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The Testing and Test Control Notation version 3;

Part 9: Using XML schema with TTCN-3

**ETSI Standard**

Reference

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# 4 Introduction

An increasing number of distributed applications use the XML format to exchange data for various purposes like data bases queries or updates or event telecommunications operations such as provisioning. All of these data exchanges follow very precise rules for data format description in the form of Document Type Description (DTD) [8] and [6] or more recently the proposed XML Schemas [7], [8] and [9]. There are even some XML based communication protocols like SOAP [i.1] that are based on XML Schemas. Like any other communication-based systems, components and protocols, XML based systems, components and protocols are candidates for testing using TTCN-3 [1]. Consequently, there is a need for establishing a mapping between XML data description techniques like DTD or Schemas to TTCN‑3 standard data types.

The core language of TTCN-3 is defined in ETSI ES 201 873-1 [1] and provides a full text-based syntax, static semantics and operational semantics as well as a definition for the use of the language with ASN.1 in ETSI ES 201 873‑7 [i.11]. The XML mapping provides a definition for the use of the core language with XML Schema structures and types, enabling integration of XML data with the language as shown in figure 1.



Figure 1: User's view of the core language and its packages

For compatibility reasons, it was the purpose of the present document that the TTCN-3 code obtained from the XML Schema using the explicit mapping will be the same as the TTCN-3 code obtained from first converting the XML Schema using Recommendation ITU‑T X.694 [4] into ASN.1 [3] and then converting the resulting ASN.1 code into TTCN-3 according to ETSI ES 201 873‑7 [i.11]. However, due to the specifics of testing, in a few cases the present document will produce a superset or different constructs of what Recommendation ITU‑T X.694 [4] would produce. For example, according to Recommendation ITU‑T X.694 [4], abstract elements are omitted when converting the head element of a substitution group, while the present document includes also the abstract elements into the resulted **union** type, thus allowing provoking the SUT with incorrect data.