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**Information technology — Open
Document Architecture (ODA) and
interchange format: Document structures**
iTeh STANDARD PREVIEW

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*Technologies de l'information — Architecture des documents ouverts
(ODA) et format d'échange: Structures documentaires*

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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. 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 8613-2 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 Rec. T.412.

This second edition cancels and replaces the first edition (ISO 8613-2:1989), 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*

Annexes A and H form an integral part of this part of ISO/IEC 8613. Annexes B to G and I to K are for information only.

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 Recs. in the T.410-Series | International Standard ISO/IEC 8613 consist 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).
- (The formal specification is applicable to ISO/IEC 8613 only).

Further Recommendations | International Standards may be added to this series of ITU-T Recommendations | International Standards.

Development of this series of ITU-T Recommendations | International Standards was originally in parallel with the ECMA-101 standard: Open Document Architecture.

This series of ITU-T Recommendations | International Standards is a new edition of the CCITT T.410-Series Recommendations (1988) and ISO 8613 (1989).

Significant technical changes are the inclusion of the following amendments as agreed by ITU-T and ISO/IEC:

- Alternative Representation;
- Annex on use of MHS/MOTIS; [ISO/IEC 8613-2:1995](https://standards.iteh.ai/catalog/standards/sist/81401d22-be74-4dc6-8989-a2ad3986dc65/iso-iec-8613-2-1995)
- Colour; <https://standards.iteh.ai/catalog/standards/sist/81401d22-be74-4dc6-8989-a2ad3986dc65/iso-iec-8613-2-1995>
- Conformance Testing Annex;
- Document Application Profile Proforma and Notation;
- Security;
- Streams;
- Styles;
- Tiled Raster Graphics.

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

This ITU-T Recommendation | International Standard contains eleven annexes:

- Annex A – Notation used to represent document structures (integral);
- Annex B – Examples of document structures (non-integral);
- Annex C – Examples of particular document architecture features (non-integral);
- Annex D – The defaulting mechanism (non-integral);
- Annex E – Attribute summary tables (non-integral);
- Annex F – Overview of alternative description, technical and implementation aspects (non-integral);
- Annex G – Further information on security aspects within a document (non-integral);
- Annex H – Conversions between the reference colour space and the interchange spaces (integral);
- Annex I – Definitions of colour terms (non-integral);
- Annex J – Colour concepts (non-integral);
- Annex K – Bibliography on colour (non-integral).

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY — OPEN DOCUMENT ARCHITECTURE (ODA) AND INTERCHANGE FORMAT: DOCUMENT STRUCTURES

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 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, raster graphics elements and geometric 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 Recommendations | International Standards, 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 of the document.

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 a document architecture intended for representation of documents;
- defines a document processing model;
- defines the document structures, the basic constituents of the architecture and a descriptive representation of these in terms of attributes;
- defines an interface which allows the use of different content architectures with the document architecture;
- defines the reference model of the document layout process;
- defines the reference model of the document imaging process;
- defines the reference model for protecting parts of a document;
- defines three document architecture classes;
- defines a notation used for illustrating and describing document structures;
- provides examples of document structures;
- provides examples of particular document attributes.

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 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 ISO and IEC maintain registers of currently valid International Standards. The ITU-T Secretariat maintains a list of currently valid ITU-T Recommendations.

2.1 Identical Recommendations | International Standards

- ITU-T Recommendation T.411 (1993) | ISO/IEC 8613-1:1994, *Information technology – Open Document Architecture (ODA) and interchange format: Introduction and general principles.*
- ITU-T Recommendation T.414 (1993) | ISO/IEC 8613-4:1994, *Information technology – Open Document Architecture (ODA) and interchange format: Document Profile.*
- ITU-T Recommendation T.415 (1993) | ISO/IEC 8613-5:1994, *Information technology – Open Document Architecture (ODA) and interchange format: Open Document Interchange Format.*
- ITU-T Recommendation T.416 (1993) | ISO/IEC 8613-6:1994, *Information technology – Open Document Architecture (ODA) and interchange format: Character content architectures.*
- ITU-T Recommendation T.417 (1993) | ISO/IEC 8613-7:1994, *Information technology – Open Document Architecture (ODA) and interchange format: Raster graphics content architectures.*
- ITU-T Recommendation 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 Recommendation 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).*

2.3 Additional references

- ISO 2846:1975, *Set of printing inks for offset printing* – *Colorimetric characteristics.*
- ISO 3664:1975, *Photography – Illumination conditions for viewing colour transparencies and their reproductions.*
- ISO/IEC 6937:1994, *Information technology – Coded graphic character set for text communication – Latin alphabet.*
- CIE Publication S002:1986, *Colorimetric Observers.*
- CIE Publication 15.2:1986, *Colorimetry.*
NOTE – CIE = International Commission on Illumination.
- ANSI PH2.30-1985, *Graphic Arts and Photographic Viewing Conditions for Color Prints, Transparencies and Photomechanical Reproduction.*
- SMPTE Recommended Practice RP37:1969, *Color Temperature for Color Television Studio Monitors.*
- SMPTE Recommended Practice RP145:1986, *Color Monitor Colorimetry.*

3 Definitions

For the purpose of this Recommendation | International Standard the definitions given in ITU-T Rec. T.411 | ISO/IEC 8613-1 apply.

NOTE – Definitions of some additional terms relating to colour are in Annex I.

4 Abbreviations

For the purpose of this Recommendation | International Standard, the abbreviations given in ITU-T Rec. T.411 | ISO/IEC 8613-1 apply.

5 Conventions

For the purpose of this Recommendation | International Standard the conventions given in ITU-T Rec. T.411 | ISO/IEC 8613-1 apply.

The following additional conventions are used within this Recommendation | International Standard.

5.1 Subordinate

References to the immediate subordinates of an object always use the form “immediate subordinates” or “immediately subordinate”.

When the term “subordinate” is used without this qualifier it means subordinate to any hierarchical level.

5.2 Superior

References to the immediate superior of an object always use the form “immediate superior” or “immediately superior”.

The term “nearest superior” is used in conjunction with an object and with a particular qualification to mean the first superior going up the hierarchy which satisfies the qualification, i.e. first checking the immediate superior, then its immediate superior, and then each superior in turn in this hierarchic order. For example, “nearest superior that belongs to the specified object class” means the first superior going up the hierarchy from the object which is of the specified object class.

When the term “superior” is used without either of these qualifiers it means superior to any hierarchical level.

5.3 Next and following

When the term “next” or “immediately following” is used in conjunction with an object then it means the object immediately following this object in sequential order (see 7.1.2). Thus, “next layout object” means the immediately following layout object in sequential layout order; “next logical object” means the immediately following logical object in sequential logical order.

When the term “following” is used in conjunction with an object without the qualifier “immediately” then it means an object at any position later in the sequential order than this object.

In some cases the term “next” is used together with a further qualification, for example, “next layout object with the same layout category” means the first of the following layout objects in sequential layout order which has the same layout category as the specified layout object.

5.4 Preceding

When the term “immediately preceding” is used in conjunction with an object then it means the object immediately preceding this object in sequential order (see 7.1.2). Thus, “immediately preceding layout object” means the immediately preceding layout object in sequential layout order; “immediately preceding logical object” means the immediately preceding logical object in sequential logical order.

When the term “preceding” is used in conjunction with an object without the qualifier “immediately”, then it means an object at any position earlier in the sequential order than this object.

In some cases the term “preceding” is used together with a further qualification, for example, “preceding layout object with the same layout category” means the last of the preceding layout objects in sequential layout order which has the same layout category as the specified layout object.

6 Architectural principles

6.1 Architectural concepts

For the purpose of the ITU-T Rec. T.410-Series | ISO/IEC 8613, a document is an amount of structured information that can be interchanged as a unit.

This Specification provides the means to represent the structures of documents in two major forms:

- in a *formatted form* which allows documents to be presented (for example, printed or displayed) as intended by the originator;
- in a *processable form* which allows further processing of documents by the recipient, such as editing and formatting as intended by the originator.

It also provides the means to represent a document in *formatted processable form* to satisfy both purposes.

A document contains information that relates to its content and structure.

The *content* of a document consists of any type of information that is intended for human perception, for example, content elements that can be presented in a two-dimensional form, such as printed on paper or displayed on a screen.

The structural information included in a document is provided in order to:

- delimit portions within a document, such as areas for the imaging of different types of content elements;
- delimit portions of a document that have a logical meaning, such as chapters, paragraphs;
- use different types of coding for the different content types;
- allow processing of the document.

The rules for defining the structure and representation of documents are collectively called the *document architecture*.

The document architecture comprises a structural model and a descriptive representation. The *structural model* describes the structural elements of a document and the relationships among these elements. The *descriptive representation* describes how the elements of a document and the properties of these elements are represented.

The structural model and the descriptive representation present complementary views of a document. Both are necessary in order to distinguish between the structural aspects of a document and the data structures which represent those structural aspects. Also, the descriptive representation shows how additional information not described by the structural model is represented. This information includes styles and the document profile. Styles contain information relating to the layout and presentation of a document (see 6.3.5). The document profile includes information relating to the document as a whole (see 6.3.7).

This Specification does not require all parts of the document architecture to be present in any particular document.

<https://standards.iteh.ai/catalog/standards/sist/81401d22-be74-4dc6-8989-2ad3986dc65/iso-iec-8613-2-1995>

6.2 Structural model of a document

The structural model introduces the *structural elements* of the document architecture.

6.2.1 Specific structures

The structural model of a document provides for two different but complementary views of the content of a specific document:

- the logical view associates content with structural elements such as chapters, appendices, headings, paragraphs, footnotes and figures;
- the layout view associates content with structural elements relating to presentation media, such as pages and areas within pages.

This is illustrated in Figure 1.

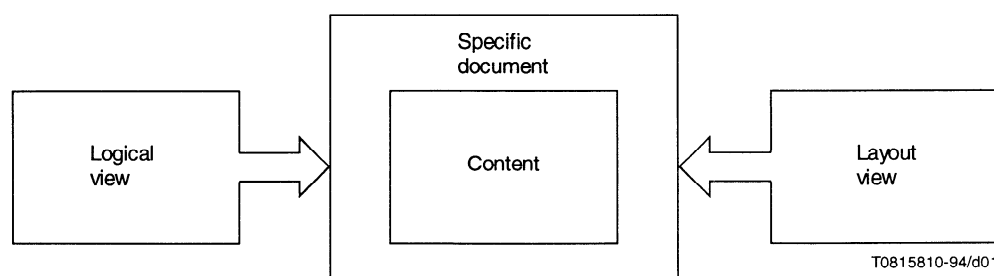


Figure 1 – Views of a document

These structural elements of a specific document are called *objects*. Each view associates the same document content with a separate structure which consists of a hierarchy of objects.

Thus

- the *specific logical structure* associates the content of a document with a hierarchy of *logical objects* and provides for the representation of documents in processable form;
- the *specific layout structure* associates the content of a document with a hierarchy of *layout objects* and provides for the representation of documents in formatted form.

The *specific structure* consists of the specific logical structure and/or the specific layout structure.

The structures are independent of the types of content within a document.

There are two types of relationships among objects in a structure, namely:

- *structural relationships* which specify the hierarchical structure of the objects;
- *non-hierarchical relationships* which specify other relationships, such as cross-references to figures or footnotes.

6.2.2 Content of a document

The structural model of a document partitions the content into structural elements called *content portions*.

The information within each content portion must pertain to a particular type of content and the structure of this information is defined by a content architecture. A *content architecture* consists of the definition of a set of *content elements*, control functions and attributes, with their coded representation, and of the rules for the application of the attributes and control functions to the content elements.

Selection of content architecture depends on the type or types of content elements to be represented. A single document may contain content portions pertaining to different content architectures. There shall be only one content architecture per content portion.

A content architecture does not identify any logical or layout objects of a document. All structural information and all logical and layout objects are specified by the logical and layout structures of the document architecture.

The document architecture supports the incorporation of the content architectures that are specified in other parts of the ITU-T Rec. T.410-Series | ISO/IEC 8613 as well as supporting the incorporation of content architectures for any other types of content. The document architecture has been designed to be separate from the content architectures. This is achieved since the structural model has been designed such that the properties of the structural elements that are used to describe a document are independent of the types of content that may be associated with those structural elements. Both document architecture and one or more content architectures are needed to represent a document.

The interface between the document architecture and the content architecture(s) is defined in clause 8.

This interface allows the use of any of the content architectures defined in other parts of the ITU-T Rec. T.410-Series | ISO/IEC 8613 with the document architecture. Other types of content may be used with the document architecture provided a content architecture is defined to this interface.

6.2.3 Generic structures

The generic structure of a document provides for the representation of characteristics common to, and relationships between, a number of objects within a document. In the most comprehensive case it provides for the representation of the common characteristics of a group of documents.

6.2.3.1 Object classes

In many documents, there may be sets of objects with common characteristics; for example:

- logical objects representing sections, consisting of a sequence of subordinate objects representing paragraphs, with the same characteristics;
- pages with the same headers and footers.

An *object class* is a structural element of the document that models such a group of common characteristics.

The ITU-T Rec. T.410-Series | ISO/IEC 8613 does not define particular object classes; however it provides the means by which object classes can be defined.

Any content portions associated with an object class are called *generic content portions*.

For convenience of reference, the term *component* is used to refer collectively to an object or an object class.