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ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

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Amendment 1
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SERIES X: DATA NETWORKS AND OPEN SYSTEM
COMMUNICATIONS

OSI networking and system aspects – Abstract Syntax
Notation One (ASN.1)

Information technology –Abstract Syntax Notation
One (Asn.1) – Information object specification

Amendment 1:

**(to ITU-T Rec. X.681 | ISO/IEC 8824-2) Support
for EXTENDED-XER**

CAUTION !

PREPUBLISHED RECOMMENDATION

This prepublication is an unedited version of a recently approved Recommendation. It will be replaced by the published version after editing. Therefore, there will be differences between this prepublication and the published version.

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**INFORMATION TECHNOLOGY –
ABSTRACT SYNTAX NOTATION ONE (ASN.1) –
INFORMATION OBJECT SPECIFICATION**

**DRAFT AMENDMENT 1
(to ITU-T Rec. X.681 | ISO/IEC 8824-2)**

Support for EXTENDED-XER

1 Summary

An Amendment 1 is provided for ITU-T Rec. X.680 | ISO/IEC 8824-1, ITU-T Rec. X.681 | ISO/IEC 8824-2, ITU-T Rec. X.690 | ISO/IEC 8825-1, ITU-T Rec. X.691 | ISO/IEC 8825-2 and ITU-T Rec. X.693 | ISO/IEC 8825-4. These amendments provide the following:

- Correction of a bug in CXER resulting from allowing white-space between a minus sign and a following INTEGER or REAL value (CXER was not canonical). This is no longer permitted, in value notation, XML Value Notation or in XER and CXER. **This is a change and not an addition.**
- Addition of encoding instructions in an ASN.1 module, using either a type prefix or within an encoding control section, in order to specify variations of the BASIC-XER encodings. These encoding instructions are designed to support mappings from an XSD specification to an ASN.1 specification. This provision has meant a change of terminology, where a type with "[...]" in front of it is a prefixed type, and the "[...]" notation may or may not be a tag. This change of terminology results in changes to the text (but not the substance) of the BER and PER specifications.
- The addition of NaN (Not-a-Number) and minus zero as new values for REAL (support for encoding these new values is provided in Amendment 1 to ITU-T Rec. X.690 | ISO/IEC 8825-1 and to ITU-T Rec. X.691 | ISO/IEC 8825-2, as well as in Amendment 1 to ITU-T Rec. X.693 | ISO/IEC 8825-4).
- The addition of new XML Value Notations for **REAL**, **BOOLEAN**, **ENUMERATED**, and **INTEGER** that use text rather than empty-element tags for the values. These are available in XML Value Notation and in EXTENDED-XER, but not in BASIC-XER (for reasons of backwards-compatibility).
- Changes to the XML Value Notation for sequence-of (and the XER encodings) to provide delimitation of values where they are not XML elements (this occurs with the additional XML Value Notations, and only affects use of those additional XML Value Notations). This change is only concerned with use of XML Value Notations that have been added by this amendment, and these are not allowed in BASIC-XER, which is not affected.

This provides the necessary basic support for EXTENDED-XER.

**INFORMATION TECHNOLOGY –
ABSTRACT SYNTAX NOTATION ONE (ASN.1) –
INFORMATION OBJECT SPECIFICATION**

**DRAFT AMENDMENT 1
(to ITU-T Rec. X.681 | ISO/IEC 8824-2)**

Support for EXTENDED-XER

NOTE: All new or changed text in this document is highlighted in yellow in clauses being replaced. When merging all such text into the base document the highlighting is to be removed.

In subclause 14.6, replace the production "XMLOpenTypeFieldValue" with the following:

XMLOpenTypeFieldValue ::=
 XMLTypedValue
 | **xmlhstring**

Replace subclause 14.9 with the following three subclauses:

14.9 For a type field or a variable-type value or value set field defined by an "ObjectClassFieldType", the "XMLOpenTypeFieldValue" shall be used in any "XMLValue".

14.9.1 When used in an ASN.1 module, the type identified by the "XMLTypedValue" shall be any ASN.1 type (but see ITU-T Rec. X.680 | ISO/IEC 8824-1, 13.3) and the "XMLValue" in the "XMLTypedValue" shall be any value of that type.

NOTE – When the notation is used as specified in ITU-T Rec. X.693 | ISO/IEC 8825-4, 8.5, the type of the "XMLTypedValue" in an "XMLOpenTypeFieldValue" is identified by the protocol (for example, by a component relation constraint), the "NonParameterizedTypeName" in the "XMLTypedValue" is derived from this, and the "XMLValue" is a value of this type.

14.9.2 The "xmlhstring" alternative of "XMLOpenTypeFieldValue" shall not be used in an ASN.1 module. This alternative can be used only as specified in ITU-T Rec. X.693 | ISO/IEC 8825-4, 8.5, when the type is identified by the protocol and the "xmlhstring" is the hexadecimal value for the encoding of that type, using some (unspecified) encoding rules.

Replace subclause 14.12 with the following:

14.12 For an "XMLOpenTypeFieldValue", if the "Type" specified in the information object (after ignoring any tags) is a "typereference" or an "ExternalTypeReference", then the "NonParameterizedTypeName" shall be that "typereference" or "ExternalTypeReference", otherwise it shall be the "xmlasn1typename" specified in ITU-T Rec. X.680 | ISO/IEC 8824-1, Table 4 corresponding to the built-in type specified in the information object, after application of the subclauses of ITU-T Rec. X.680 | ISO/IEC 8824-1, 25.11, if applicable.

Replace subclause 15.6 with the following:

15.6 For a "TypeFromObject" and a "ValueSetFromObjects", the XML value notation for sequence-of and set-of (see ITU-T Rec. X.680 | ISO/IEC 8824-1, Table 5) and the "xmlasn1typename" (if required) shall be determined by the "Type" specified in the information object(s), after application of the sub-clauses of ITU-T Rec. X.680 | ISO/IEC 8824-1, 25.11, if applicable.

In Annex F, replace the production "XMLOpenTypeFieldValue" with the following:

XMLOpenTypeFieldValue ::=
 XMLTypedValue
 | **xmlhstring**
