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Information technology — Open Document Architecture (ODA) and interchange format: Identification of document fragments

*Technologies de l'information — Architecture des documents ouverts
(ODA) et format d'échange: Identification de fragments 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. 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 8613-12 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.422.

ISO/IEC 8613 consists of the following part, 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 relationship and non-linear structures*

Annex A forms an integral part of this part of ISO/IEC 8613. Annexes B to D 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 Recommendations in the T.410-Series | International Standard ISO/IEC 8613 consists of:

- Introduction and general principles;
- Document structures;
- Abstract interface for the manipulation of ODA documents;
- Document profile;
- Open document interchange format;
- Character content architectures;
- Raster graphics content architectures;
- Geometric graphics content architectures;
- Audio content architectures;
- Formal specification of the Open Document Architecture (FODA).
(The formal Specification is applicable to ISO/IEC 8613 only).
- Tabular structures and tabular layout;
- Identification of document fragments;
- Temporal relationships and non-linear structures.

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 ECMA-101 standard: *Open Document Architecture*.

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

- Annex A (integral) contains changes to other parts of ITU-T Rec. T.410-Series | ISO/IEC 8613;
- Annex B (non-integral) contains examples of location expressions;
- Annex C (non-integral) contains the application class tag assignments;
- Annex D (non-integral) contains a summary of object identifiers.

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INTERNATIONAL STANDARD**ITU-T RECOMMENDATION****INFORMATION TECHNOLOGY — OPEN DOCUMENT
ARCHITECTURE (ODA) AND INTERCHANGE FORMAT:
IDENTIFICATION OF DOCUMENT FRAGMENTS****1 Scope**

The purpose of ITU-T Rec. T.410-Series | ISO/IEC 8613 is to facilitate the interchange and manipulation 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, raster graphics elements and geometric graphics elements, all potentially within one document.

NOTE – These Recommendations | International Standards are designed to allow for extensions, including spreadsheets and additional types of content such as 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 Recommendation | International Standard provides:

- a mechanism for the identification of document fragments. Location expressions are used for this purpose;
- the specification of external references;
- the specification of subprofiles.

2 Normative references

The following 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 Telecommunication Standardization Bureau of the ITU 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.412 (1993) | ISO/IEC 8613-2:1995, *Information technology – Open Document Architecture (ODA) and interchange format: Document structures*.
- ITU-T Recommendation T.413 (1994) | ISO/IEC 8613-3:1995, *Information technology – Open Document Architecture (ODA) and interchange format: Abstract interface for the manipulation of ODA documents*.
- 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*.
- ITU-T Recommendation T.419¹⁾ | ISO/IEC 8613-9: ...¹⁾, *Information technology – Open Document Architecture (ODA) and interchange format: Audio content architectures*.
- ITU-T Recommendation T.421 (1994) | ISO/IEC 8613-11:1995, *Information technology – Open Document Architecture (ODA) and interchange format: Tabular structures and tabular layout*.
- ITU-T Recommendation T.424¹⁾ | ISO/IEC 8613-14: ...¹⁾, *Information technology – Open Document Architecture (ODA) and interchange format: Temporal relationships and non-linear structures*.

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)*.
- ITU-T X.501 (1993), *Information technology – Open Systems Interconnection – The Directory: Models*.
ISO/IEC 9594-2:1990, *Information technology – Open Systems Interconnection – The Directory – Part 2: Models*.
- ITU-T X.511 (1993), *Information technology – Open Systems Interconnection – The Directory: Abstract service definition*.
ISO/IEC 9594-3:1990, *Information technology – Open Systems Interconnection – The Directory – Part 3: Abstract service definition*.

2.3 Additional references

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

¹⁾ Presently at the stage of draft.

- ISO 8601:1988, *Data elements and interchange formats – Information interchange – Representation of dates and times*.
- ISO/IEC 8613-10:1995, *Information technology – Open Document Architecture (ODA) and interchange format – Part 10: Formal specifications*.
- ISO/IEC 10031-2:1991, *Information technology – Text and office systems – Distributed-office-applications model – Part 2: Distinguished-object-reference and associated procedures*.

3 Definitions

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

The following additional definitions are given in this Recommendation | International Standard:

- 3.1 associated information name:** A name which uniquely identifies a set of information being transmitted with the document, the precise semantics being local to the transfer mechanism being used.
- 3.2 document fragment:** A part of a document identified by a location expression.
- 3.3 external entity:** Any amount of structured external ODA information that can be interchanged as a unit.
- 3.4 external reference:** A reference to structured information that is external to the document that references it.
- 3.5 identifier production function:** A function defined for producing identifiers of constituents with given properties, used for the construction of constituent locators.
- 3.6 location expression:** A mechanism to select a document fragment based on values of attributes and other document characteristics.
- 3.7 locator:** Part of a location expression which identifies one or more constituents, a subtree in a specific structure, or a region in a specific structure.
- 3.8 reference name:** A pointer into an external references list in either the document profile or the hypermedia document profile.
- 3.9 subprofile:** A subprofile is a constituent consisting of a set of attributes, taken from a subset of the document profile attributes, that can be specified for a document fragment.

4 Abbreviations

For the purposes of this Recommendation | International Standard the abbreviations given in ITU-T Rec. T.411 | ISO/IEC 8613-1 and ISO/IEC 10031-2 apply.

The following additional abbreviations are given in this Recommendation | International Standard:

DOR Distinguished Object Reference

5 Conventions

For the purposes of this Recommendation | International Standard the conventions given in ITU-T Rec. T.411 | ISO/IEC 8613-1 and ITU-T Rec. T.412 | ISO/IEC 8613-2 apply.

6 Overview

The areas covered by this Specification are the following:

- location expressions, for identification of document fragments;
- external references, for identification and handling of information that is external to a given document;
- subprofiles, for the provision of, mainly, management information applying to a document fragment.

6.1 Location expressions

The purpose of location expressions is to provide a general mechanism for the identification of document fragments. Location expressions may be either basic or composite depending on the structure of the expression.

Location expressions allow the selection of a document fragment based on values of attributes and other document characteristics.

6.2 External references

Document constituents may refer to information external to the document they belong to, by means of the external references mechanism. Reference entities are the referenced information.

6.3 Subprofiles

A subprofile is a constituent consisting of a set of attributes, taken from a subset of the document profile attributes, that can be specified for a document fragment. This document fragment shall be referenced using a location expression.

The attributes of a subprofile provide management information, or other kind of information, applying to a document fragment, in a similar way that document profile attributes apply to whole documents.

6.4 Relationship to application profiles

Application profiles may be defined for applications that need identification of document fragments, to specify (in addition to the rules described in clause 10 of ITU-T Rec. T.411 | ISO/IEC 8613-1):

- permissible ranges of values for location expressions;
- what the value range of the parameter “external entity” shall be;
- rules for external information names;
- rules for associated information names;
- rules for distinguished names;
- values and semantics of ASN.1 object identifiers in external entities.

7 Location expressions

7.1 Introduction

In this clause, productions following the notation described in F.3.2 of ITU-T Rec. T.411 | ISO/IEC 8613-1 are used.

The mechanism for identification of document fragments is based on the use of *location expressions*.

A location expression is either a *basic location expression* or a *composite location expression*, i.e.:

**<location-expression> ::= <basic-location-expression>
 | <composite-location-expression>**

7.2 Basic location expressions

A basic location expression consists of a *locator*, which may identify:

- A single constituent or a set of constituents (*constituent-locator*).
- A subtree in a specific structure, formed by an object description and, if composite, all its subordinates, and also, in certain circumstances, its associated content portions if any (*subtree-locator*).
- A region in a specific structure, formed by all object descriptions comprised, in sequential order (as defined in ITU-T Rec. T.412 | ISO/IEC 8613-2), between a pair of given object descriptions (*region-locator*).

A basic location expression is defined by the following production:

```
<basic-location-expression> ::= <region-locator>
                                | <subtree-locator>
                                | <constituent-locator>
```

When evaluated, a locator yields a set of zero or more constituents (each represented by its identifier). In the case of subtrees and regions, the constituents form an ordered sequence (following the sequential order); in any other case (e.g. in case of styles), the order of the constituents does not have to follow any rules and has no semantic meaning.

When a location expression that takes a parameter that is defined for a single constituent is evaluated with an argument that is a set of locations, the location expression is evaluated for each member (if any) of the argument, and the result of the entire expression is taken to be the union of all individual results (or empty, if the argument set was empty).

7.2.1 Region locators

A region is specified by a region locator, that consists of a pair of object locators (see 7.2.3), each of them with an optional flag indicating if the identified object is to be included or not in the region. If the flag is not provided, then the object locator is not included.

A region locator is defined by the following production:

```
<region-locator> ::= 'REGION' '(' '(' <object-locator> [ ',' 'not-included' ] ')' ','
                    '(' <object-locator> [ ',' 'not-included' ] ')' ')'
```

7.2.2 Subtree locators

A subtree is specified by a subtree locator, that consists of an object locator (see 7.2.3).

A subtree locator is defined by the following production:

```
<subtree-locator> ::= 'SUBTREE' <object-locator>
```

7.2.3 Constituent locators

The construction of constituent locators is based on the use of *identifier production functions* that are defined for producing identifiers of constituents with given properties.

Their use is defined with the following productions:

```
<constituent-locator> ::= <document-profile-locator>
                        | <subprofile-locator>
                        | <component-locator>
                        | <content-portion-locator>
                        | <style-locator>
                        | <link-or-link-class-locator>
                        | 'CONSTITUENT-WITH' '(' <constituent-type> ')'
```

```
<document-profile-locator> ::= -- Indication that the document profile is to be located --
```

```
<subprofile-locator> ::= <subprofile-id>
                        | 'SUBPROFILE-OF' '(' <constituent-locator> ')'
                        | 'SUBPROFILE-WITH' '(' <attribute-name> ',' <value-specification> ')'
```

```
<subprofile-id> ::= -- A subprofile identifier, as defined in clause 9 --
```

```
<component-locator> ::= <object-class-locator>
                        | <object-locator>
```

```
<object-class-locator> ::= <object-class-id>
                        | 'OBJECT-CLASS-OF' '(' <object-locator> ')'
                        | 'OBJECT-CLASS-WITH' '(' <attribute-name> ',' <value-specification>
                        | ',' 'defaulting' ] ')'
```

<object-class-id> ::= -- *An object class identifier, as defined in ITU-T Rec. T.412 | ISO/IEC 8613-2 --*

<object-locator> ::= **<object-id>**
 | 'SUBORD' '(' **<object-locator>** [',' **<counters>**] ')'
 | 'OBJECT-WITH' '(' **<attribute-name>** ',' **<value-specification>**
 [',' **<object-locator>**] [',' **<counters>**] [',' 'not-defaulting'] ')'

<object-id> ::= -- *An object identifier, as defined in ITU-T Rec. T.412 | ISO/IEC 8613-2 --*

<content-portion-locator> ::= **<content-portion-id>**
 | 'ASSOC' '(' **<component-locator>** [',' **<counters>**] ')'
 | 'CONTENT-WITH' '(' **<attribute-name>** ',' **<value-specification>**
 [',' **<component-locator>**] [',' **<counters>**] [',' 'not-defaulting'] ')'

<content-portion-id> ::= -- *A content portion identifier, as defined in ITU-T Rec. T.412 | ISO/IEC 8613-2 --*

<style-locator> ::= **<style-id>**
 | 'LAYOUT-STYLE-OF' '(' **<component-locator>** ')'
 | 'PRESENTATION-STYLE-OF' '(' **<component-locator>** ')'
 | 'LAYOUT-STYLE-WITH' '(' **<attribute-name>** ',' **<value-specification>**
 [',' 'not-defaulting'] ')'
 | 'PRESENTATION-STYLE-WITH' '(' **<attribute-name>** ',' **<value-specification>**
 [',' 'not-defaulting'] ')'

<style-id> ::= -- *A layout style identifier, as defined in ITU-T Rec. T.412 | ISO/IEC 8613-2 --*

<link-or-link-class-locator> ::= **<link-class-locator>**
 | **<link-locator>**

<link-class-locator> ::= **<link-class-id>**
 | 'LINK-CLASS-OF' '(' **<link-locator>** ')'
 | 'LINK-CLASS-WITH' '(' **<attribute-name>** ',' **<value-specification>** ')'

<link-class-id> ::= -- *A link class identifier, as defined in ITU-T Rec. T.424 | ISO/IEC 8613-14 --*

<link-locator> ::= **<link-id>**
 | 'LINK-WITH' '(' **<attribute-name>** ',' **<value-specification>** [',' 'not-defaulting'] ')'

<link-id> ::= -- *A link identifier, as defined in ITU-T Rec. T.424 | ISO/IEC 8613-14 --*

<counters> ::= '(' ['**<start-counter>**'] [',' '**<end-counter>**'] ')'

<start-counter> ::= **<integer-value>**

<end-counter> ::= **<integer-value>**

<integer-value> ::= -- *An integer value, as defined in Annex F of ITU-T Rec. T.411 | ISO/IEC 8613-1 --*

<attribute-name> ::= -- *An attribute name, as defined in Annex F of ITU-T Rec. T.411 | ISO/IEC 8613-1 --*

<value-specification> ::= **<value>**
 | '(' [-- *start* -- **<value>**] [',' -- *end* -- **<value>**] ')'

<value> ::= **<value-type>**

<value-type> ::= -- *A value type, as defined in Annex F of ITU-T Rec. T.411 | ISO/IEC 8613-1 --*

7.2.4 Identifier production functions

For all functions defined in this subclause, any argument which is a value specification can be specified either as a single value or as a value range. Value ranges are only applicable to integer-valued or date and time attributes. A value range shall be specified as a sequence of an optional lower limit and an optional upper limit. If the lower limit is specified, any value which is less than this limit is not included in the range. If the upper limit is specified, any value which is greater than this limit is not included in the range. All other values are included in the range.

Some functions take arguments which specify an optional start counter and an optional end counter to select a subset of identifiers from a list of constituents found by the function. However, if the limits specified by these counters are outside the actual range of the list, only those identifiers which are present in the list are returned.