

ITU-T The leader on ASN.1 Standards

ASN.1 and its Encoding Rules

X.680 – Basic notation

X.681 – Information objects

X.682 – Constraint notation

X.683 – Parameterization

X.690 – Basic Encoding Rules (BER), Canonical Encoding Rules (CER), and Distinguished Encoding Rules (DER)

X.691 – Packed Encoding Rules (PER)

X.692 – Encoding Control Notation (ECN)

X.693 – XML Encoding Rules (XER)

X.694 – Mapping W3C XML schema definitions into ASN.1

X.695 – Registration and application of PER encoding instructions

Generic applications of ASN.1

X.891 – Fast infoset

X.892 – Fast Web Services

X.893 – Fast infoset security

For more information on ASN.1:

ASN.1 home
<http://www.itu.int/itu-t/asn1>

ASN.1 module database
<http://www.itu.int/itu-t/asn1/database/>

OID repository
<http://www.oid-info.com>

ASN.1 means

- A revolution of new possibilities:
 - 3GPP (UMTS)
 - ITS (Smart Highway)
 - VoIP (Voice over Internet Protocol)
 - RFID (Radio Frequency Identification)
 - Secure e-mails
 - Network security
 - Telebiometrics
 - Emergency Telecommunication
- Seamless information transfer in any format (audio, data, video, XML markup, text, etc.) regardless of programming language, data structure, OS, or target platform characteristics.
- Less network bandwidth and less processing power (hence a higher transaction processing rate) for Web Services (see X.892).

ASN.1 Adoption Forecast

ASN.1 is being increasingly used outside the telecommunication industry in such areas as security, transportation, banking, genetic research and many others.

Logistics:
FAA, FedEx, ICAO, etc.

Manufacturing:
Ford, Mercedes Benz, Mitsubishi, etc.

Information Network:
Cisco, Compaq, HP, IBM, Intel, Microsoft, Sun, etc.

Financial Services:
American Express, GTE, MasterCard, Visa, etc.

Telecommunication:
AT&T, MCI, Motorola, Nokia, Sprint, France Telecom, etc.

ASN.1

**Abstract
Syntax
Notation
One**

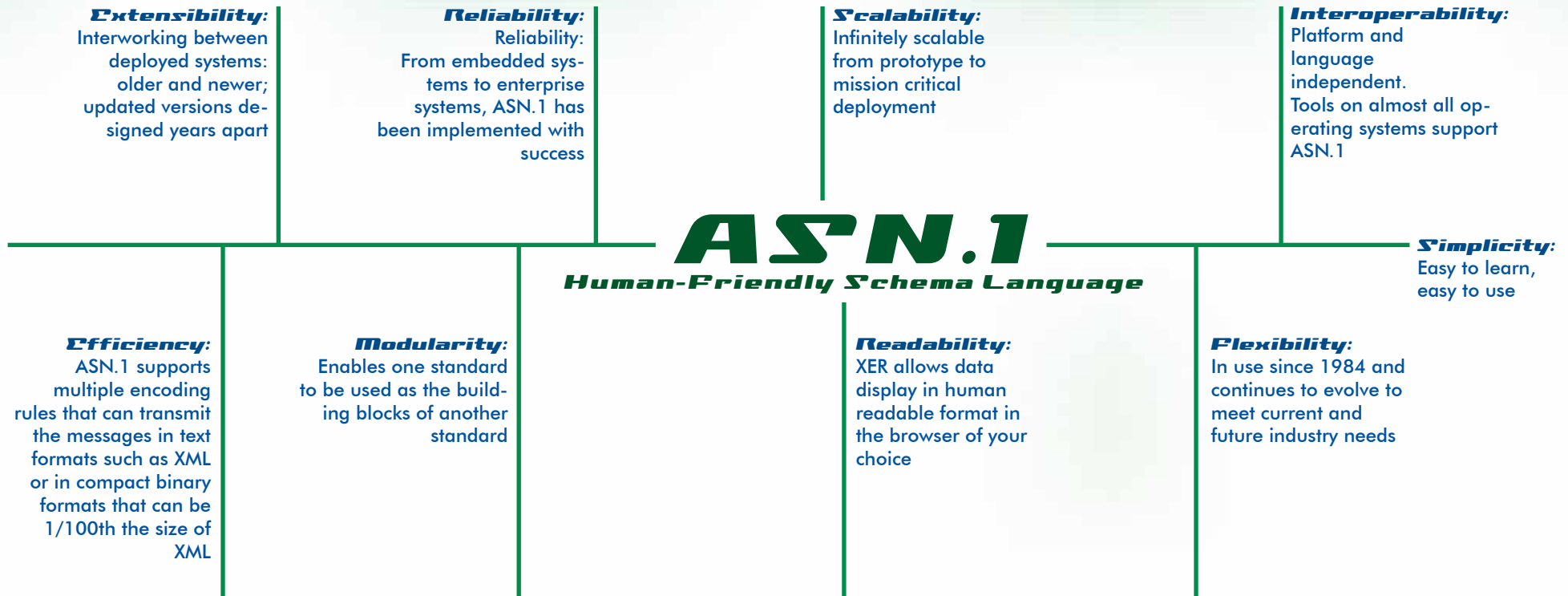
**Your
Interoperability
Solution**

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ITU-T

The Power of International Standards

ASN.1 - Compact, Efficient, Reliable Information Transfer



ASN.1 is a notation (unique in the world, currently) that allows the definition, in a language and platform and encoding independent manner, of the content of messages that are exchanged between computers. ASN.1 describes such a definition as an «abstract syntax for communication».

It can be contrasted to the concept in ABNF of «valid syntax», or in XSD of a «valid document», where the focus is entirely on what are valid encodings of data, without concern with any meaning that might be attached to such encodings. That is, without any of the necessary semantic linkages.

An ASN.1 definition can be readily mapped (by a pre-run-time processor) into a C or C++ or Java data-structure that can be used by application code, and supported by run-time libraries providing encoding and decoding of representations in either an XML or a TLV format, or a very compact packed encoding format.

ASN.1 is widely used in industry sectors where efficient (low-bandwidth, low-transaction-cost) computer communications are needed, but is also being used in sectors where XML-encoded data is required (for example, transfer of biometric information).

ITU-T Study Group 17 is responsible for studies related to data communication. For more detailed information, see <http://www.itu.int/ITU-T/studygroups/com17>