Terms of Reference Template

Testing Task Force (TTF)

**INSTRUCTIONS for completing the document:**

The template is for TTF use and it consists in four parts:

Part I – TTF technical proposal: Provides the D-G/OCG/Board with the essential elements to mainly understand the rationale and objective

**The parts hereinafter are composed of the TTF details that may be updated prior to the final set-up of the project team.**

Part II – Details of the TTF Technical Proposal: Organisation of the work and links with other stakeholders.

Part III - Execution of the work: detailed description of the work to be done, deliverables to be produced, tasks structure, milestones estimate of the maximum budget to be allocated. The information provided in this is part must be precise enough to be used to select contractors in the Call for Expertise.

Part IV - Performance Indicators: these must provide the elements for the Reference Body report to the D-G on the performance of the TTF.

**PLEASE REMOVE ALL GUIDELINE TEXT IN THE FINAL VERSION OF THE ToRs
(hint: search for style “Guideline” and delete the paragraphs)**

**For any questions e-mail to CTI Director** **Ultan.Mulligan@etsi.org**

|  |
| --- |
| ToR TTF XXX (Ref. Body XXX) |
| Version: 0.0 |
| Author: Firstname Lastname – Date: 20YY-mm-dd |
| Last updated by: Firstname Lastname – Date: 20YY-mm-dd |
| page 2 of 22 |

Terms of Reference –Testing Task Force Proposal

TTF XXX (Ref. Body MTS)

 Development of a new major revision of the TTCN-3 language
TTCN-3 tool conformance tests

Summary information

|  |  |  |
| --- | --- | --- |
| Approval status | Approved by TC MTS (doc ref: XXXX) | **YES/NO** |
| Reference Body | Ref. Body TC MTS |
| ETSI Funding | **Maximum budget : 311 750 EUR** |
| Minimum of 4 ETSI Members Support | **YES** |
| Time scale | **From** | 2024-05-15 |
| **To** | 2025-12-31 |
| Work Items  | **TTCN-3 Major New Release:*** Part 1: TTCN-3 Core Language
* Part 4: TTCN-3 Operational Semantics
* Part 5: TTCN-3 Runtime Interface (TRI)
* Part 6: TTCN-3 Control Interface (TCI)
* Part 7: Using ASN.1 with TTCN-3
* Part 8: The IDL to TTCN-3 Mapping
* Part 9: Using XML schema with TTCN-3
* Part 10: TTCN-3 Documentation Comment Specification
* Part 11: Using JSON with TTCN-3
* TTCN-3 Language Extensions: Configuration and Deployment Support
* TTCN-3 Language Extensions: TTCN‑3 Performance and Real Time Testing
* TTCN-3 Language Extensions: Advanced Parameterization
* TTCN-3 Language Extensions: Behaviour Types
* TTCN-3 Language Extensions: Support of interfaces with continuous signals
* TTCN-3 Language Extensions: Extended TRI
* TTCN-3 Language Extensions: Advanced Matching
* TTCN-3 Language Extensions: Object Oriented features

**TTCN-3 Conformance Test Specifications*** TTCN-3 Conformance Test Suite; Part 1: Implementation Conformance Statement (ICS)
* TTCN-3 Conformance Test Suite; Part 2: Test Suite Structure and Test Purposes (TSS&TP)
* TTCN-3 Conformance Test Suite; Part 3: Abstract Test Suite (ATS) and Implementation eXtra Information for Testing (IXIT)
* Conformance test suite for using XML schema with TTCN-3; Part 1: Implementation Conformance Statement (ICS)
* Conformance test suite for using XML schema with TTCN-3; Part 2: Test Suite Structure and Test Purposes (TSS&TP)
* Conformance test suite for using XML schema with TTCN-3; Part 3: Abstract Test Suite (ATS) and Implementation eXtra Information for Testing (IXIT)
* TTCN-3 Object Oriented extensions Conformance Test Suite - Part 1 : Implementation Conformance Statement
* TTCN-3 Object Oriented extensions Conformance Test Suite - Part 2: Test Suite Structure & Test Purpose
* TTCN-3 Object Oriented extensions Conformance Test Suite - Part 3: Abstract Test Suite & IXIT
 |
| TTF Roadmap reference |  |

Part I –TTF Technical Proposal

# Rationale & Objectives

## Rationale

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, like telecom, automotive, medical, and many more (see more details at <http://www.ttcn-3.org/index.php/about/references/applicatio-domains>). It is used by standardization bodies 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.

In **standardization, TTCN-3** is an enabler technology for several conformance, end-to-end and interoperability test standards. **3GPP** uses it for several UE conformance test suites from Rel. 8 onward, for LTE, VoLTE and lately for NB-IoT. ETSI TBs **INT** and **ERM** also applied TTCN-3 for their test specifications.In the **C‑ITS** area, several TTCN-3 test suites have been developed and they are playing important roles in ITS PlugtestsTM events, with automated C-ITS interoperability testing being in progress. In 2016, **oneM2M** has started using TTCN-3 for IoT/M2M conformance test development that has been continued in ETSI **smartM2M** from 2017. Other bodies and alliances using TTCN-3 are TCCA, EUROCONTROL, MOST and AUTOSAR (see more details at <http://www.ttcn-3.org/index.php/about/references>).

In **research,** at least 12 big projects from different domains are known to use TTCN-3, among them the EU projects **MIDAS**, **IoT.EST**, **ARMOUR, PHANTOM, 5GTANGO** and **SMESEC** (see details in at <http://www.ttcn-3.org/index.php/about/references/projects>). In the smart grid area CEAList has developed a model driven testing solution, using TTCN-3 to implement the user domain of the solution. The **open source** Eclipse project **IoT-Testware** is using TTCN-3 to develop conformance and security test suites for IoT protocols with major contribution from Fraunhofer FOKUS and relayr (<https://projects.eclipse.org/projects/technology.iottestware>). The **Osmocom** project is an open source initiative implementing mobile communication standards, including GSM, DECT, TETRA, 3G and others (<https://osmocom.org/>) and intensively using TTCN‑3 for functional and regression testing. TTCN-3 plays an important role in the **industry** as well. TTCN-3 is used by several ETSI member and non-member companies as an essential test enabler language (e.g. Ericsson, Easy Global Market, Software Radio Systems, Nokia).

Especially industrial users want low time to market of their new products. For this reason, they have introduced agile ways of working with continuous integration (CI) and continuous delivery (CD) machineries. Agile and CI/CD are heavily relying on automated testing (AT), including TTCN-3 based AT solutions. Resolving new requirements and user requests with **short response time** is important for user satisfaction and for keeping time-to-market low.

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.

**TC MTS** has set itself the goal of keeping the language **powerful**, yet **easy to use**, **up-to-date** and well **maintained**, and meeting changing **user requirements**. The series of TTCN-3 standards consists of **26** ETSI standards and technical reports that are continuously updated. This commitment requires a very high level of expertise and experts who know the standards in detail.

The last major release of TTCN-3 Core Language was published in 2009 with version 4.1.1. Since then TTCN-3 was constantly maintained and further developed. Further maintenance and further development included the introduction of new language features in the TTCN-3 core language as well as the development of extension packages expressing the wishes and needs of TTCN-3 users and developers.

However, it is known that language maintenance through minor corrections and extensions based on issue tracking leads to a growth of the language specification and is accompanied by a growth in complexity and an erosion of quality. After a while, it is required to modernize and refactor a language specification in order to keep high-quality.

The TTCN-3 language specification has reached the state where modernization and refactoring are required. Currently, language maintenance has become complex, since even small corrections and extensions require changes in many different places in the TTCN-3 language specification and extension packages. Also, TTCN-3 users suffer from this kind of complexity, because specific aspects of a language feature may be spread across different sections and documents. This decrease learning, understanding and, finally, acceptance of TTCN-3.

In the last years, TTCN-3 maintenance and further development included the development of conformance tests for TTCN-3 tools. The development of a new major revision of the TTCN-3 language will affect the TTCN-3 tool conformance tests. The test suites may have to be restructured and test cases may have to be changed, adapted or may even become obsolete. For this TTF, the work on the TTCN-3 tool conformance tests will be restricted to the identification of existing test cases still relevant for the new major revision, and the restructuring of the conformance test suites.

## Objectives of the work to be executed

TTCN-3 language evolution STFs and TTFs in the past years enabled continuous maintenance and extensions of the TTCN-3 standards. In parallel, the STFs and TTFs developing the TTCN-3 tool conformance test suites have updated and extended the TTCN-3 tool ATS to the latest published version of the language standards. This has essentially contributed to the success of TTCN-3.

This TTF aims at developing a new major revision of TTCN-3 including all TTCN-3 extensions. The work will be split into three major tasks.

Task 1 deals with urgent TTCN-3 maintenance issues. Such issues include severe errors or ambiguities, which have to be resolved before the publication of the new major TTCN-3 release. The tasks to be performed follow the well-established CR resolution process as described in clause 5.1.2.

Task 2 deals with the development of a new major revision of the TTCN-3 language.

The work on the TTCN-3 language specification documents and TTCN-3 extension documents comprises the following tasks:

* Identification of (a) which TTCN-3 language specification documents and TTCN-3 extension documents shall remain separate documents (b) which TTCN-3 language specification documents and TTCN-3 extension documents shall be (partly) combined or united, and (c) which TTCN-3 language specification documents and TTCN-3 extension documents shall be (partly) declared to be deprecated in the major revision of TTCN-3.
* Development of major revisions of documents that remain separate documents.
* Identification of TTCN-3 language features which are (a) supported by TTCN-3 tools, but (b) are specified in documents that do not remain separate documents in the major revision of TTCN-3.
* Development of a new TTCN-3 language extension document that includes all language features which are supported by TTCN-3 tools but are defined in documents that do not remain separate documents.

The work on the new major revision of the TTCN-3 core language comprises the following tasks:

* Moving selected language features from TTCN-3 extension(s) to the core language.
* Identifying and moving selected TTCN-3 language features from the core language to extensions.
* Discussing and implementing new language features documented in Mantis.
* Updating or deleting TTCN-3 core language annexes or moving annexes into extensions.
* Harmonization issues (string handling, syntax/style simplification, handling of keywords/reserved words, BNF, etc.)
* Removal of deprecated features.
* Development of standard core language document.

A major change of a well-established standard requires promotional and educational material. The development of such material comprises the following tasks:

* Update of TTCN-3 web pages
* Update of TTCN-3 leaflet
* Webinar promoting and describing the new major revision of TTCN-3
* Conference presentations, e.g., UCAAT 2024

Task 3, the TTCN-3 tool conformance tests part of the work, comprises the following tasks:

* Analysis of the latest published versions of the relevant TTCN-3 standards and identifying new and changed requirements
* Identifying impacted 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, identification/selection of test cases still relevant for the new major revision, restructuring of the ATS and renaming of existing test groups and test cases following the new structure of the upcoming major revision of the TTCN-3 standards.

Note: Any changes of the selected test cases and the development of new test cases that may be necessary due to the draft new version, i.e., the major revision, will be postponed to a future TTF.

## Previous funded activities in the same domain

TTCN-3 language development and maintenance has been a continuous ETSI activity for the last two decades due to unceasing new user requirements and the need to maintain or even further increase where possible the high quality, clarity and unambiguity of the standard.

The demand to ensure the conformance of the TTCN-3 tools to the standard was first raised by TF160 in 2009, followed by TC MTS’s action of establishing STF 409, which covered about 1/3 of the clauses in the main standard with some test cases (which activity has led to the discovery of 19 issues or ambiguities in the TTCN-3 standard version v4.2.1). The TTCN-3 tool conformance test suites are being continuously updated and extended from that time.

A major revision of TTCN-3 has not been funded and developed since 2009.

## Consequences if not agreed

Clause 1.1 contains the achievements of past TTCN-3 language maintenance and tool conformance STFs and TTFs. TC MTS is considering the availability of the language team and the communication with users and tool vendors at least as important as the numerical results.

Experience in recent years has shown that quick reactions to user inquiries increase efficiency and eliminate ambiguities with regard to standardization, tool implementation and industrial users. Without support of the former STFs and TTFs, TC MTS would not be able to respond in a timely fashion.

This TTF aims at developing a new major revision of the TTCN-3 language specifications and all related extension packages. Due to the continuous maintenance since the last major revision in 2009, the TTCN-3 specifications have become large and complex. As a consequence, maintenance has also become complex. Even small corrections and feature extensions require changes in many different places in the TTCN-3 specifications and extension packages. Also, TTCN-3 users suffer from this kind of complexity, because specific aspects of a language feature may be spread across different sections and, even, documents.

Not developing a new major revision of TTCN-3 will increase the efforts for language maintenance and further development. Furthermore, the acceptance of TTCN-3 by the users will decrease.

# ETSI Members Support

|  |  |  |
| --- | --- | --- |
| **ETSI Member** | **Supporting delegate** | **Motivation** |
| Telefon AB LM Ericsson | Lénárd Nagy | TTCN-3 has an essential role in our product development, both in functional and performance testing, as well as in product deployment. It is essential for Ericsson that new language requirements, requests for clarification and user complaints arising during software development are resolved within a short timeframe. |
| Telecom Italia | Giulio Carmelo Maggiore | TTCN-3 promotion and use for increasing the quality of standards and implementations in the network. |
| Institut fur Informatik, Universitaet Goettingen | Jens Grabowski | The University of Gottingen is interested in the further development of TTCN-3, because we are involved in several research and development projects where testing with TTCN-3 plays a central role. TTCN-3 can only keep such a central role, if TTCN-3 is continuously maintained and adapted to the new challenges of testing. |
| Fraunhofer FOKUS | Axel Rennoch | TTCN-3 plays a central role in our R&D projects and in our training programs. We run e.g. an automotive IOP test stand for Car2X communication based on TTCN-3 and a reference test system for IHE/HL7-based solutions likewise based on TTCN-3. In addition, our automated test generation methods and tools use TTCN-3 as target test specification so that in various respects a continuously maintained and evolving TTCN-3 is essential for our work |
| Spirent | Bogdan Stanca- Kaposta | For Spirent, being one of the main TTCN-3 tool provider the maintenance is crucial for its success and TTCN-3's success at its customers and users. Continuous development and enhancement of the language is one of its main USPs.From end-users we understand that the compatibility of TTCN-3 tools applied is crucial for the further deployment of TTCN-3, at companies and at standardisation bodies and for gremias. |
| OU Elvior | Andrus Lehmets | Elvior is TTCN-3 tool provider and contributes actively into TTCN-3 evolution. Effective resolving CR-s raised by TTCN-3 users strengthens TTCN-3 position in test automation market and therefore has impact to our business. It is important that different tool vendors interpret all aspects of TTCN-3 language in a similar way, output of this TTF will help to achive this target. |
| Nokia | Matthias Simon | TTCN-3 is a key technology driving test automation at Nokia. With millions of tests executed every day, it is essential that Nokia stays actively engaged in the standardization and maintenance task force to keep the technology updated and reliable, to quickly address any issues that may arise, and to continuously improve its test automation capabilities. |

# Deliverables

## Base documents

### TTCN-3 base documents

|  |  |  |  |
| --- | --- | --- | --- |
| **Document** | **Title** | **Current Status** | **Expected date for stable document** |
| ETSI ES 201 873-1 V4.15.1 | Part 1: TTCN-3 Core Language | Published | 2023-04 |
| ETSI ES 201 873-4 V4.6.1 | Part 4: TTCN-3 Operational Semantics | Published | 2017-05 |
| ETSI ES 201 873-5 V4.9.1 | Part 5: TTCN-3 Runtime Interface (TRI) | Published | 2022-04 |
| ETSI ES 201 873-6 V4.14.1 | Part 6: TTCN-3 Control Interface (TCI) | Published | 2023-04 |
| ETSI ES 201 873-7 V4.10.1 | Part 7: Using ASN.1 with TTCN-3 | Published | 2022-04 |
| ETSI ES 201 873-8 V4.8.1 | Part 8: The IDL to TTCN-3 Mapping | Published | 2021-06 |
| ETSI ES 201 873-9 V4.12.1 | Part 9: Using XML schema with TTCN-3 | Published | 2021-06 |
| ETSI ES 201 873-10 V4.5.1 | Part 10: TTCN-3 Documentation Comment Specification | Published | 2013-04 |
| ETSI ES 201 873-11 V4.10.1 | Part 11: Using JSON with TTCN-3 | Published | 2023-05 |
| ETSI ES 202 781 V1.9.1 | TTCN-3 Language Extensions: Configuration and Deployment Support | Published | 2022-04 |
| ETSI ES 202 782 V1.4.1 | TTCN-3 Language Extensions: TTCN‑3 Performance and Real Time Testing | Published | 2022-04 |
| ETSI ES 202 784 V1.9.1 | TTCN-3 Language Extensions: Advanced Parameterization | Published | 2022-04 |
| ETSI ES 202 785 V1.9.1 | TTCN-3 Language Extensions: Behaviour Types | Published | 2022-04 |
| ETSI ES 202 786 V1.5.1 | TTCN-3 Language Extensions: Support of interfaces with continuous signals | Published | 2022-04 |
| ETSI ES 202 789 V1.6.1 | TTCN-3 Language Extensions: Extended TRI | Published | 2022-04 |
| ETSI ES 203 022 V1.5.1 | TTCN-3 Language Extensions: Advanced Matching | Published | 2022-04 |
| ETSI ES 203 790 V1.4.1 | TTCN-3 Language Extensions: Object Oriented features | Published | 2022-04 |

NOTE : The work of the TTCN-3 maintenance TTF should always be based on the latest published base documents. If during the TTF work a new version of a base document is published, the TTF can decide to base its work on this new version.

### TTCN-3 conformance test suites

|  |  |  |  |
| --- | --- | --- | --- |
| **Document** | **Title** | **Current Status** | **Expected date for stable document** |
| ETSI TS 102 950-1 V1.11.1 | Methods for Testing and Specification (MTS);TTCN-3 Conformance Test Suite;Part 1: Implementation Conformance Statement (ICS) | Published | 2023-05 |
| ETSI TS 102 950-2 V1.11.1 | Methods for Testing and Specification (MTS);TTCN-3 Conformance Test Suite; Part 2: Test Suite Structure and Test Purposes (TSS&TP) | Published | 2023-05 |
| ETSI TS 102 950-3 V1.11.1 | Methods for Testing and Specification (MTS);TTCN-3 Conformance Test Suite; Part 3: Abstract Test Suite (ATS) and Implementation eXtra Information for Testing (IXIT) | Published | 2023-05 |
| ETSI TS 103 253 V1.7.1 | Methods for Testing and Specification (MTS); Conformance test suite for using XML schema with TTCN-3; Part 1: Implementation Conformance Statement (ICS) | Published | 2022-06 |
| ETSI TS 103 254 V1.7.1 | Methods for Testing and Specification (MTS); Conformance test suite for using XML schema with TTCN-3; Part 2: Test Suite Structure and Test Purposes (TSS&TP) | Published | 2022-06 |
| ETSI TS 103 255 V1.7.1 | Methods for Testing and Specification (MTS); Conformance test suite for using XML schema with TTCN-3; Part 3: Abstract Test Suite (ATS) and Implementation eXtra Information for Testing (IXIT) | Published | 2022-06 |
| ETSI TS 103 663-1 V1.3.1 | TTCN-3 Object Oriented extensions Conformance Test Suite - Part 1 : Implementation Conformance Statement | Published | 2022-06 |
| ETSI TS 103 663-2 V1.3.1 | TTCN-3 Object Oriented extensions Conformance Test Suite - Part 2: Test Suite Structure & Test Purpose | Published | 2022-06 |
| ETSI TS 103 663-3 V1.2.1 | TTCN-3 Object Oriented extensions Conformance Test Suite - Part 3: Abstract Test Suite & IXIT | Published | 2022-06 |

## New deliverables

### New TTCN-3 base deliverables

|  |  |  |  |
| --- | --- | --- | --- |
| **Deliv.** | **Work Item code****Standard number** | **Working title** | **Expected date for publication** |
| D1 | ES 201 873-1 | Part 1: TTCN-3 Core Language |  |
| D2 | ES 201 873-4 | Part 4: TTCN-3 Operational Semantics |  |
| D3 | ES 201 873-5 | Part 5: TTCN-3 Runtime Interface (TRI) |  |
| D4 | ES 201 873-6 | Part 6: TTCN-3 Control Interface (TCI) |  |
| D5 | ES 201 873-7 | Part 7: Using ASN.1 with TTCN-3 |  |
| D6 | ES 201 873-8 | Part 8: The IDL to TTCN-3 Mapping |  |
| D7 | ES 201 873-9 | Part 9: Using XML schema with TTCN-3 |  |
| D8 | ES 201 873-10 | Part 10: TTCN-3 Documentation Comment Specification |  |
| D9 | ES 201 873-11 | Part 11: Using JSON with TTCN-3 |  |
| D10 | ES 202 781 | TTCN-3 Language Extensions: Configuration and Deployment Support |  |
| D11 | ES 202 782 | TTCN-3 Language Extensions: TTCN‑3 Performance and Real Time Testing |  |
| D12 | ES 202 784 | TTCN-3 Language Extensions: Advanced Parameterization |  |
| D13 | ES 202 785 | TTCN-3 Language Extensions: Behaviour Types |  |
| D14 | ES 202 786 | TTCN-3 Language Extensions: Support of interfaces with continuous signals |  |
| D15 | ES 202 789 | TTCN-3 Language Extensions: Extended TRI |  |
| D16 | ES 203 022 | TTCN-3 Language Extensions: Advanced Matching |  |
| D17 | ES 203 790 | TTCN-3 Language Extensions: Object Oriented features |  |

Upon request of STF160, intermediate versions may be produced for the requested parts. This does not require formal approval by TC MTS and will appear as a draft uploaded to the TC MTS drafts area.

The development of a new major revision of TTCN-3 may require the publication of new deliverables. Work items for these new deliverables will be discussed and created before the TTF starts, i.e., latest at MTS#92.

### New TTCN-3 conformance test suite deliverables

|  |  |  |  |
| --- | --- | --- | --- |
| **Deliv.** | **Work Item code****Standard number** | **Working title** | **Expected date for publication** |
| D18 | TS 102 950-1 | Methods for Testing and Specification (MTS); TTCN-3 Conformance Test Suite; Part 1: Implementation Conformance Statement (ICS) |  |
| D19 | TS 102 950-2 | Methods for Testing and Specification (MTS); TTCN-3 Conformance Test Suite; Part 2: Test Suite Structure and Test Purposes (TSS&TP) |  |
| D20 | TS 102 950-3 | Methods for Testing and Specification (MTS); TTCN-3 Conformance Test Suite; Part 3: Abstract Test Suite (ATS) and Implementation eXtra Information for Testing (IXIT) |  |
| D21 | TS 103 253 | Methods for Testing and Specification (MTS); Conformance test suite for using XML schema with TTCN-3; Part 1: Implementation Conformance Statement (ICS) |  |
| D22 | TS 103 254 | Methods for Testing and Specification (MTS); Conformance test suite for using XML schema with TTCN-3; Part 2: Test Suite Structure and Test Purposes (TSS&TP) |  |
| D23 | TS 103 255 | Methods for Testing and Specification (MTS); Conformance test suite for using XML schema with TTCN-3; Part 3: Abstract Test Suite (ATS) and Implementation eXtra Information for Testing (IXIT) |  |
| D24 | TS 103 663-1 | TTCN-3 Object Oriented extensions Conformance Test Suite - Part 1 : Implementation Conformance Statement |  |
| D25 | TS 103 663-2 | TTCN-3 Object Oriented extensions Conformance Test Suite - Part 2: Test Suite Structure & Test Purpose |  |
| D26 | TS 103 663-3 | TTCN-3 Object Oriented extensions Conformance Test Suite - Part 3: Abstract Test Suite & IXIT |  |

# Maximum budget

## Task summary/Manpower Budget

|  |  |
| --- | --- |
| **Task short description** | Budget (EUR) |
| T0: Project Management | 9 000 |
| T1: Urgent TTCN-3 maintenance issues | 3 250 |
| T2: Development of a new major revision of the TTCN-3 language |  |
| T2.1: New major revisions of TTCN-3 language specifications parts 2 – 11 (ES 201 873-2 - ES 201 873-11) and TTCN-3 extensions (ES 202 781, ES 202 782, ES 202 784, ES 202 785, ES 202 786, ES 202 789, ES 203 022, ES 203 790) | 65 000 |
| T2.2: Development of new major revision of TTCN-3 core language (ES 202 781) | 195 000 |
| T2.3: Development of promotional and educational material for new major revision of TTCN- | 13 000 |
| T3: Conformance test suites for TTCN-3 tools | 26 500 |
| T3.1: Listing of Changes |  |
| T3.2: TTCN-3 Part 1 new/changed features |  |
| T3.3: TTCN-3 Part 9 new/changed features |  |
| T3.4: TTCN-3 Ext. OO features new/changed features |  |
| T3.5: Tools/Adaptation |  |
| T3.6: Validation |  |
| T3.7: Discussion of validation results |  |
| T3.8: TTCN-3 Part 1 correction of tests |  |
| T3.9: TTCN-3 Part 9 correction of tests |  |
| T3.10: TTCN-3 Ext. OO features correction of tests |  |
| T3.11: Submission of CRs for TTCN-3 maintenance |  |
| **TOTAL** | **311 750** |

## Travel budget

For the presentation of the TTF progress at three regular TB MTS meetings and for the promotion of the TTF work at the ETSU UCAAT conference, the following additional travel budget is needed:

|  |  |
| --- | --- |
| **Event** | Budget (EUR) |
|
| MTS#93 | 1 200 |
| MTS#94 | 1 200 |
| MTS#95 | 1 200 |
| UCAAT | 1 800 |
| **TOTAL** | **5 400** |