

Recommendation

## **ITU-T Z.161 (10/2023)**

SERIES Z: Languages and general software aspects for telecommunication systems

Formal description techniques (FDT) – Testing and Test Control Notation (TTCN)

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### **Testing and Test Control Notation version 3: TTCN-3 core language**



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# Recommendation ITU-T Z.161

## Testing and Test Control Notation version 3: TTCN-3 core language

### Summary

Recommendation ITU-T Z.161 defines Testing and Test Control Notation 3 (TTCN-3) intended for specification of test suites that are independent of platforms, test methods, protocol layers and protocols. TTCN-3 can be used for specification of all types of reactive system tests over a variety of communication ports. Typical areas of application are protocol testing (including mobile and Internet protocols), service testing (including supplementary services), module testing, testing of Common Object Request Broker Architecture (CORBA) based platforms and application programming interfaces (APIs). The specification of test suites for physical layer protocols is outside the scope of this Recommendation.

The core language of TTCN-3 can be expressed in a variety of presentation formats. While this Recommendation defines the core language, Recommendation ITU-T Z.162 defines the tabular format for TTCN (TFT) and Recommendation ITU-T Z.163 defines the graphical format for TTCN (GFT). The specification of these formats is outside the scope of this Recommendation. The core language serves the following three purposes:

- a) as a generalized text-based test language;
- b) as a standardized interchange format of TTCN test suites between TTCN tools;
- c) as the semantic basis (and where relevant, the syntactical basis) for the various presentation formats.

The core language may be used independently of the presentation formats. However, neither the tabular format nor the graphical format can be used without the core language. Use and implementation of these presentation formats shall be done on the basis of the core language.

This revision of the Recommendation contains amendments, clarifications, corrigenda and editorial corrections.

### History \*

Edition	Recommendation	Approval	Study Group	Unique ID
1.0	ITU-T Z.140	2001-07-22	10	11.1002/1000/5475
2.0	ITU-T Z.140	2003-04-22	17	11.1002/1000/6241
3.0	ITU-T Z.140	2006-03-16	17	11.1002/1000/8640
4.0	ITU-T Z.161	2007-11-13	17	11.1002/1000/9265
5.0	ITU-T Z.161	2011-03-16	17	11.1002/1000/11065
6.0	ITU-T Z.161	2012-05-29	17	11.1002/1000/11598
7.0	ITU-T Z.161	2013-07-14	17	11.1002/1000/11957
8.0	ITU-T Z.161	2014-11-13	17	11.1002/1000/12346
9.0	ITU-T Z.161	2015-10-29	17	11.1002/1000/12617
10.0	ITU-T Z.161	2016-10-14	17	11.1002/1000/13044
11.0	ITU-T Z.161	2017-10-14	17	11.1002/1000/13369
12.0	ITU-T Z.161	2018-10-14	17	11.1002/1000/13703
13.0	ITU-T Z.161	2019-10-14	17	11.1002/1000/14059
14.0	ITU-T Z.161	2020-10-29	17	11.1002/1000/14480
15.0	ITU-T Z.161	2021-10-14	17	11.1002/1000/14781
16.0	ITU-T Z.161	2022-10-14	17	11.1002/1000/15091
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### Keywords

Control notation, interoperability testing, protocol testing, protocols, service testing, testing, tools, TTCN-3.

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\* To access the Recommendation, type the URL <https://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID.

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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# Recommendation ITU-T Z.161

## Testing and Test Control Notation version 3: TTCN-3 core language

### 1 Scope

This Recommendation defines the core language of TTCN-3. TTCN-3 can be used for the specification of all types of reactive system tests over a variety of communication ports. Typical areas of application are protocol testing (including mobile and Internet protocols), service testing (including supplementary services), module testing, testing of CORBA based platforms, APIs, etc. TTCN-3 is not restricted to conformance testing and can be used for many other kinds of testing including interoperability, robustness, regression, system and integration testing. The specification of test suites for physical layer protocols is outside the scope of this Recommendation.

TTCN-3 is intended to be used for the specification of test suites which are independent of test methods, layers and protocols. Various presentation formats are defined for TTCN-3 such as a tabular presentation format and a graphical presentation format. The specification of these formats is outside the scope of this Recommendation.

While the design of TTCN-3 has taken the eventual implementation of TTCN-3 translators and compilers into consideration the means of realization of executable test suite (ETS) from abstract test suite (ATS) is outside the scope of this Recommendation.

### 2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ETSI ES 201 873-1 V4.15.1] ETSI ES 201 873-1 V4.15.1 (2023-04), *Methods for Testing and Specification (MTS); The Testing and Test Control Notation version 3; Part 1: TTCN-3 Core Language*.

### 3 Definitions

#### 3.1 Terms defined elsewhere

None.

#### 3.2 Terms defined in this Recommendation

None.

### 4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

API	Application Programming Interface
ATS	Abstract Test Suite
CORBA	Common Object Request Broker Architecture

ETS Executable Test Suite  
TTCN Testing and Test Control Notation

## **5 Conventions**

None.

## **6 Endorsement**

[ETSI ES 201 873-1 V4.15.1] was approved by ITU-T as the basis for Recommendation ITU-T Z.161.

## Bibliography

- [b-ITU-T Z.162] Recommendation ITU-T Z.162 (2007), *Testing and Test Control Notation version 3: TTCN-3 tabular presentation format (TFT)*.
- [b-ITU-T Z.163] Recommendation ITU-T Z.163 (2007), *Testing and Test Control Notation version 3: TTCN-3 graphical presentation format (GFT)*.







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