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| ***TTF T032 - Progress Report for ETSI*** |
| **Presented to ETSI meeting** |  |  | **Author:** | Jens Grabowski |
|   |   |   | **Date:** | 07/09/2023 |
| **Doc ref** |  |   | **Version** | 0.1 |
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| **TTF** | **T032** |   | **TTF leader** | Jens Grabowski |
| **TB/WG** | **MTS** |   | **TB responsible** | MTS |
|  |  |   | **Administrator** | Marie-Laure Lasnier |
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| **TTF title:** | TTCN-3 maintenance and conformance testing |
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| **Milestone** | **A** |  | **Status** | **Covers the period until (cut-off date)** | 30/09/2023 |
| **Template** |
| **Objective** | Progress report#1 to be approved by TC MTS |
| **Achieved** | Yes |  |
|  |
| **Remarks** | --- |
|  |  |  |  |  |  |
| **Achieved dates** |  |  |  |  |  |
| **Template** | **Draft report** | **TB approval** | **ETSI approval** |  |  |
| 07/09/2023 |   |   |   |   |   |
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# Executive summary

The TTCN-3 testing language has intensively been developed by ETSI during the last 20 years. By today, TTCN-3 has become a significantly important testing technology in different domains (see more details at <http://www.ttcn-3.org/index.php/about/references/applicatio-domains>). It is used by standardization bodies (see more details at <http://www.ttcn-3.org/index.php/about/references>) as well as by EU research projects and open source initiatives. TTCN-3 reached very high deployment at various ETSI member companies. The language is also endorsed by ITU-T as the Z.16x and Z.17x Recommendation series.

Significant number of TTCN-3 test toolsets are available on the market. At least five commercial tools, five free or open source tools and one internal test tool of an industrial ETSI members are known to exist (<http://www.ttcn-3.org/index.php/tools>). This also indicates the high interest and use of the language. TTCN-3, as THE standard test language, serving several domains and application areas, is specified in very detail. For example, the TTCN-3 core language alone is estimated to contain about 5,000 requirements. It is of upmost importance for users of standard test suites as well as for industrial users that the TTCN-3 tools conform to the TTCN-3 language standards. This can be secured by TTCN-3 tool conformance test suites, in a similar way as implementations of other ETSI standards (e.g. protocol specifications) are checked by means of ETSI-developed conformance test suites. In the past, the TTCN-3 tool conformance test suite development process itself has led to several language standard clarifications.

TTF T032 “Testing Task Force (TTF) T032 on TTCN-3 Maintenance” has two objectives. The first objective is to maintain the high quality of the language and at the same time keep it harmonized with the new requirements of the users, new application areas and new ways of working like Agile SW development. In addition TTF T032 has the task to study the need and scope of a new major revision of the TTCN-3 standards. The second objective is to maintain and further develop the TTCN-3 tool conformance test suites in order to reach full test coverage of the TTCN-3 series of standards.

The TTF team consists of seven experts. The work on Task 1 “TTCN-3 maintenance and further development” started with two Video conferences. The first video conference was dedicated to the preparation of a TTF ToR for the development of a new major revision of the TTCN-3 standards. In the second video conference, all open CRs were discussed and assigned to team members for further processing. The work on Task 2 “Conformance test suites for TTCN-3 tools and sub-tasks” is in the starting phase and concentrated on the organization and distribution of the work among the experts.

# Introduction

The work on Task 1 “TTCN-3 maintenance and further development” comprises the following tasks:

* Review and resolve change requests reporting technical defects or requesting clarifications and new language features for all existing TTCN-3 language standards.
* Develop proposals for language extensions requested by ETSI TBs, 3GPP, oneM2M, ETSI members and the TTCN-3 community and consent the solution with the contributor(s).
* Implement agreed solutions.
* Manage the change request (CR) process.
* Manage the interim versions of the standard according to 3GPP needs (when requested), and the versions for approval.
* Present the TTCN-3 standards’ status and the work of the TTF (previously STF) at the conference(s) associated with ETSI TB MTS and at ETSI TC MTS meetings.
* Providing input for the updates of the TTCN-3 leaflet and the TTCN-3 web pages.
* Study the need and scope of a new major revision of the TTCN-3 standards.

The work on Task 2 “Conformance test suites for TTCN-3 tools and sub-tasks” comprises the following tasks:

* Analysis of the latest published versions of the relevant TTCN-3 standards and identifying new and changed requirements.
* Identifying affected existing test cases and define new test cases for the new requirements.
* Implement changes and additions in the textual part of the deliverables (PICS, TSS&TP, textual part of the ATS).
* Implement changes and additions in the code of the ATS.
* Verification of the test cases with test tools.
* Discussion of validation outcomes with TTCN-3 experts, and raising CRs for clarification in case of discovered ambiguity.
* Analysis of the latest draft versions of the relevant TTCN-3 standards and development of not validated new test cases for the new requirements.

TTF T032 consists of the following five experts:

* Jens Grabowski, University of Göttingen (TTF management)
* Axel Rennoch, Fraunhofer FOKUS (TTF management)
* Ramon Barakat, Fraunhofer FOKUS
* Gusztáv Adamis, Ericsson Hungary
* Lénárd Nagy, Ericsson Hungary
* Matthias Simon, Nokia
* Tomáš Urban, Elvior

# Contractual milestone

The contractual milestone A is related to this progress report.

Milestone A is achieved by TB MTS approving this progress report.

# Progress of the work

***Progress of the work on Task 1 – TTCN-3 maintenance and further development***

The TTF work on Task 1 started with two *video conferences.* The first video conference took place on July 27, 2023 and was dedicated to the preparation of a TTF ToR for the development of a new major revision of the TTCN-3 standards. In the second video conference, which took place on September 5, 2023, all open CRs were discussed and assigned to team members for further processing.

An in-person work session is planned for:

* Week 45: 7. – 10. Nov. 2023 in Göttingen

Additional online work sessions and additional individual homework will be scheduled during the in-person work session in Göttingen.

During the second video conference **32** CRs listed below have been discussed and assigned to team members for further processing:

**Part 01: TTCN-3 Core Language (23 CRs)**

8090 Deprecate `lengthof` in favor of `length`

8094 Provide a canonical style for source code layout

8100 Inline terminal productions

8106 Provide TTCN-3 defintions for predefined types

8111 Allow UTF-8 for charstrings?

8152 Harmonize string literals

8153 Extend usage of break and continue statements

8155 Issue with the number of elements of templates

8156 Introduce user defined methods

8182 Old module template parameter rules in 5.4.1.2

8184 Implicit template restriction should mention the map type

8185 Implicit template restrictions for compound expressions

8191 Strict Rules

8192 Simplify import statement

8193 Redefine keywords and reserved words

8194 Optional Names for Formal Parameters

8196 Redefining Macros as Predefined Constants

8197 Automatic Alternative Selection for Unions

8198 Type requirement of value variable assignment is too restrictive.

8210 Clarify list subtyping of record of types

8211 Obsolete restriction for subtyping list-types?

8212 Dot missing in Example 4 of chapter 8.2.3.1

8213 Is map a data or a reference type?

**Part 06: TTCN-3 Control Interface (1 CR)**

8095 Provide a TTCN-3 specification for TCI and TRI

**Part 09: Using XML with TTCN-3**

8201 Handling empty element-values

**Ext Pack: Ext Pack: Behaviour Types (ES 202 785) (3 CRs)**

8188 Support for function literals

8189 Implicit apply

8190 Expression Bodies

**General: CRs not related/assigned to a TTCN-3 language specification document (5 CRs)**

7981 Support for REST APIs (HTTP)

8108 Uniqueness of identifiers for fields and enumerations

8180 Next major version of TTCN-3

8195 Make specification updates easier to find

8113 Type traits and user defined methods

***Progress of the work on Task 2 – Conformance test suites for TTCN-3 tools and sub-tasks***

The work on Task 2 “Conformance test suites for TTCN-3 tools and sub-tasks” is in the starting phase and concentrated on the organization and distribution of the work among the experts.

The first technical working phase address the validation of the “unvalidated” tests provided by the last TTF. All tests are available in the public repository <https://forge.etsi.org/rep/mts/ttcn3-conformance-tests>.

# Assessment of technical risk, difficulties encountered/expected, unresolved issues

* **Task 1 – TTCN-3 maintenance and further development**

Currently, the number of unresolved CRs is manageable and should not cause major problems. However, new CRs tend to be submitted before work sessions and the number of new CRs submitted in 2022 cannot be predicted. If the number of new CRs becomes big, the TTF may not be able to resolve all open CRs. The resolution of some CRs may be left for succeeding TTFs. The TTF will then prioritize the open CRs and resolve them in order of priority as long as possible (some high priority CRs may need long discussions, while low priority, e.g. trivial CRs may be handled quickly and thus may overtake the resolution of higher priority CRs).

* **Task 2 – Conformance test suites for TTCN-3 tools and sub-tasks**

The preceding TTCN-3 conformance testing TTFs have provided a sound methodological basis for the work of this TTF. The TTF work has started late in September 2023 and currently no technical risk or other difficulties are expected.

At this point in time no action is seen to be required from TC MTS.

# Proposed changes in the TTF work plan

No proposed change.

# Resources requirements

There is no change foreseen in the TTF resource requirements related to the TTF’s ToR.

# Changes in the TTF Team

There was no change in the TTF's composition and no change is foreseen or required.

# Meetings/events attended on behalf of the TTF

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| --- | --- | --- | --- | --- | --- |
| **Date** | **Place** | **TB/Orga** | **Event description** | **Reason to attend** | **Expert(s)** |
| 26.09. – 27.09.23 | Mainz | TC MTS | MTS#90 regular meeting | Presentation of progress report (milestone A) | Jens Grabowski |

# Meetings/events planned to be attended

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| --- | --- | --- | --- | --- | --- |
| **Date** | **Place** | **TB/Orga** | **Event description** | **Reason to attend** | **Expert(s)** |
| 14.11. – 16 11.23 | Timisoara, Romania | TC MTS | User Conference on Advanced Automated Testing (UCAAT) | Participation at ETSI booth | Lénárd Nagy |
| 24.01. – 25.01.24 | Berlin | TC MTS | MTS#91 regular meeting | Presentation of progress report (milestone B) | Jens Grabowski, Axel Rennoch |
| 30.05. – 31.05.24 | Sophia-Antipolis | TC MTS | MTS#92 regular meeting | Presentation of TTF finalization (milestone C and D) | Jens Grabowski, Axel Rennoch |

# TTF communications, presentations, promotion, inside and outside ETSI, WEB pages etc

* The TTF T032 website is in preparation.
* TTF T032 continuously updates the TTCN-3 leaflet and contributes to the TTCN-3 website <http://www.ttcn-3.org/>.
* Further external communication is done via Mantis (<http://forge.etsi.org/mantis/main_page.php>) and emails.

# Technical advice required from the reference Technical Body

There is no issue requiring TB decision.

# Status of the deliverables

* **Task 1 – TTCN-3 maintenance and further development**

TTCN-3 standards are stable documents. The way of working of TTCN-3 evolution TTFs is approved by ETSI TC MTS, is based on change requests submitted to ETSI’s Mantis CR handling system. Technical resolution and proposed changes in the texts of deliverables are publically available in Mantis during the year. Agreed text of resolved CRs is implemented in drafts of deliverables at, and after the last working session of the TTF. Therefore, the output drafts of the deliverables are available at the end of the project.

The actual status of the CRs can be found at <http://forge.etsi.org/mantis/main_page.php>.

* **Task 2 – Conformance test suites for TTCN-3 tools and sub-tasks**

Final drafts for Task 2 deliverables will be made available as part of Milestone C (cut-off date 31.05.24)

# Next report

The next report is scheduled for Milestone B (cut-off date 31/01/2024)

# Any other business

None