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INTERNATIONAL STANDARD

ISO 8613-5

Information processing — Text and office systems — Office Document Architecture (ODA) and interchange format —

Part 5 :
Office Document Interchange Format (ODIF)

Traitement de l'information — Bureautique — Architecture des documents de bureau (ODA) et format d'échange —

Partie 5 : Format d'échange de documents de bureau

Contents

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75% approval by the member bodies voting.

International Standard ISO 8613-5 was prepared by Technical Committee ISO/TC 97, *Information processing systems.*

At present, ISO 8613 consists of seven parts:

- part 1, Introduction and general principles;
- part 2, Document structures;
- part 4, Document profile;
- part 5, Office document interchange format (ODIF);
- part 6, Character content architectures;
- part 7, Raster graphics content architectures;
- part 8, Geometric graphics content architectures.

NOTE – At present, there is no part 3.

Further parts may be added to this International Standard.

Development of this International Standard has been in parallel with:

- ECMA 101 : 1985, *Office document architecture;*
- CCITT Recommendation T.73 (1984) : *Document interchange protocol for the telematic services;*
- CCITT Recommendations in the T.410 series (1988) : *Open Document Architecture (ODA) and Interchange Format.*

This part contains six annexes:

- annex A (informative): Coded representation;
- annex B (normative): Application class tag assignments;
- annex C (informative): Summary of object identifiers;
- annex D (informative): Examples;
- annex E (normative): Office Document Language (ODL);
- annex F (informative): Examples of Office Document Language representations.

Information processing — Text and office systems — Office Document Architecture (ODA) and interchange format —

Part 5 :
Office Document Interchange Format (ODIF)

1 Scope

The purpose of ISO 8613 is to facilitate the interchange of documents.

In the context of ISO 8613, 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 — ISO 8613 is designed to allow for extensions, including typographical features, colour, spreadsheets and additional types of content such as sound.

ISO 8613 applies to the interchange of documents by means of data communications or the exchange of storage media.

ISO 8613 provides 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.

ISO 8613 also provides for the interchange of ODA information structures used for the processing of interchanged documents.

Furthermore, ISO 8613 allows for the interchange of documents containing one or more different types of content such as character text, images, graphics and sound.

This part of ISO 8613 defines

- the format of the data stream used to interchange documents structured in accordance with ISO 8613–2;
- the representation of the constituents which may appear in an interchanged document.

> NOTES
>
> 1 This part of ISO 8613 does not specify the coded representation of content elements.
>
> 2 Data formats for presentation attributes and coding attributes are defined in other parts of ISO 8613.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 8613. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8613 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 8601 : 1988, *Data elements and interchange formats – Information interchange – Representation of dates and times.*

ISO 8613 : 1989, *Information processing – Text and office systems – Office Document Architecture (ODA) and Interchange Format –*

    Part 1 – Introduction and general principles;

    Part 2 – Document structures;

    Part 4 – Document profile;

    Part 6 – Character content architectures;

    Part 7 – Raster graphics content architectures;

    Part 8 – Geometric graphics content architectures.

ISO 8824 : 1987, *Information processing – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1).*

ISO 8824 Add.1 : [1], *Information processing systems – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1) – Addendum 1 : ASN.1 extensions.*

ISO 8825 : 1987, *Information processing – Open Systems Interconnection – Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1).*

ISO 8825 Add.1 : [1], *Information processing systems – Open Systems Interconnection – Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1) – Addendum 1 : ASN.1 extensions.*

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

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

ISO 9541-6 : [1], *Information processing – Font and character information interchange – Part 6: Font and character attribute subsets and applications.*

3 Definitions

For the purpose of this part of ISO 8613, the definitions given in ISO 8613–1 apply.

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[1] To be published.

4 Document representations

A document structured in accordance with ISO 8613 is represented for interchange by either the Office Document Interchange Format (ODIF), or the Office Document Language (ODL) in conjunction with the SGML Document Interchange Format (SDIF). The ODIF and ODL/SDIF representations are technically equivalent; a document can be transformed from one to the other without loss of information about the document constituents and attributes.

NOTE – Both data structure (ODIF) and language (ODL) representations have been standardized in order to meet the document representation requirements of distinct application environments. ODIF, being a data structure specified using ASN.1, is particularly intended for use in an OSI environment. ODL is particularly appropriate for systems that share information through marked–up text files, especially where human users can access the markup directly.

4.1 ODIF

ODIF is an abstract data syntax in which the constituents and attributes of the document are represented by a hierarchy of data structures and data items, specified using the abstract syntax notation ASN.1 defined in ISO 8824.

The coded representation of each data structure or data item is obtained by applying a set of encoding rules.

ODIF is specified in clause 5.

NOTE – ASN.1 is a formal description method that allows data types relevant to an application to be specified in terms of other data types, including basic data types such as "integer" and "octet string" which are defined in ISO 8824 itself. Basic encoding rules for ASN.1 are defined in ISO 8825 and are summarized in annex A.

4.2 ODL and SDIF

ODL is a language in which the constituents and attributes of the document are identified by descriptive tags, and are grouped into one or more storage entities (e.g. files) as the user may require.

For interchange, each ODL entity is represented as a single data structure or data item, specified using ASN.1, in a data stream constructed according to the SGML Document Interchange Format defined in ISO 9069.

ODL is specified in annex E (normative).

NOTE – ODL is an SGML application conforming to ISO 8879.

5 Office Document Interchange Format (ODIF)

5.1 General description

A document structured in accordance with ISO 8613 is represented by a data stream consisting of one or more data structures of the following types:

- document profile descriptor;
- layout object descriptor;
- layout object class descriptor;
- logical object descriptor;
- logical object class descriptor;
- presentation style descriptor;
- layout style descriptor;
- text unit.

These data structures are called *interchange data elements*. Within a data stream, the interchange data elements are ordered in accordance with certain rules which are specified below. This part of ISO 8613 defines two such sets of rules; they are called *interchange format class A* and *interchange format class B*.

Which of these sets of rules applies to a given data stream is indicated in the document profile descriptor. In all cases, a data stream contains one and only one document profile descriptor which is always the first interchange data element in the data stream. The document profile descriptor may be the only data structure in the data stream.

When an ODIF data stream is used as part of an ASN.1 external data type, the abstract syntax shall be formed by an ASN.1 SEQUENCE–OF type referencing the Interchange-Data-Element type; the encoding of the data value shall consist of an integral number of octets, formed by applying the ASN.1 basic encoding rules; and the value of the associated ASN.1 object identifier shall be { 2 8 0 0 }.

> NOTE – The manner of incorporating the interchange data elements, or the external data type, in an application protocol or the manner of mapping them on service data units (in an OSI environment) is not defined by this part of ISO 8613.

5.2 Interchange format class A

According to interchange format class A, a data stream consists of one document profile descriptor and, optionally, one or more interchange data elements of the following types:

- layout object descriptor;
- layout object class descriptor;
- logical object descriptor;
- logical object class descriptor;
- presentation style descriptor;
- layout style descriptor;
- text unit.

The order of the interchange data elements is as follows:

a) document profile descriptor;

b) layout object class descriptors;

c) logical object class descriptors;

d) text units representing generic content portions;

e) presentation style descriptors;

f) layout style descriptors;

g) layout object descriptors;

h) logical object descriptors;

i) text units representing specific content portions.

Within each of the groups of layout object descriptors and logical object descriptors, the order of the descriptors is equal to the sequential order defined in ISO 8613–2.

If the data stream contains layout object descriptors, the text units representing specific content portions are ordered according to the sequential layout order; otherwise, they are ordered according to the sequential logical order.

Within each of the other groups of interchange data elements, the order is arbitrary.

5.3 Interchange format class B

According to interchange format class B, a data stream consists of one document profile descriptor and, optionally, one or more interchange data elements of the following types:

- layout object descriptor;
- layout object class descriptor;
- presentation style descriptor;
- text unit.

Interchange format class B can be used only to represent documents that do not contain any specific or generic logical structure, i.e. documents that conform to the formatted document architecture class.

The order of the interchange data elements is as follows:

a) document profile descriptor;

b) layout object class descriptors and associated text units;

c) presentation style descriptors;

d) layout object descriptors and associated text units.

Within the group of layout object class descriptors and associated text units, the order is such that a group of descriptors that have identical identifiers, except for the last number in each identifier, follow each other in the data stream without any other descriptor between them. However, each descriptor of an object class for a basic layout object is followed immediately by the associated text units.

Within the group of layout object descriptors and associated text units, the order of the descriptors is equal to the sequential order defined in ISO 8613-2. However, each descriptor of a basic layout object is followed immediately by the associated text units.

Within the group of presentation style descriptors, the order is arbitrary.

5.4 Descriptors and text units

A document profile descriptor, layout object descriptor, layout object class descriptor, logical object descriptor, logical object class descriptor, presentation style descriptor or layout style descriptor consists of simple and composite data items representing the attributes of the constituent concerned.

The document profile, each object class, each style and each object is represented by one descriptor.

A text unit consists of two parts:

a) an attribute field, i.e. a data structure consisting of simple and composite data items representing the attributes of the content portion concerned;

b) an information field, i.e. a data structure that is either a data item or a set of data items representing the content elements making up the content portion concerned.

Each content portion is represented by one text unit.

The data formats of the interchange data elements are specified in 5.5 to 5.12, using the abstract syntax notation ASN.1 defined in ISO 8824.

NOTE – 5.5 to 5.12 by themselves do not completely define the data stream format; additional rules are specified in 5.1 to 5.4 of this part and in other parts of ISO 8613. For example, the keyword OPTIONAL merely indicates that a particular data structure or data item is not part of every instance of the containing data structure; the conditions controlling the presence or absence of the data structure or data item are specified in part 2 or part 4.

5.5 Interchange data elements

Interchange–Data–Elements { 2 8 1 5 5 }

DEFINITIONS   ::= BEGIN

EXPORTS Interchange–Data–Element;

IMPORTS Document–Profile–Descriptor
        FROM Document–Profile–Descriptor   - - see 5.6
        Layout–Class–Descriptor, Layout–Object–Descriptor
        FROM Layout–Descriptors   - - see 5.8
        Logical–Class–Descriptor, Logical–Object–Descriptor
        FROM Logical–Descriptors   - - see 5.9
        Presentation–Style–Descriptor, Layout–Style–Descriptor
        FROM Style–Descriptors   - - see 5.10
        Text–Unit
        FROM Text–Units;   - - see 5.12

Interchange–Data–Element   ::= CHOICE {
    document–profile   [0] IMPLICIT Document–Profile–Descriptor,
    layout–object–class   [1] IMPLICIT Layout–Class–Descriptor,
    layout–object   [2] IMPLICIT Layout–Object–Descriptor,
    content–portion   [3] IMPLICIT Text–Unit,
    logical–object–class   [5] IMPLICIT Logical–Class Descriptor,
    logical–object   [6] IMPLICIT Logical–Object–Descriptor,
    presentation–style   [7] IMPLICIT Presentation–Style–Descriptor,
    layout–style   [8] IMPLICIT Layout–Style–Descriptor}

END

5.6 Document profile descriptor

Document–Profile–Descriptor { 2 8 1 5 6 }

DEFINITIONS   ::= BEGIN

EXPORTS Document–Profile–Descriptor;

IMPORTS Resource–Name, Object–or–Class–Identifier
        FROM Identifiers–and–Expressions   - - see 5.7
        Measure–Pair, Transparency, Colour, Dimension–Pair, One–Of–Four–Angles,
        Border, Medium–Type
        FROM Layout–Descriptors   - -see 5.8
        Protection
        FROM Logical–Descriptors   - - see 5.9
        Content–Architecture–Class, Content–Type, Block–Alignment, Fill–Order
        FROM Style–Descriptors   - - see 5.10
        Type–of–Coding
        FROM Text–Units   - - see 5.12
        Character–Content–Defaults, Char–Presentation–Feature,
        Character–Coding–Attribute
        FROM Character–Profile–Attributes { 2 8 1 6 4 }   - - see ISO 8613–6
        Raster–Gr–Content–Defaults, Ra–Gr–Presentation–Feature,
        Ra–Gr–Coding–Attribute
        FROM Raster–Gr–Profile–Attributes { 2 8 1 7 4 }   - - see ISO 8613–7
        Geo–Gr–Content–Defaults, Geo–Gr–Presentation–Feature,
        Geo–Gr–Coding–Attribute
        FROM Geo–Gr–Profile–Attributes { 2 8 1 8 4 }   - - see ISO 8613–8
        Font–Reference FROM ISO9541–FONTS { 1 9541 6 1 0 };   - - see ISO 9541–6

Document–Profile–Descriptor   ::= SET {
    generic–layout–structure   [0] IMPLICIT NumericString OPTIONAL,
    specific–layout–structure   [1] IMPLICIT NumericString OPTIONAL,
    generic–logical–structure   [4] IMPLICIT NumericString OPTIONAL,
    specific–logical–structure   [5] IMPLICIT NumericString OPTIONAL,
    presentation–styles   [6] IMPLICIT NumericString OPTIONAL,
    layout–styles   [7] IMPLICIT NumericString OPTIONAL,

    - - for the generic structures;
    - - 'partial generator–set' is represented by "0", 'complete–generator–set'
    - - is represented by "1", 'factor–set' is represented by "2";
    - - for the other cases, the numeric string has the value 'present'
    - - represented by "1"

    external–document–class   [9] Document–Reference OPTIONAL,
    resource–document   [10] Document–Reference OPTIONAL,
    resources   [11] IMPLICIT SET OF SET {
        resource–identifier   Resource–Name,
        object–class–identifier   Object–or–Class–Identifier} OPTIONAL,
    document–characteristics   [2] IMPLICIT Document–Characteristics OPTIONAL,
    document–management–attributes   [3] IMPLICIT Document–Management–Attributes OPTIONAL}

Document–Characteristics   ::= SET {
    document–application–profile   CHOICE {
                                             [0] IMPLICIT INTEGER {
                                                  group–4–facsimile (2)},
                                             [4] IMPLICIT OBJECT IDENTIFIER} OPTIONAL,
    doc–appl–profile–defaults   [10] IMPLICIT Doc–Appl–Profile–Defaults OPTIONAL,
    document–architecture–class   [1] IMPLICIT INTEGER {
                                                  formatted (0),
                                                  processable (1),
                                                  formatted–processable (2)} OPTIONAL,
    content–architecture–classes   [5] IMPLICIT SET OF OBJECT IDENTIFIER OPTIONAL,

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interchange-format-class                          [6]  IMPLICIT INTEGER {
                                                       if-a (0),
                                                       if-b (1)} OPTIONAL,

oda-version                                       [8]  IMPLICIT SEQUENCE {
    standard-or-recommendation                         Character-Data,
    publication-date                                   Date-and-Time} OPTIONAL,
non-basic-doc-characteristics                     [2]  IMPLICIT Non-Basic-Doc-Characteristics OPTIONAL,
non-basic-struc-characteristics                   [3]  IMPLICIT Non-Basic-Struc-Characteristics OPTIONAL,
additional-doc-characteristics                    [9]  IMPLICIT Additional-Doc-Characteristics OPTIONAL}

Doc-Appl-Profile-Defaults                    ::= SET {
    document-architecture-defaults                [0]  IMPLICIT Document-Architecture-Defaults OPTIONAL,
    character-content-defaults                    [1]  IMPLICIT Character-Content-Defaults OPTIONAL,
    raster-gr-content-defaults                    [2]  IMPLICIT Raster-Gr-Content-Defaults OPTIONAL,
    geo-gr-content-defaults                       [3]  IMPLICIT Geo-Gr-Content-Defaults OPTIONAL,

    - - the following tags are reserved for additional types
    - - of content defaults:
        - - [4] videotex, for use in conjunction with CCITT Recommendations
        - - [5] audio
        - - [6] dynamic-graphics

    external-content-architecture-defaults        [7]  IMPLICIT SEQUENCE OF EXTERNAL OPTIONAL }

Document-Architecture-Defaults               ::= SET {
    content-architecture-class                    [0]  IMPLICIT Content-Architecture-Class OPTIONAL,
    content-type                                  [1]  IMPLICIT Content-Type OPTIONAL,
    page-dimensions                               [2]  IMPLICIT Measure-Pair OPTIONAL,
    transparency                                  [3]  IMPLICIT Transparency OPTIONAL,
    colour                                        [4]  IMPLICIT Colour OPTIONAL,
    layout-path                                   [5]  IMPLICIT One-Of-Four-Angles OPTIONAL,
    medium-type                                   [6]  IMPLICIT Medium-Type OPTIONAL,
    block-alignment                               [7]  IMPLICIT Block-Alignment OPTIONAL,
    border                                        [8]  IMPLICIT Border OPTIONAL,
    page-position                                 [9]  IMPLICIT Measure-Pair OPTIONAL,
    type-of-coding                               [10]  IMPLICIT Type-of-Coding OPTIONAL}

Non-Basic-Doc-Characteristics                ::= SET {
    profile-character-sets                        [5]  IMPLICIT OCTET STRING OPTIONAL,
    comments-character-sets                       [1]  IMPLICIT OCTET STRING OPTIONAL,
    alternative-repr-char-sets                    [6]  IMPLICIT OCTET STRING OPTIONAL,

    - - each of these octet strings represents a string of escape sequences

    page-dimensions                               [2]  IMPLICIT SET OF Dimension-Pair OPTIONAL,
    medium-types                                  [8]  IMPLICIT SET OF Medium-Type OPTIONAL,
    layout-paths                                 [21]  IMPLICIT SET OF One-Of-Four-Angles OPTIONAL,
    transparencies                               [22]  IMPLICIT SET OF Transparency OPTIONAL,
    protections                                  [23]  IMPLICIT SET OF Protection OPTIONAL,
    block-alignments                             [24]  IMPLICIT SET OF Block-Alignment OPTIONAL,
    fill-orders                                  [25]  IMPLICIT SET OF Fill-Order OPTIONAL,
    colours                                      [26]  IMPLICIT SET OF Colour OPTIONAL,
    borders                                      [27]  IMPLICIT SET OF Border OPTIONAL,
    page-positions                               [28]  IMPLICIT SET OF Measure-Pair OPTIONAL,
    types-of-coding                              [29]  IMPLICIT SET OF Type-of-Coding OPTIONAL,
    char-presentation-features                    [9]  IMPLICIT SET OF Char-Presentation-Feature OPTIONAL,
    ra-gr-presentation-features                   [4]  IMPLICIT SET OF Ra-Gr-Presentation-Feature OPTIONAL,
    geo-gr-presentation-features                 [12]  IMPLICIT SET OF Geo-Gr-Presentation-Feature OPTIONAL,
```

```
        - - the following tags are reserved for additional types
        - - of presentation features:
            - - [13] videotex, for use in conjunction with CCITT Recommendations
            - - [14] audio
            - - [15] dynamic–graphics

    character–coding–attributes          [16]  IMPLICIT SET OF Character–Coding–Attribute OPTIONAL,
    ra–gr–coding–attributes               [3]  IMPLICIT SET OF Ra–Gr–Coding–Attribute OPTIONAL,
    geo–gr–coding–attributes             [17]  IMPLICIT SET OF Geo–Gr–Coding–Attribute OPTIONAL,

        - - the following tags are reserved for additional types
        - - of coding attributes:
            - - [18] videotex, for use in conjunction with CCITT Recommendations
            - - [19] audio
            - - [20] dynamic–graphics

    ext–non–basic–pres–features          [10]  IMPLICIT SEQUENCE OF EXTERNAL OPTIONAL,
    ext–non–basic–coding–attributes      [11]  IMPLICIT SEQUENCE OF EXTERNAL OPTIONAL}

Non–Basic–Struc–Characteristics     ::= SET {
    number–of–objects–per–page            [0]  IMPLICIT INTEGER OPTIONAL}

Additional–Doc–Characteristics      ::= SET {
    unit–scaling                          [3]  IMPLICIT SEQUENCE {INTEGER,INTEGER} OPTIONAL,
    fonts–list                            [2]  IMPLICIT Fonts–List OPTIONAL}

Fonts–List                          ::= SET OF SET {
    font–identifier                            INTEGER,
    font–reference                             Font–Reference}

Document–Management–Attributes      ::= SET {
    document–description                  [7]  IMPLICIT Document–Description OPTIONAL,
    dates–and–times                       [0]  IMPLICIT Dates–and–Times OPTIONAL,
    originators                           [1]  IMPLICIT Originators OPTIONAL,
    other–user–information                [2]  IMPLICIT Other–User–Information OPTIONAL,
    external–references                   [3]  IMPLICIT External–References OPTIONAL,
    local–file–references                 [4]  IMPLICIT Local–File–References OPTIONAL,
    content–attributes                    [5]  IMPLICIT Content–Attributes OPTIONAL,
    security–information                  [6]  IMPLICIT Security–Information OPTIONAL}

Document–Description                ::= SET {
    title                                 [0]  IMPLICIT Character–Data OPTIONAL,
    subject                               [1]  IMPLICIT Character–Data OPTIONAL,
    document–type                         [2]  IMPLICIT Character–Data OPTIONAL,
    abstract                              [3]  IMPLICIT Character–Data OPTIONAL,
    keywords                              [4]  IMPLICIT SET OF Character–Data OPTIONAL,
    document–reference                    [5]  Document–Reference OPTIONAL}

Character–Data                      ::= [APPLICATION 3] IMPLICIT OCTET STRING

        - - string of characters from the sets designated by the attribute
        - - "profile character sets", plus carriage return and line feed

Document–Reference                  ::= CHOICE {
    unique–reference                           OBJECT IDENTIFIER,
    descriptive–reference                      Character–Data}
```

```
Dates-and-Times                          ::= SET {
    document-date-and-time                   [0]  IMPLICIT Date-and-Time OPTIONAL,
    creation-date-and-time                   [1]  IMPLICIT Date-and-Time OPTIONAL,
    local-filing-date-and-time               [2]  IMPLICIT SEQUENCE OF Date-and-Time OPTIONAL,
    expiry-date-and-time                     [3]  IMPLICIT Date-and-Time OPTIONAL,
    start-date-and-time                      [4]  IMPLICIT Date-and-Time OPTIONAL,
    purge-date-and-time                      [5]  IMPLICIT Date-and-Time OPTIONAL,
    release-date-and-time                    [6]  IMPLICIT Date-and-Time OPTIONAL,
    revision-history                         [7]  IMPLICIT SEQUENCE OF SET {
        revision-date-and-time                   [0] IMPLICIT Date-and-Time OPTIONAL,
        version-number                           [1] IMPLICIT Character-Data OPTIONAL,
        revisors                                 [2] IMPLICIT SET OF SET {
            names                                    [0] IMPLICIT SET OF Personal-Name OPTIONAL,
            position                                 [1] IMPLICIT Character-Data OPTIONAL,
            organization                             [2] IMPLICIT Character-Data OPTIONAL} OPTIONAL,
        version-reference                        [3] Document-Reference OPTIONAL,
        user-comments                            [4] IMPLICIT Character-Data OPTIONAL} OPTIONAL}

Date-and-Time                            ::= [APPLICATION 4] IMPLICIT PrintableString

    - - string of characters representing a date and, optionally, a time
    - - in accordance with ISO 8601

Originators                              ::= SET {
    organizations                            [0]  IMPLICIT SET OF Character-Data OPTIONAL,
    preparers                                [1]  IMPLICIT SEQUENCE OF SET {
        personal-name                            [0] IMPLICIT Personal-Name OPTIONAL,
        organization                             [1] IMPLICIT Character-Data OPTIONAL} OPTIONAL,
    owners                                   [2]  IMPLICIT SEQUENCE OF SET {
        personal-name                            [0] IMPLICIT Personal-Name OPTIONAL,
        organization                             [1] IMPLICIT Character-Data OPTIONAL} OPTIONAL,
    authors                                  [3]  IMPLICIT SEQUENCE OF SET {
        personal-name                            [0] IMPLICIT Personal-Name OPTIONAL,
        organization                             [1] IMPLICIT Character-Data OPTIONAL} OPTIONAL}

Personal-Name                            ::= [APPLICATION 6] IMPLICIT SET {
    surname                                  [0]  IMPLICIT Character-Data,
    givenname                                [1]  IMPLICIT Character-Data OPTIONAL,
    initials                                 [2]  IMPLICIT Character-Data OPTIONAL,
    title                                    [3]  IMPLICIT Character-Data OPTIONAL}

Other-User-Information                   ::= SET {
    copyright                                [0]  IMPLICIT SET OF SET {
        copyright-information                    [0] IMPLICIT SET OF Character-Data OPTIONAL,
        copyright-dates                          [1] IMPLICIT SET OF Date-and-Time OPTIONAL}
                                                                          OPTIONAL,
    status                                   [1]  IMPLICIT Character-Data OPTIONAL,
    user-specific-codes                      [2]  IMPLICIT SET OF Character-Data OPTIONAL,
    distribution-list                        [3]  IMPLICIT SEQUENCE OF SET {
        personal-name                            [0] IMPLICIT Personal-Name OPTIONAL,
        organization                             [1] IMPLICIT Character-Data OPTIONAL} OPTIONAL,
    additional-information                   [5]  ANY OPTIONAL}

External-References                      ::= SET {
    references-to-other-documents            [0]  IMPLICIT SET OF Document-Reference OPTIONAL,
    superseded-documents                     [1]  IMPLICIT SET OF Document-Reference OPTIONAL}

Local-File-References                    ::= SET OF SET {
    file-name                                [0]  IMPLICIT Character-Data OPTIONAL,
    location                                 [1]  IMPLICIT Character-Data OPTIONAL,
    user-comments                            [2]  IMPLICIT Character-Data OPTIONAL}

Content-Attributes                       ::= SET {
    document-size                            [1]  IMPLICIT INTEGER OPTIONAL,
    number-of-pages                          [2]  IMPLICIT INTEGER OPTIONAL,
    languages                                [4]  IMPLICIT SET OF Character-Data OPTIONAL}
```

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```
Security–Information              ::= SET {
    authorization                    CHOICE {
        person                           [0] IMPLICIT Personal–Name,
        organization                     [4] IMPLICIT Character–Data} OPTIONAL,
    security–classification          [1]  IMPLICIT Character–Data OPTIONAL,
    access–rights                    [2]  IMPLICIT SET OF Character–Data OPTIONAL}

                                 END
```