INTERNATIONAL TELECOMMUNICATION UNION

CCITT

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

T.541

(11/1988)

SERIES T: TERMINAL EQUIPMENT AND PROTOCOLS FOR TELEMATIC SERVICES

OPERATIONAL APPLICATION PROFILE FOR VIDEOTEX INTERWORKING

Reedition of CCITT Recommendation T.541 published in the Blue Book, Fascicle VII.7 (1988)

NOTES

1 CCITT Recommendation T.541 was published in Fascicle VII.7 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

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

Recommendation T.541

OPERATIONAL APPLICATION PROFILE FOR VIDEOTEX INTERWORKING

1 Scope

This Recommendation defines an operational application profile which conforms to T.400 Series of Recommendations.

Its purpose is to specify an operational structure class suitable for videotex interworking as defined in configuration 1 of CCITT Recommendation F.300 and in Recommendation T.564.

2 Field of application

This Recommendation defines an operational application profile, that is in conformance with DTAM (T.400 Series of Recommendations) and that allows operational structures to be interchanged for the purpose of an international videotex interworking.

This operational application profile defines the features of the operational structure that can be interchanged. These features are depending on the document structures as specified in the document application profile (see Recommendation T.504).

3 References

- Rec. F.300: Videotex service
- Rec. X.200: Reference model of open systems interconnection for CCITT applications
- Rec. X.213: Network service definition for open systems interconnection for CCITT applications
- Rec. X.214: Transport service definition for open systems interconnection for CCITT applications
- Rec. X.224: Transport protocol specification for open systems interconnection for CCITT applications
- Rec. X.215: Session service definition for open systems interconnection for CCITT applications
- Rec. X.225: Session protocol specification for open systems interconnection for CCITT applications
- Rec. X.216: Presentation service definition for open systems interconnection for CCITT applications
- Rec. X.226: Presentation protocol specification for open systems interconnection for CCITT applications
- Rec. X.217: Association control service definition for open systems interconnection for CCITT applications
- Rec. X.227: Association control protocol specification for open systems interconnection for CCITT applications
- Rec. T.101: International interworking for videotex services
- Rec. T.400: Introduction to document architecture, transfer and manipulation
- Rec. T.411: Open document architecture (ODA) and interchange format – Introduction and general principles
- Rec. T.412: Open document architecture (ODA) and interchange format – Document structures – Rec. T.414: Open document architecture (ODA) and interchange format – Document profile
- Rec. T.415: Open document architecture (ODA) and interchange format – Open document interchange format (ODIF)
- Rec. T.431: Document transfer and manipulation (DTAM) – Services and protocols – Introduction and general principles
- Rec. T.432: Document transfer and manipulation (DTAM) – Services and protocols – Service definition
- Rec. T.433: Document transfer and manipulation (DTAM) – Services and protocols – Protocol specification
- Rec. T.441: Document transfer and manipulation (DTAM) – Services and protocols – Operational structure
- Rec. T.504: Document application profile for videotex interworking

– Rec. T.523: Communication application profile DM-1 for videotex interworking
– Rec. T.564: Gateway characteristics for videotex interworking

4 Definitions

The definitions of T.400 Series of Recommendations apply also to this Recommendation.

5 Characteristics supported by this operational application profile

5.1 *Overview*

For the purpose of videotex interworking operational structures are associated with a videotex document to provide an environment for interactive communication, necessary for a recipient to handle the userw's input data as intended by the originator.

Therefore the purpose of this section is to specify the functional description of the features supported by this operational application profile.

5.2 *Range of operational structures*

For the purpose of an international videotex interworking four operational structures are specified, one of each representing the "data entry structure", the "application control memory", the "administrative structure" and the "special terminal facilities structure" as defined in Recommendation T.564.

5.3 *Generic characteristics*

Not used.

5.4 *Specific characteristics*

Each of the operational structures specified in this operational application profile only supports specific features of operational structures.

6 Definition of the operational application profile

6.1 *Complexity level of operational structures*

For further study.

6.2 *Operational profile level*

One operational profile has to be defined for every application using operational structures.

This operational profile specifies:

– Four operational structures are used;
– Each of the operational structures only contains specific features.

Details are for further study.

6.3 *Specification of operational structures*

Four operational structures are specified by this operational application profile.

6.3.1 *Data entry structure*

The data entry structure as defined in draft Recommendation T.564 is mapped onto one specific operational structure. No generic operational structure is present.

The Data-Entry-SE is mapped to the specific operational root. The object identifier of the root of this operational structure has an assigned value of 11.

The subordinates of Data-Entry-SE are: Data-Entry-Program-SE, Field-SE, Rules-SE, Prompt-SE, and Result-SE.

Data-Entry-Program-SE is mapped to composite operational object. Field-SE, Rules-SE, Prompt-SE and Result-SE are mapped to basic operational objects.

Field-SE, Prompt-SE and Result-SE may have associated operational elements.

Subordinate to Data-Entry-Program-SE is Data-Entry-Subprogram-SE. Data-Entry-Subprogram-SE is mapped to basic operational object.

For each of the SEs specified above, constraints are defined on the number of SEs which may exist at one time. These constraints are defined in Recommendation T.564.

6.3.2 *Application control memory structure*

The application control memory structure as defined in Recommendation T.564 is mapped onto one specific operational structure. No generic operational structure is present.

The Application-Control-Memory-SE is mapped to the specific operational root. The object identifier of the root of this operational structure has an assigned value of 12.

Subordinate to the Application-Control-Memory-SE is the Record-SE. The Record-SE is mapped to basic operational object.

For each of the SEs specified above, constraints are defined on the number of SEs which may exist at one time. These constraints are defined in Recommendation T.564.

6.3.3 *The administrative structure*

The administrative structure as defined in Recommendation T.564 is mapped onto one specific operational structure. No generic operational structure is present.

The Administrative-Information-SE is mapped to the specific operational root. The object identifier of the root of this operational structure has an assigned value of 13.

6.3.4 *Special terminal facilities structure*

The special terminal facilities structure as defined in Recommendation T.564 is mapped onto one specific operational structure. No generic operational structure is present.

The Specific-Terminal-Facilities-SE is mapped to the specific operational root. The object identifier of the root of this operational structure has an assigned value of 14.

Subordinate to the Special-Terminal-Facilities-SE is the Redefinition-Entity-SE. Redefinition-Entity-SE is mapped to basic operational object.

For each of the SEs specified above, constraints are defined on the number of SEs which may exist at one time. These constraints are defined in Recommendation T.564.

6.4 *Specification of attributes*

The attributes applicable to constituents of the operational structure are defined in the following tables, using the following notation:

-- attribute not applicable

m attribute is mandatory

nm attribute is non-mandatory

d attribute is defaultable

From the attributes specified for operational structures in Annex A to this Recommendation, videotex interworking will not use the attributes operational object class and subordinates.

The use of the attribute document fragment is for further study.

6.4.1 *Attributes of the data entry structure*

Table 1/T.541 shows the use of attributes defined for objects of operational structures.

TABLE 1/T.541

Attributes	Data-Entry-SE	Data-Entry-Program-SE	Data-Entry-Subprogram-SE	Field-SE	Rules-SE	Prompt-SE	Result-SE
Object type	m	m	m	m	m	m	m
Object identifier (Note)	m	m	m	m	m	m	m
Reference attribute	--	d	d	--	--	--	nm
Application defined attribute lists	d	d	d	d	d	d	d
Default value lists	nm	--	--	--	--	--	--

Note – This attribute may be omitted when the value can be unambiguously derived from the transmission sequence of the relevant objects.

Values for the attribute object-type

Data-Entry-SE: 0
Data-Entry-Program-SE: 1
Data-Entry-Subprogram-SE: 2
Field-SE: 3
Rules-SE: 4
Prompt-SE: 5
Result-SE: 6

Table 2/T.541 shows the use of attributes defined for operational elements.

TABLE 2/T.541

	Field-content portion	Prompt-content portion	Result-content portion
Operational element identifier (Note)	m	m	m
Operational element content type	d	d	d
Operational element content	d	d	d

Note – This attribute may be omitted when the value can be unambiguously derived from the transmission sequence of the relevant elements.

6.4.1.1 *Data-Entry-SE*

6.4.1.2 *Data-Entry-Program-SE*

The attribute first-subprogram, defined in Recommendation T.564, is mapped to the reference attribute, defined in Recommendation T.441 (or currently in Annex A of this Recommendation).

This application profile specifies the use of this attribute as defaultable. Currently no default value is defined within this standard.

The application defined attribute list for the Data-Entry-Program-SE contains the following attributes:

Data-Entry-Type	d
Allowed-characters-for-keyword-access	nm
Character-list-for-keyword-access	nm
Max-length-keyword-access	d
Allowed-characters-for-a-direct-access-command	nm
Max-length-direct-access	d

6.4.1.3 *Result-SE*

The attribute Last-sub-program defined in Recommendation T.564 is mapped to the reference attribute defined in Recommendation T.441 (or currently in Annex A of this Recommendation). The application defined attribute-list for the Result-SE contains the following attribute:

Termination reason	d

6.4.1.4 *Field-SE*

The application defined attribute list for the field-SE contains the following attributes:

Field-layout	d
Field-type	nm
Protected	nm
Data-source	nm
Field-text-marking	nm

6.4.1.5 *Data-Entry-Subprogram-SE*

The attributes:

reference-to-rules-SE
reference-to-field-SE
reference-to-prompt-in-SE, and reference-to-a-prompt-out-SE

defined in Recommendation T.564, are mapped to the reference attribute defined in Recommendation T.441 and in Annex A of this Recommendation.

This application profile specifies the use of these attributes as defaultable. Currently no default values are defined within this standard.

The application defined attribute list for the Data-Entry-Subprogram-SE contains the following attributes:

Echo	d
Echoed-character	d
Echo-parameter	nm

6.4.1.6 *Rules-SE*

The application defined attribute list for the Rules-SE contains the following attributes:

Time-out	d
List-of-valid-commands	d
Length-of-choice	d
List-of-enabled-choices	d
Allowed-characters	nm
Character-list	nm
Entry-invoke-character	nm
Local-editing	nm

6.4.1.7 *Prompt-SE*

The application defined attribute list for the Prompt-SE contains the following attributes:

Position	d
Dimensions	d

6.4.1.8 *Prompt content portion*

The application defined attribute content portion is the following:

Coding attributes	d

6.4.2 *Attributes of the application control memory structure*

Table 3/T.541 shows the use of attributes defined for operational structures.

TABLE 3/T.541

Attributes	Data-Entry-SE	
		Record-SE
Object type	m	m
Object identifier (Note)	m	m
Reference attribute	--	--
Application defined attribute lists	d	d
Default value lists	nm	--

Note – This attribute may be omitted when the value can be unambiguously derived from the transmission sequence of the relevant objects.

Values for the attribute object-type

Application-Control-Memory-SE: 7
Record-Content: 8

6.4.2.1 *Application-Control-Memory-SE*

6.4.2.2 *Record-SE*

The application defined attribute list for the Record-SE contains the following attributes:

Record-content	d

Note – Specifying the record content by using operational elements is for further study.

6.4.3 *Attributes of the administrative structure*

Table 4/T.541 shows the attributes defined for operational structures.

TABLE 4/T.541

Attributes	Administrative-Information-SE			
		Local-Host-Information-SE		
			External-Host-Information-SE	
				Document-Information-SE
Object type	m	m	m	m
Object identifier (Note)	m	m	m	m
Reference attribute	--	--	--	--
Application defined attribute list		nm	nm	d
Default value list	nm	--	--	--

Note – This attribute may be omitted when the value can be ambiguously derived from the transmission sequence of the relevant objects.

Values for the attribute object-type

Administrative-Information-SE: 9
Local-Host-Information-SE: 10
External-Host-Information-SE: 11
Document-Information-SE: 12

6.4.3.1 *Administrative-Information-SE*

The application defined attribute list for the Administrative-Information-SE:

External-Host-Id	m
Local-Host-Id	m
Bilateral-Management-Parameter	nm

6.4.3.2 *Local-Host-Information-SE*

The application defined attribute list for the Local-Host-Information-SE contains the following attribute:

Error-Report-to-External-Host	nm

6.4.3.3 *External-Host-Information-SE*

The application defined attribute list for the External-Host-Information-SE contains the following attribute:

Error-Report-to-Local-Host	nm
Asynchronous-Message	nm

6.4.3.4 *Document-Information-SE*

The application defined attribute list for the Document-Information-SE contains the following attributes:

Application-Time-based-charging-period	d
Application-price-Frame-based	d
Application-price-Transaction-based	d
Application-Time-based-charging-price	d
Communication-Cost-Time-based-charging-period	d
Communication-Cost-Time-based-charging-price	d

6.4.4 *Attributes of the special terminal facilities structure*

Table 5/T.541 shows the use of attributes defined for operational structures:

TABLE 5/T.541

Attributes	Special-Terminal-Facilities-SE	
		Redefinition-Entry-SE
Object type	m	m
Object identifier (Note)	m	m
Reference attribute	--	--
Application defined attribute lists	d	d
Default value lists	nm	--

Note – This attribute may be omitted when the value can be unambiguously derived from the transmission sequence of the relevant objects.

Values for the attribute object-type

Special-Terminal-Facilities-SE: 13
Redefinition-Entry-SE: 14

6.4.4.1 *Special-Terminal-Factilities-SE*

The application defined attribute-list for the Special-Terminal-Facilities-SE contains the following attributes:

Measurement-unit	d
Dimensions	d

6.4.4.2 *Redefinition-Entity-SE*

The application defined attribute-list for the Redefinition-Entity-SE contains the following attributes:

Redefinition-coding	d
Redefinition-content	d

Note – Specifying the redefinition content by using operational elements is for further study.

6.5 *Attribute values for constituents of the operational structures*

6.5.1 *Object type*

The value of the attribute object type is given by the relevant value of the operational structure (see Recommendation T.441 or Annex A of this Recommendation) and §§ 6.4.1, 6.4.2 and 6.4.4 of this Recommendation.

6.5.2 *Object identifier*

The assignment of values to the operational roots is specified in this Recommendation.

The procedure of assigning values to the subordinate constituents of the operational structure is specified in Recommendation T.441 or in Annex A of this Recommendation).

6.5.3 *Reference attribute*

The reference attribute is used in the context of the Data-Entry-Program-SE and Data-Entry-Subprogram-SE and Result-SE. The assignment of values to the reference attribute is specified in Recommendation T.564.

6.5.4 *Application defined attribute lists*

The values of attributes, mapped to the application defined attribute lists, are specified in Recommendation T.564.

This Recommendation specifies the mapping of the attributes defined in Recommendation T.564 to the application defined attribute lists.

6.5.5 *Default value lists*

For the application defined attributes of each of the SE:

- Data-Entry-SE
- Application-Control-Memory-SE
- Administrative-Information-SE
- Special-Terminal-Facilities-SE

default values for the application defined attributes are specified in this Recommendation.

The default values of each of the concerned SE are mapped to the attribute default value lists of the relevant operational root.

6.5.6 *Operational element content type*

The attribute type-of-coding, specified in Recommendation T.564, is mapped to the attribute operational element content type, specified in Recommendation T.441 or in Annex A of this Recommendation). Recommendation T.564 specifies the values for this attribute.

6.5.7 *Operational element content*

The attribute content-information, specified in Recommendation T.564, is mapped to the attribute operational element content, specified in Recommendation T.441 or in Annex A of this Recommendation). Recommendation T.564 specifies the values for this attribute.

6.6 *Default values for application defined attributes*

The default value nil indicates that no default value is defined within this standard. In these cases steps 1 and 2 of the defaulting mechanism specified in § 9.2.4 of Recommendation T.564 shall uniquely derive the default value for the relevant attribute.

6.6.1 *Data entry structure*

List of attributes	Default value
Data-Entry-Program-SE attributes:	
Data-Entry-Type	Nil
Max-Length-Keyword-Access	0
Max-Length-Direct-Access	0
Result-SE attributes:	
Termination reason	Nil
Field-SE attributes:	
Field-Layout	(0,0), (40,24)
Data-Entry-Program-SE attributes:	
Echo	"normal"
Echoed character	Nil
Rules-SE attributes:	
Time-Out	600 seconds
Valid-Commands	Nil
Length-Of-Valid-Choices	Nil
List-Of-Enabled-Choices	Nil
Prompt-SE attributes:	
Position	(0,0)
Dimensions	(40,24)

6.6.2 *Application control memory structure*

List of attributes	Default value
Record-contents	Nil

6.6.3 *Special terminal facilities structure*

List of attributes	Default value
Special-Terminal-Facilities-SE attributes:	
Measurement-unit	Characterbox
Dimensions	(40,24)
Redefinition-Entity-SE attributes:	
Redefinition-coding	Nil
Redefinition-content	Nil

6.7 *Implicitly created constituents*

Some constituents of the display structure or operational structures are implicitly created at connection establishment time (see Annex A of Recommendation T.564 or Table 1/T.532).

To ensure that manipulation of these constituents during association is always possible, the following values for the object identifier shall be used:

– "11 0" for Result-SE
– "11 0 0" for Result-Content-Portion
– "13 0" for Local-Host-Information-SE
– "13 1" for External-Host-Information SE
– "13 2" for Document-Information-SE

ANNEX A

(to Recommendation T.541)

Operational structure

This Annex is an integral part of this Recommendation. It specifies details on operational structures currently not covered by Recommendation T.441. It is intended that future work on operational structures will be compatible with the specifications of this annex.

A.1 *Constituents of the operational structure*

The operational structure is used (in addition to the specific document) for describing application defined structures in terms of operational objects and operational elements. The following constituents occur in this structure:

– operational root;
– composite operational object;
– basic operational object;
– operational elements.

A.1.1 *Operational root*

The operational root is the highest level object in the hierarchy of this structure. It is a composite object whose immediate subordinates can be any number and combination of composite and basic operational objects.

A.1.2 *Composite operational objects*

A composite operational object is a composite object of the operational structure.

A composite operational object can be immediately subordinate to the operational root or to another composite operational object of one hierarchy level above. (Only one level of composite operational objects will be used by videotex interworking.)

The immediate subordinates of a composite operational object can be any number and combination of composite and basic operational objects. Operational elements cannot be directly associated with a composite operational object.

A.1.3 *Basic operational objects*

A basic operational object is a basic object of the operational structure.

A basic operational object can be immediately subordinate to the operational root or to a composite operational object.

A basic operational object has no subordinates. It is directly associated with the operational elements if any are present.

A.1.4 *Operational elements*

Operational elements are associated with basic operational objects. They describe application specific data, which are specified in the appropriate Recommendation of the application.

A.2 *Definitions of attributes*

This clause defines the attributes and their applicability to the operational objects. Each attribute has a name and a value by which it describes a characteristic of a structure element or the relationship to another structure element.

Table A-1/T.541 shows which attribute can be specified for each type of constituent.

TABLE A-1/T.541

Attribute name	Operational root	Composite operational object	Basic operational object	Operational element
Object type	D	D	D	-
Object identifier	M*	M*	M*	-
Operational element identifier	-	-	-	M*
Operational object class	NM	NM	NM	-
Subordinates	NM	NM	-	-
Operational elements	-	-	NM	-
Document fragment	NM	NM	NM	-
Reference attribute	-	NM	NM	NM
Operational element content type	-	-	-	D
Operational element content	-	-	-	D
Default value lists	NM	NM	-	-
Application defined attribute lists	NM	NM	NM	NM

M Mandatory
D Defaultable
NM Non-mandatory
– Not applicable
M* Mandatory; exceptions specified

A.2.1 *Identification attributes*

A.2.1.1 *Object type*

Mandatory for all operational object class descriptions, defaultable for operational object descriptions.

This attribute must be specified for an operational object description, unless generic structures are used.

The attribute specifies the object type whose value is an integer.

The relevant operational application profile shall specify the values for this attribute and shall identify for each of the relevant objects if it is a:

– operational root;
– composite operational object;
– basic operational object.

From this specification it can be derived which attributes are applicable to the relevant object (see Table A-1/T.541).

A.2.1.2 *Object identifier*

Mandatory for all operational object descriptions. For the same exceptions as specified in Recommendation T.412, 5.3.1.3, the object identifier may be omitted.

This attribute uniquely identifies an operational object description.

The object identifier consists of a sequence of numbers. Each number in the sequence corresponds to a hierarchical level of the specific operational structure and identifies one specific object description at that level (see Recommendation T.412).

The first number in the sequence identifies the object description of the operational root.

An object identifier consisting of just this first number identifies the object description of the operational root.

The operational application profile (T.540 Series of Recommendations) defines the assignment of integers to the operational structures used by the application.

The value of the subsequent numbers in the sequence is not significant. It is required, however, that the sequence of numbers assigned to an object description must distinguish it from all other object descriptions among the operational structures used by the relevant application.

The object identifier is represented as a character string of decimal-coded numerals with a space character as separator between each pair of numerals.

A.2.1.3 *Operational element identifier*

Mandatory for all operational object descriptions. In the same exceptional cases as specified in Recommendation T.412, § 5.3.1.3, the operational element identifier may be omitted.

This attribute uniquely identifies an operational element description.

The value of the operational element identifier consists of a sequence of numbers which is composed of two parts. In the first part, it is identical to the identifier of the basic operational component that the operational element is associated with. The second part is a number appended to this identifier which identifies this operational element.

The operational element identifier is presented as a character string of decimal-coded numerals with a space character as separator between each pair of numerals.

A.2.2 *Relationship attributes*

A.2.2.1 *Operational object class*

Non-mandatory; may be specified for all operational object descriptions.

This attribute is not supported by this Annex, as videotex interworking makes no use of generic structures.

A.2.2.2 *Subordinates*

Non-mandatory for composite operational object descriptions.

This attribute identifies the set of objects immediately subordinate to a composite operational object.

The value of the attribute is a sequence of one or more numbers. Each number corresponds to an immediately subordinate object description and consists of the last number of identifier of that object description. The same number may not occur more that once in the sequence.

The order of the appearance of the numbers in the sequence – and the order of their numeric values – defines the sequential order among the immediately subordinate objects.

A.2.2.3 *Operational elements*

Non-mandatory for basic component descriptions.

This attribute links operational elements to a particular basic component. There may be zero, one or more operational elements per basic object description.

The value of this attribute is the sequence of the second parts of the identifiers of the corresponding operational element descriptions.

A.2.2.4 *Document fragment*

Non-mandatory may be specified for any component description. There is no constraint as to where this attribute may be specified. i.e., at what level or for what component descriptions.

This attribute establishes the relationship between constituents of the operational structure and constituents of the logical and layout structures and their associated content portions, thereby defining the document fragments as such.

The value of this attribute is a pair of parameters. The first parameter is the fragment name. The fragment name is to be provided by the application. The second parameter is a sequence of one or more identifiers of the referenced document constituents.

The interpretation of this attribute (e.g., if the reference to an object of the specific document includes the reference to all subordinate objects) is application dependent.

A.2.2.5 *Reference attribute*

Non-mandatory; may be specified for any operational object description, or operational element description. The value of this attribute is a sequence of pairs of parameters. The first parameter is the reference name. The reference name is to be provided by the application. The second parameter is a sequence of identifiers of operational object descriptions, or operational element descriptions.

This attribute permits to reference from one constituent of the operational structure to other constituents. This reference can only be interpreted in the specific context of the application.

Maintaining consistency when using this attribute has to be provided by the application and is not within the scope of this Annex.

A.2.3 *Miscellaneous attribute*

A.2.3.1 *Operational element content type*

Defaultable; to be specified for any operational element description, if present.

This attribute specifies the type of the content contained in the relevant operational element. The operational application profile shall specify the set of permissible values of this attribute, according to the relevant content architecture.

A.2.3.2 *Operational element content*

Defaultable; to be specified for any operational element description, if present.

The value of this attribute is a string in accordance with the value of the relevant operational element content type.

A.2.3.3 *Default value lists*

Non-mandatory; may be specified for composite component description.

This attribute defines default values for attributes of subordinate object descriptions.

The value of the attribute is a sequence of one or more lists of attributes, each list being applicable to a different subordinate object type.

A.2.4 *Application defined attribute list*

Defaultable for operational object descriptions and operational element descriptions; default value: NULL. NULL means that no default value list is present.

This attribute allows for the definition of application specific information to be included in any operational component or operational element description.

The value of the attribute is a set of application defined values, i.e., the applications define the contents of the lists.

ANNEX B

(To Recommendation T.541)

B.1 *Operational data formats*

```
Operational-
    Descriptor          ::=     CHOICE {

operational-object-class        [0]     IMPLICIT Operational-Class-Descriptor,
                                        -- not used by the videotex interworking application;
                                        -- therefore not specified in this document

operational-object              [1]     IMPLICIT Operational-Object-Descriptor,
operational-element             [2]     IMPLICIT Operational-Element }

Operational-
Information-Identifier  ::=     Object-or-Class-Identifier
                                        -- used in the case of the delete operation
```

B.1.1 *Operational object descriptor*

```
Operational-Object-
    Descriptor          ::=     SEQUENCE {

object-type                             Operational-Object-Type OPTIONAL,
descriptor-body                         Operational-Object-Descriptor-Body OPTIONAL}

Operational-Object-
    Type                ::=     INTEGER {
                                    data-entry (0),
                                    data-entry-program (1),
                                    data-entry-subprogram (2),
                                    field (3),
                                    rules (4),
                                    prompt (5),
                                    result (6),
                                    application-control-memory (7),
                                    record (8),
                                    document-information (12),
                                    special-terminal-facilities (13),
                                    redefinition-entity (14) }

Operational-Object
Descriptor-Body         ::=     SET  {

object-identifier                       Object-Or-Class-Identifier OPTIONAL,

subordinates                    [0]     IMPLICIT SEQUENCE OF Numeric-String OPTIONAL,
                                        -- not used by the videotex interworking application;
                                        -- therefore not specified in this document

operational-elements            [1]     IMPLICIT SEQUENCE OF Numeric-String, OPTIONAL,
object-class                    [2]     IMPLICIT Object-Or-Class-Identifier OPTIONAL,
                                        -- not used by the videotex interworking application;
                                        -- therefore not specified in this document

-- document-fragment            [3]     IMPLICIT Document-Fragment OPTIONAL,
                                        -- not used by the videotex interworking application;
                                        -- therefore not specified in this document

reference-attribute             [4]     IMPLICIT Reference-Attribute OPTIONAL,
default-value-lists             [5]     IMPLICIT Default-Value-Lists OPTIONAL,
application-defined-
attribute-lists                 [6]     IMPLICIT Application-Defined-Attribute-Lists OPTIONAL  }
```

B.1.2 *Operational elements*

```
Operational-Element        ::=     SET  {

operational-element-
        identifier                         Object-or-Class-Identifier OPTIONAL,
reference-attribute        [4]     IMPLICIT Reference-Attribute OPTIONAL,
                                   -- not used by the videotex interworking application

application-defined-
attribute-lists            [6]     IMPLICIT Application-Defined-Attribute-Lists OPTIONAL,
operational-element-
content-type               [7]     Operational-Content-Type OPTIONAL,
operational-element-content [8]    IMPLICIT OCTET STRING OPTIONAL  }
```

B.1.3 *Common attributes*

```
Reference-Attribute        ::=     SEQUENCE OF SEQUENCE {

reference-name             [0]     IMPLICIT OCTET STRING OPTIONAL,
                                   -- '00'H reference to a rules SE
                                   -- '01'H reference to a prompt-in SE
                                   -- '02'H reference to a prompt-out SE
                                   -- '03'H reference to a field SE
                                   -- in the case of first subprogram and last subprogram no
                                   -- reference name is used

referenced-constituent             Object-Or-Class Identifier }

Default-Value-Lists        ::=     Operational-Object-Descriptor-Body
```

B.1.4 *Application defined attributes*

```
Application-Defined-
Attribute-List             ::=     SET {
                                   -- DATA ENTRY STRUCTURE

data-entry-type            [0]     IMPLICIT INTEGER {
                                       information-retrieval (1),
                                       data-collection (2),
                                       on-the-fly (3),
                                       duplex (4)}  OPTIONAL,

allowed-characters-for-
a-keyword-access-command   [1]     IMPLICIT BOOLEAN OPTIONAL,
                                   -- true = yes
                                   -- false = no

character-list-for-
keyword-access             [2]     Character-List OPTIONAL,
max-length-keyword-access  [3]     IMPLICIT INTEGER OPTIONAL,
allowed-character-for-
a-direct-access-command    [4]     IMPLICIT BOOLEAN OPTIONAL,
                                   -- true = yes
                                   -- false = no
termination-reason         [5]     IMPLICIT Termination-Reason OPTIONAL,
field-layout               [6]     IMPLICIT Field-Layout OPTIONAL,
field-text-marking                 CHOICE  {
                           [7]     IMPLICIT NULL,
                           [8]     Appearance } OPTIONAL,
echo                       [9]     IMPLICIT INTEGER {
                                       normal-echo (0),
                                       fixed-echo (1),
                                       null (2) }  OPTIONAL,
echoed-character           [10]    G0G2-Character OPTIONAL,
echo-parameter             [11]    Appearance OPTIONAL,
```

```
time-out                        [12]    IMPLICIT INTEGER OPTIONAL
                                        -- measured in seconds
entry-invoke-character          [13]    G0G2-Character OPTIONAL,
local-editing                   [33]    IMPLICIT INTEGER OPTIONAL,
                                        -- details for further study
length-of-valid-choices         [15]    IMPLICIT INTEGER {
                                            one-digit (1)
                                            two-digits (2) } OPTIONAL,
list-of-enabled-choices         [16]    List-of-Choices OPTIONAL,
allowed-characters-for-
data-collection                 [17]    IMPLICIT INTEGER {
                                            forbidden (0),
                                            allowed (1),
                                            alphabetic (2),
                                            alphanumeric (3),
                                            numeric (4) }  OPTIONAL,
character-list                  [18]    Character-List OPTIONAL,
list-of-valid-commands          [19]    OCTET STRING OPTIONAL,
                                        -- the OCTET STRING is encoded in a way that the bits are
                                        -- representing the commands as follows:
                                        -- bit 0: time-out, bit 2 = V2, bit 3: V3, bit 8: D1a,
                                        -- bit 9: D1b, bit 10: D1c, bit 11: D1d, bit 14: D4, bit 15: D5,
                                        -- bit 16: D6, bit 17: D7, bit 19: D9, bit 20: D10, bit 21: D11,
                                        -- bit 22: D12, bit 23: D13, bit 24: D14, bit 27: D17, bit 28:
                                        -- D18, bit 29: end-of-field,
                                        -- a command is enabled by setting the bit to 1 and disabled by
                                        -- setting the bit to 0.
field-type                      [20]    IMPLICIT INTEGER {
                                            data-collection-field (0),
                                            country-code-field (1),
                                            tel-number-field (2),
                                            subscr-number-field (3),
                                            co-user-suffix-field (4),
                                            user-number-field (5),
                                            subscr-title-field (6),
                                            subscr-name-field (7),
                                            additional-name-field (8),
                                            street-field (9),
                                            town-field (10),
                                            postcode-field (11),
                                            date-field (12),
                                            time-field (13),
                                            date-and-time field (14)
                                            } OPTIONAL,
system-field-attributes         [21]    IMPLICIT System-Field-Attributes OPTIONAL,
                                        -- the following two attributes are used for prompts, the
                                        -- second also for the SPECIAL TERMINAL-FACILITIES-SE
position                        [22]    IMPLICIT Measure-Pair OPTIONAL,
dimension                       [23]    IMPLICIT Measure-Pair OPTIONAL,

                        -- APPLICATION CONTROL MEMORY STRUCTURE

record-content                  [14]    IMPLICIT Record-Content OPTIONAL,

                        -- SPECIAL TERMINAL FACILITIES STRUCTURE

measurement-unit                [31]    IMPLICIT Measurement-Unit OPTIONAL,
redefinition-coding             [25]    IMPLICIT Redefinition-Coding OPTIONAL,
redefinition-content            [26]    IMPLICIT IMPLICIT OCTET STRING OPTIONAL,

                        -- ADMINISTRATIVE STRUCTURE

a-price-frame-based             [27]    IMPLICIT Real-Number OPTIONAL,
a-price-transaction-based       [32]    IMPLICIT Real-Number OPTIONAL,
a-time-based-charging-price     [28]    IMPLICIT Real-Number OPTIONAL,
a-time-based-charging-period    [29]    IMPLICIT INTEGER OPTIONAL,
```

```
c-cost-tbc-period               [30]  IMPLICIT INTEGER OPTIONAL,
c-cost-tbc-price                [24]  IMPLICIT Real-Number OPTIONAL,

                    -- OPERATIONAL ELEMENTS

coding attributes               [8]   IMPLICIT Videotex-Coding-Attributes
                                      -- coding attributes are to be specified for prompt content
                                      -- portions by the relevant content architecture; coding
                                      -- attributes are the same as for blocks
                                      }
```

B.1.5 *Basic types*

```
Object-or-Class-
    Identifier      ::=     [APPLICATION 1] IMPLICIT Printable-String
                                -- only digits and space are used in the present version of
                                -- the standard
                                -- a "null" value is represented by an empty string
                                -- the first digit identifies the relevant root:
                                -- data entry root ""0", application
                                -- control memory root ""1", administrative
                                -- information root "2", special terminal
                                -- facilities root "3"
Character-List      ::=         CHOICE {
bit-8-character-list        [0]   IMPLICIT SET OF G0G2-Bit-8-Character,
bit-7-character-list        [1]   IMPLICIT SET OF G0G2-Bit-7-Character }
G0G2-Character      ::=         CHOICE {
bit-8-character             [0]   IMPLICIT G0G2-Bit-8-Character,
bit-7-character             [1]   G0G2-Bit-7-Character }
G0G2-Bit-8-
    Character       ::=         INTEGER
                                -- G0 or G2 character included. Space with 8-bit encoding;
                                -- values between 20H-7FH and AOH-FFH
G0G2-Bit-7-
    Character       ::=         CHOICE {
g0-character                [0]   IMPLICIT INTEGER {
                                -- G0 character included. Space with 7-bit encoding;
                                -- values between 20H-7FH
g2-character                [1]   IMPLICIT INTEGER {
                                -- G2 character included. Space with 7-bit encoding;
                                -- values between 20H-7FH
Field-Layout        ::=     SEQUENCE OF SEQUENCE {
                                        Measure-Pair, Measure-Pair }
List-of-Choices     ::=     BIT STRING
                                -- the length of the string is equal to 10 bits if the length
                                -- of choices is 1, equal to 100 bits if the length is 2
                                -- the bit position is representing actual choice value
Appearance          ::=     IMPLICIT SET {
foreground-colour           [0]   IMPLICIT INTEGER OPTIONAL,
background-colour           [1]   IMPLICIT INTEGER OPTIONAL,
underline                   [2]   IMPLICIT BOOLEAN OPTIONAL,
                                -- true means on; false means off
reverse-video               [3]   IMPLICIT BOOLEAN OPTIONAL,
                                -- true means on; false means off
flashing                    [4]   IMPLICIT BOOLEAN OPTIONAL,
                                -- true means on; false means off
-- the following parameters are only used for the echo parameter
```

```
height                          [5]     IMPLICIT BOOLEAN OPTIONAL,
                                        -- true means double; false means normal
width                           [6]     IMPLICIT BOOLEAN OPTIONAL,
                                        -- true means double; false means normal
                                        }

Termination-Reason      ::=     INTEGER {
                                        time-out (0), V2 (2),
                                        V3 (3), D1a (8),
                                        D1b (9), D1c (10), D1d (11),
                                        D4 (14), D5 (15), D6 (16),
                                        D7 (17), D9 (19), D10 (20),
                                        D11 (21), D12 (22), D13 (23),
                                        D14 (24), D17 (27), D18 (28),
                                        end-of-field (29)}

Real-Number             ::=     SEQUENCE {

integer-part                    [0]     IMPLICIT INTEGER DEFAULT 0,
decimal-exponent                [7]     IMPLICIT INTEGER DEFAULT 2 }
                                            -- the encoded real number is obtained by dividing the
                                            -- integer-part by 10**decimal-exponent

Measurement-Unit        ::=     INTEGER {

                                        character-box (0) }

Measure-Pair            ::=     SEQUENCE {

horizontal                              INTEGER,
vertical                                INTEGER }

Redefinition-Coding     ::=     SEQUENCE {

redefinition-type               [0]     IMPLICIT INTEGER {
                                            drcs (0),
                                            colour-redefinition (1),
                                            reset-sequence (2),

redefinition-coding-data-
        syntax                  [1]     IMPLICIT OBJECT IDENTIFIER }

Record-Content          ::=     SET OF CHOICE {
                                        D-CREATE,
                                        D-DELETE,
                                        D-MODIFY }
                                -- these operations are defined in Recommendations T.432
                                -- and T.433

Operational-Content-
        Type            ::=     CHOICE {

                                [0]     IMPLICIT INTEGER {
                                            g0g2-bit-8 (0),
                                                -- G0/G2 character included. Space with 8-bit encoding
                                            g0g2-bit-7 (1),
                                                -- G0/G2 character included. Space and SS2 with
                                                -- 7-bit encoding
                                            ascii1) (3)
                                                -- T.50 (international reference version)
                                                -- character
                                                                } OPTIONAL,
                                            -- the integer value is used in the cases of a field
                                            -- content portion and a result content portion
```

1) American standard code for information interchange.

```
                                [1]     IMPLICIT OBJECT IDENTIFIER OPTIONAL }
                                        -- the OBJECT IDENTIFIER is used in the case of a prompt
                                        -- content portion

System-Field-Attributes ::=     SEQUENCE {

protected                       [0]     IMPLICIT BOOLEAN OPTIONAL,
                                        -- true = protected
                                        -- false = not protected
data-source                     [1]     IMPLICIT BOOLEAN OPTIONAL,
                                        -- true = data supplied by local host
                                        -- false = data supplied by the user   }
```

ANNEX C

(to Recommendation T.541)

This Annex is an integral part of this Recommendation.

Summary of ASN.1 object identifiers

ASN.1 object identifier value	Description	Section
0 1 8 16 2	Object identifier for this operational application profile	Annex C of this Recommendation

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Printed in Switzerland

Geneva, 2010