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**Information technology — ASN.1  
encoding rules: Specification of  
Encoding Control Notation (ECN)**

**AMENDMENT 2**

*Technologies de l'information — Règles de codage ASN.1:  
Spécification de la notation de contrôle de codage (ECN)*  
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## Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

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INTERNATIONAL STANDARD  
ITU-T RECOMMENDATIONInformation technology – ASN.1 encoding rules: Specification of  
Encoding Control Notation (ECN)

## Amendment 2: Time type support

## 1) Subclause 8.5

Insert the following 5 new reserved encoding class names in subclause 8.5:

#DATE  
#DATE-TIME  
#DURATION  
#TIME  
#TIME-OF-DAY

## 2) Subclause 9.6.6

Replace 9.6.6 with the following:

- 9.6.6** The categories of encoding class (see 16.1.3) are:
- The alternatives category (classes that are derived by class assignment from #ALTERNATIVES).
  - The concatenation category (classes that are derived by class assignment from #CONCATENATION).
  - The repetition category (classes that are derived by class assignment from #REPETITION).
  - The optionality category (classes that are derived by class assignment from #OPTIONAL).
  - The tag category (classes that are derived by class assignment from #TAG).
  - The boolean, bitstring, characterstring, integer, null, objectidentifier, octetstring, opentype, pad, and-real, and time categories (categories for classes that are derived from the corresponding primitive classes).
  - The encoding structure category (classes generated from ASN.1 type definitions, or by explicit definition of an encoding structure).

## 3) Table 2

Insert the following lines into Table 2 above "GeneralizedTime":

TIME	#TIME	#TIME
DATE	#DATE	#TIME
TIME-OF-DAY	#TIME-OF-DAY	#TIME
DATE-TIME	#DATE-TIME	#TIME
DURATION	#DURATION	#TIME

4) Subclause 16.1.7

Replace 16.1.7 with the following:

16.1.7 The "BitfieldClassReference" is:

BitfieldClassReference ::=

- #NUL
- #BOOL
- #INT
- #BITS
- #OCTETS
- #CHARS
- #PAD
- #BIT-STRING
- #BOOLEAN
- #CHARACTER-STRING
- #EMBEDDED-PDV
- #ENUMERATED
- #EXTERNAL
- #INTEGER
- #NULL
- #OBJECT-IDENTIFIER
- #OCTET-STRING
- #OPEN-TYPE
- #REAL
- #RELATIVE-OID
- #TIME
- #DATE
- #DATE-TIME
- #TIME-OF-DAY
- #DURATION
- #GeneralizedTime
- #UTCTime
- #ObjectDescriptor
- #BMPString
- #GeneralString
- #GraphicString
- #IA5String
- #NumericString
- #PrintableString
- #TeletexString
- #UniversalString
- #UTF8String
- #VideotexString
- #VisibleString

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The categories of the classes that these built-in names reference (see 16.1.14) are all defined to be in the bit-field group of categories.

5) Subclause 16.1.14

Insert the following lines in 16.1.14 above "#TRANSFORM":

#TIME	(primitive)	time
#DATE	#TIME	
#TIME-OF-DAY	#TIME	
#DATE-TIME	#TIME	
#DURATION	#TIME	

**6) Subclause 16.2.6**

Replace 16.2.6 with the following:

**16.2.6** The "EncodingStructureField" is:

<b>EncodingStructureField ::=</b>	
#NUL	
#BOOL	
#INT	<b>Bounds?</b>
#BITS	<b>Size?</b>
#OCTETS	<b>Size?</b>
#CHARS	<b>Size?</b>
#PAD	
#BIT-STRING	<b>Size?</b>
#BOOLEAN	
#CHARACTER-STRING	
#EMBEDDED-PDV	
#ENUMERATED	<b>Bounds?</b>
#EXTERNAL	
#INTEGER	<b>Bounds?</b>
#NULL	
#OBJECT-IDENTIFIER	
#OCTET-STRING	<b>Size?</b>
#OPEN-TYPE	
#REAL	
#RELATIVE-OID	
#TIME	
#DATE	
#TIME-OF-DAY	
#DATE-TIME	
#DURATION	
#GeneralizedTime	
#UTCTime	
#ObjectDescriptor	<b>Size?</b>
#BMPString	<b>Size?</b>
#GeneralString	<b>Size?</b>
#GraphicString	<b>Size?</b>
#IA5String	<b>Size?</b>
#NumericString	<b>Size?</b>
#PrintableString	<b>Size?</b>
#TeletexString	<b>Size?</b>
#UniversalString	<b>Size?</b>
#UTF8String	<b>Size?</b>
#VideotexString	<b>Size?</b>
#VisibleString	<b>Size?</b>

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**7) Subclause 16.2.8**

Replace 16.2.8 with the following:

**16.2.8** The ASN.1 values which can be associated with each primitive field are as follows:

#NUL	The null value
#BOOL	The boolean values
#INT	The integer values
#BITS	Bitstring values
#OCTETS	Octetstring values
#CHARS	Character string values
#PAD	None
#OBJECT-IDENTIFIER	Object identifier values
#OPEN-TYPE	Open type values
#REAL	Real values
#TIME	Time values
#TAG	Tag numbers

NOTE – The #PAD field cannot have associated ASN.1 values, and is never visible outside the encoding and decoding procedures.

**8) Table 5**

*Insert the following in Table 5 below "real":*

time	"TimeValue"
	(see ITU-T Rec. X.680   ISO/IEC 8824-1, 34 bis. 3.2)

**9) Subclause 23.15**

*Replace 23.15 with the following:*

**23.15 Defining encoding objects for classes in the other categories**

In this version of this Recommendation | International Standard, there is no defined syntax for classes in the following categories:

objectidentifier  
opentype  
real  
time

**10) Annex G**

*In Annex G, replace the corresponding productions with the following:*

**BitfieldClassReference ::=**

#NUL  
#BOOL  
#INT  
#BITS  
#OCTETS  
#CHARS  
#PAD  
#BIT-STRING  
#BOOLEAN  
#CHARACTER-STRING  
#EMBEDDED-PDV  
#ENUMERATED  
#EXTERNAL  
#INTEGER  
#NULL  
#OBJECT-IDENTIFIER  
#OCTET-STRING  
#OPEN-TYPE  
#REAL  
#RELATIVE-OID  
#TIME  
#DATE  
#DATE-TIME  
#TIME-OF-DAY  
#DURATION  
#GeneralizedTime  
#UTCtime  
#ObjectDescriptor  
#BMPString  
#GeneralString  
#GraphicString  
#IA5String  
#NumericString  
#PrintableString  
#TeletexString  
#UniversalString  
#UTF8String  
#VideotexString  
#VisibleString

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EncodingStructureField ::=

#NUL	
#BOOL	
#INT	Bounds?
#BITS	Size?
#OCTETS	Size?
#CHARS	Size?
#PAD	
#BIT-STRING	Size?
#BOOLEAN	
#CHARACTER-STRING	
#EMBEDDED-PDV	
#ENUMERATED	Bounds?
#EXTERNAL	
#INTEGER	Bounds?
#NULL	
#OBJECT-IDENTIFIER	
#OCTET-STRING	Size?
#OPEN-TYPE	
#REAL	
#RELATIVE-OID	
<u>#TIME</u>	
<u>#DATE</u>	
<u>#TIME-OF-DAY</u>	
<u>#DATE-TIME</u>	
<u>#DURATION</u>	
#GeneralizedTime	
#UTCTime	
#ObjectDescriptor	Size?
#BMPString	Size?
#GeneralString	Size?
#GraphicString	Size?
#IA5String	Size?
#NumericString	Size?
#PrintableString	Size?
#TeletexString	Size?
#UniversalString	Size?
#UTF8String	Size?
#VideotexString	Size?
#VisibleString	Size?

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