.

2 Normative references

The following ITU-T Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The ITU-T Secretariat maintains a list of currently valid ITU-T Recommendations/CCITT Recommendations.

2.1 Identical Recommendations | International Standards

- ITU-T Recommendation T.411 (1992) | ISO/IEC 8613-1:1994, *Information technology – Open Document Architecture (ODA) and interchange format: Introduction and general principles*.
- ITU-T Recommendation T.412 (1992) | ISO/IEC 8613-2:1994, *Information technology – Open Document Architecture (ODA) and interchange format: Document structures*.
- ITU-T Recommendation T.414 (1992) | ISO/IEC 8613-4:1994, *Information technology – Open Document Architecture (ODA) and interchange format: Document profile*.
- ITU-T Recommendation T.415 (1992) | ISO/IEC 8613-5:1994, *Information technology – Open Document Architecture (ODA) and interchange format: Open Document Interchange Format*.

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)*.

2.3 Additional references

- ITU-T Recommendation T.4 (1993), *Standardization of Group 3 facsimile apparatus for document transmission*.
- CCITT Recommendation T.6 (1992), *Facsimile coding schemes and coding control functions for Group 4 facsimile apparatus*.
- ISO 8879:1986, *Information processing – Text and office systems – Standard Generalized Markup Language (SGML)*.