ETSI ES 201 873-9 V4.11.1 (2020-05)

Methods for Testing and Specification (MTS);

The Testing and Test Control Notation version 3;

Part 9: Using XML schema with TTCN-3

**ETSI Standard**

Reference

RES/MTS-201873-9v4.11.1

Keywords

language, testing, TTCN-3, XML

***ETSI***

650 Route des Lucioles

F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C

Association à but non lucratif enregistrée à la

Sous-Préfecture de Grasse (06) N° 7803/88

***Important notice***

The present document can be downloaded from:
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at [www.etsi.org/deliver](http://www.etsi.org/deliver).

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at <https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:
<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

***Copyright Notification***

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.
The content of the PDF version shall not be modified without the written authorization of ETSI.
The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2020.

All rights reserved.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.
**3GPP™**and **LTE™** are trademarks of ETSI registered for the benefit of its Members and
of the 3GPP Organizational Partners.
**oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and
of the oneM2M Partners.
**GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

# 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 the various presentation formats

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.