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| ETSI_logo_Office_Colour_Small | ***STF 491 - Final Report for ETSI*** |
| **Final Report** | **Author:**  | Dr. György Réthy |
|  |  | **Date:**  | 04/01/2016  |
|  |  | **Version** |  |
| **Doc**  |  | page 1 of 10 |

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| **STF** | **491** |  | **STF leader** | György Réthy |
| **TB/WG** | MTS |  | **TB responsible** | Emmanuelle Chaulot-Talmon |
|  |  |  | **STF Assistant** | Elodie Rouveroux |

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| **STF title:** | TTCN-3 Evolution 2015 |

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| **Milestone** | **B** |  | **Status** | **Covers the period until (cut-off date)** | 31 March 2016 |
| **Template** |
| **Objective** | Final Report and final draft deliverables presented to MTS#67 (27-28 January 2016). TC MTS will review the drafts during the plenary proceed to approval by Remote Consensus. The milestone will be achieved when the Final Report and the final draft deliverables will be approved by TC MTS and accepted by the ETSI Secretariat. |
| **Achieved** |  | *Indicate whether the objective has been achieved**If the objective is not achieved, give a short explanation in the “remarks”* |
| **Remarks** |  |

**Achieved dates**

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| **Template** | **Draft report** | **ETSI approval** | **Sent to EC** | **EC approval** |
| 04/01/2016 |  |  |  |  |

**Activities carried out by the STF in the period** **from 11 May 2015 to 31 March 2016.**

# Executive summary

TTCN-3 has become an important testing technology, which is used intensively for test automation of functional, conformance, end-to-end and network integration testing, and also utilized for performance testing. It is an execution language of model based testing solutions in telecommunication, automotive, medical and other industries. TTCN‑3 is an **evolving** language. As the use of TTCN‑3 expands, users are requesting for new language features as well as commenting on the language, expecting improvements and maintenance of the standards.

TTCN-3 has important role both in standardization and in industry, while it is a continuously **evolving** language. Therefore TC MTS is committed to keep the language up-to-date, powerful and well maintained. Several standards developed by **3GPP**, ETSI TCs **INT,** and **ITS,** **OMA,** **WiMAX Forum** and the **TETRA Association** are using TTCN‑3 for their test specifications, while new areas, like **M2M/IoT** and **Cloud/NFV** are on the horizon to potentially use it in the near future. 3GPP is asking MTS to provide continuous maintenance of the language. Users are requesting for new language features and clarifications as well as expecting improvements and maintenance of the standards.

The **purpose of STF491** – “TTCN-3 evolution 2015” was to maintain the **consistency** and **high quality** of the language – that is currently consist of **14** ETSI **standards** and together more than **1400 pages** -, 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.

The STF team consists of 4 experts. The STF has an approved working procedure based on **Change Request**s (CR) submitted and progressed in ETSI’s Mantis change handling system. As Mantis is publically visible, this guarantees transparency of the STF work to TB MTS, to the users of the language as well as to tool vendors.

The STF has **resolved and implemented in its deliverables 94 CRs**. The detailed list of implemented CRs is provided in clause .

# Introduction

As the use of TTCN-3 expands, users naturally comment on the language, expecting improvements and maintenance issues to be addressed. TB MTS is committed to keep the language powerful, up-to-date and well maintained, hence a change request (CR) procedure has been put in place. At the time of proposing this STF, there were many open TTCN-3 CRs and several CRs have been received during the lifetime of the STF. In overall (see details in clause 4.1).

## Scope, major aims of the STF work

The scope of the STF work was to handle TTCN-3 CRs, reporting defects / requesting clarifications and requesting new features and implement the solutions in the related ETSI standards. See the details in clause 4.1.

## STF activity and expected output

The STF work comprised of the following tasks:

* Analyse, discuss and prepare a technical solution for open change requests, reporting technical defects or requesting clarifications or new language features.
* Prepare, review and agree concrete textual resolution for the technically agreed CRs.
* Implement agreed solutions.
* Manage the change request (CR) process.
* Manage the interim and final draft versions of the deliverables (for those parts having resolved CRs).
* Prepare the drafts for the TB approval process (for those parts having resolved CRs).

The expected output are the revised versions of the TTCN-3 standard, for which one or more CRs have been resolved (see clause 4.1).

Beyond the final deliverables, two interim drafts have been produced and uploaded to TB MTS’s draft’s area, containing resolutions of CRs identified by STF 160 as urgent, after the first STF session in early August:

* RES/MTS-201873-1 T3ed481 (ES 201 873-1) version V4.7.3
* RES/MTS-201873-9 T3ed471 (ES 201 873-9) version V4.6.2

## Relation with the reference TB and with other bodies, inside and outside ETSI

The reference TB for the STF is TB MTS. TB MTS, except supervising the STF work at regular TB meetings, has also established a TTCN-3 Steering Group to resolved technical issues escalated by the STF or any ETSI member to the TB. The work status is reported to TB MTS after each STF session (by mail correspondence on the MTS-GEN mail exploder list) and at each regular TB MTS meetings. Outputs will also be reviewed and approved by TB MTS. Some active TB MTS members has also been involved in this STF and hence be in direct contact with TB MTS via the usual communication means (MTS-GEN mailing list, MTS face-to-face meetings, conference calls).

# Overview of the organization of the activity

## Team composition and experts’ qualification

The STF consists 4 experts:

* Gyorgy Rethy, Ericsson; TTCN-3, ASN.1 and XSD language expert with a tool implementation background supported by the Ericsson TTCN-3 tool development team.
* Jens Grabowski, University of Goettingen; TTCN-3 and XSD language expert with computing technologies and tool implementation background
* Axel Rennoch, Fraunhofer FOKUS; TTCN-3 language expert with tool implementation background
* Jacob Wieland, TestingTech; TTCN-3, ASN.1 and XSD language expert with strong programming and tool implementation background

Tomaš Urban, Elvior OU (TTCN-3, ASN.1 and XSD language expert with strong programming and tool implementation background), helped the STF work by following the ongoing work and providing useful feedback regarding resolution of CRs and also implementing CRs in the draft of Part-6 of ES 201 873.

## STF teamwork, distribution of tasks, working methods

The STF working procedure has been presented and approved by TB MTS (see in MTS(10)0023r1). All contributions are recorded as TTCN-3 CRs, either by the users or by an STF member (e.g. when a problem is raised in a mail discussion or found during the STF work).

CRs are allocated to STF members for analysis. In case of more complex requests or when there are alternative solutions are possible (i.e. the solution is non-trivial), the analysis result is reviewed and the decision is taken by the whole STF; the STF member whom the CR is assigned, writes the textual proposal of the resolution; this proposal is then reviewed by one or more STF members and, when agreed, assigned to the rapporteur of the given standard for implementation. In cases when the solution is straightforward, no discussion by the whole STF may be needed and the STF member whom the CR is assigned, may directly proposed a text for its solution; this solution is reviewed and implemented as above. Editorial and technically trivial CRs may be implemented by the rapporteurs directly.

In cases, when the proposed solution may raise backward incompatibility, or is felt to require a wider agreement, the proposed solution is discussed with TTCN-3 tool vendors and other stakeholders (e.g. STF160). If no consensus can be reached, the question is escalated to the TTCN-3 Steering Group of TB MTS either by the STF or by any ETSI member (in the lifetime of this STF no CR was escalated).

Rapporteurs have spent their voluntary contribution days with resolving editorial and trivial CRs to save time at joint working sessions, and by merging resolved CRs into the standards’ drafts. The rapporteurs have the responsibility - except implementing resolved CRs - also to prepare and upload the drafts for TB approval.

## Liaison with the reference TB and/or the Steering Group

There was no need to liaise.

## Meetings attended on behalf of the STF with the reference TB and other ETSI TBs

Gyorgy Rethy, STF leader attended MTS#66, where presented the status of the STF work. MTS#66 has approved the STF’s Progress Report.

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

No STF communication beyond email discussions of technical issues with STF160 and tool vendors has taken place.

# Final status of the activity

## Overview of the STF work

The STF has had four joint working sessions with all STF members present, in accordance with the STF work plan:

* 3-7 Augustl 2015, ETSI, Sophia Antipolis
* 21-25 September 2015, ETSI, Berlin
* 12-16 October 2015, ETSI, Sophia Antipolis
* 2-6 November 2015, Berlin

The joint working sessions are used to discuss and reach technical agreement on open CRs and to draft and review text for resolution. Beyond this, STF experts has worked 5 voluntary days each from their home offices by finishing reviews of CRs in confirmed status, implementing resolved CRs in the drafts and with final review of the deliverables.

The STF has delivered the final drafts for TB approval of the revised ETSI standards before the deadline:

* RES/MTS-201873-1 T3ed481 V4.7.5: [MTS(16)067012](https://docbox.etsi.org/MTS/MTS/05-CONTRIBUTIONS/2016/MTS%2816%29067012_Draft_-_RES_MTS-201873-1_T3ed481.zip)
* RES/MTS-201873-4 T3ed461 V4.5.2: [MTS(16)067011](https://docbox.etsi.org/MTS/MTS/05-CONTRIBUTIONS/2016/MTS%2816%29067011_Draft_-_RES_MTS-201873-4_T3_ed451_OS.zip)
* RES/MTS-201873-6 T3ed481 V4.7.2: [MTS(16)067010](https://docbox.etsi.org/MTS/MTS/05-CONTRIBUTIONS/2016/MTS%2816%29067010_Draft_-_RES_MTS-201873-6_T3ed481TCI.zip)
* RES/MTS-201873-9 T3ed471 V4.6.4: [MTS(16)067003](https://docbox.etsi.org/MTS/MTS/05-CONTRIBUTIONS/2016/MTS%2816%29067003_Draft_-_RES_MTS-201873-9_ed471XSD.zip)

Other deliverables in the ToR didn’t receive any CR or no CR is resolved, therefore according to the STF’s ToR, no new version is published.

Beyond the final deliverables, two interim drafts have been produced and uploaded to TB MTS’s draft’s area, containing resolutions of CRs identified by STF 160 as urgent, after the first STF session in early August:

* RES/MTS-201873-1 T3ed481 (ES 201 873-1) version V4.7.3
* RES/MTS-201873-9 T3ed471 (ES 201 873-9) version V4.6.2

The STF, during its activity, has **resolved and implemented in its deliverables 94 CRs**, which are listed below.

Draft ES 201 873-1 (97% of all Part-1 CRs):

- [0006774](http://forge.etsi.org/mantis/view.php?id=6774): Return values for altsteps.

- [0006813](http://forge.etsi.org/mantis/view.php?id=6813): Passing fields or elements of a component variable as inout parameter.

- [0006843](http://forge.etsi.org/mantis/view.php?id=6843): allow select union for anytype.

- [0006864](http://forge.etsi.org/mantis/view.php?id=6864): Index notation applied to omitted or uninitialized strings.

- [0006934](http://forge.etsi.org/mantis/view.php?id=6934): Unnecessary restriction on match operation.

- [0007053](http://forge.etsi.org/mantis/view.php?id=7053): More detailed explanation of a module parameter restriction.

- [0007055](http://forge.etsi.org/mantis/view.php?id=7055): Allow component and default types in module parameters.

- [0007081](http://forge.etsi.org/mantis/view.php?id=7081): Allow EOF to close line comemnts.

- [0007085](http://forge.etsi.org/mantis/view.php?id=7085): Placeholder for the draft of V4.8.1.

- [0007090](http://forge.etsi.org/mantis/view.php?id=7090): description and example for field value redirect are wrong.

- [0007096](http://forge.etsi.org/mantis/view.php?id=7096): Strong typing in redirect assignments.

- [0007097](http://forge.etsi.org/mantis/view.php?id=7097): Clarification: ispresent function for elements of a "record of" or "set of".

- [0007112](http://forge.etsi.org/mantis/view.php?id=7112): allow different syntax for binary string types.

- [0007113](http://forge.etsi.org/mantis/view.php?id=7113): Wording issues in rules on actual values of in formal parameters.

- [0007114](http://forge.etsi.org/mantis/view.php?id=7114): Actual parameters of out formal value parameters not defined.

- [0007115](http://forge.etsi.org/mantis/view.php?id=7115): Actual parameters of inout formal template parameters.

- [0007116](http://forge.etsi.org/mantis/view.php?id=7116): Actual parameters of out formal template parameters.

- [0007117](http://forge.etsi.org/mantis/view.php?id=7117): The order of evaluation of actual and default parameters is not completely set .

- [0007118](http://forge.etsi.org/mantis/view.php?id=7118): Not clear when actual parameter passing occurs.

- [0007119](http://forge.etsi.org/mantis/view.php?id=7119): Out parameter rule inside a note.

- [0007120](http://forge.etsi.org/mantis/view.php?id=7120): Missing restriction on number of parameters in list notation.

- [0007121](http://forge.etsi.org/mantis/view.php?id=7121): Restriction on the use of union alternatives as inout parameters shall be extended to anytype.

- [0007122](http://forge.etsi.org/mantis/view.php?id=7122): Signatures should not be mentioned in the rules on actual parameters.

- [0007123](http://forge.etsi.org/mantis/view.php?id=7123): Type parameterization in examples.

- [0007124](http://forge.etsi.org/mantis/view.php?id=7124): Semantics of Actual Parameter Assignment Notation ambiguous.

- [0007126](http://forge.etsi.org/mantis/view.php?id=7126): Semantics of anytype not really usable.

- [0007127](http://forge.etsi.org/mantis/view.php?id=7127): Obsolete @encoded used in istemplatekind.

- [0007128](http://forge.etsi.org/mantis/view.php?id=7128): Wrong endianness in examples.

- [0007129](http://forge.etsi.org/mantis/view.php?id=7129): Naming convension in examples.

- [0007130](http://forge.etsi.org/mantis/view.php?id=7130): Typo in the example 3 on actual parameters.

- [0007131](http://forge.etsi.org/mantis/view.php?id=7131): Wrong description in the example 6 on actual parameters.

- [0007132](http://forge.etsi.org/mantis/view.php?id=7132): Syntax of the select statement.

- [0007133](http://forge.etsi.org/mantis/view.php?id=7133): Select union statement should have at least one branch.

- [0007134](http://forge.etsi.org/mantis/view.php?id=7134): Syntactical structure of the select branch shall contain TemplateInstance.

- [0007135](http://forge.etsi.org/mantis/view.php?id=7135): Template instance in the header of the select union statement.

- [0007136](http://forge.etsi.org/mantis/view.php?id=7136): Value list size for arrays.

- [0007137](http://forge.etsi.org/mantis/view.php?id=7137): Uniqueness of items in assignment notation.

- [0007138](http://forge.etsi.org/mantis/view.php?id=7138): Missing rule on lower and upper bound of arrays.

- [0007139](http://forge.etsi.org/mantis/view.php?id=7139): Unnecessary rule on uniqueness of enumerated values.

- [0007140](http://forge.etsi.org/mantis/view.php?id=7140): Templates not allowed in the value part of the reply operation.

- [0007141](http://forge.etsi.org/mantis/view.php?id=7141): Strong typing rules.

- [0007142](http://forge.etsi.org/mantis/view.php?id=7142): Terminology in example on expressions.

- [0007143](http://forge.etsi.org/mantis/view.php?id=7143): Compound expression for union and anytype.

- [0007144](http://forge.etsi.org/mantis/view.php?id=7144): Restriction on blocking operations in else branch.

- [0007146](http://forge.etsi.org/mantis/view.php?id=7146): Operations missing in the list of forbidden port operations.

- [0007147](http://forge.etsi.org/mantis/view.php?id=7147): Operation with side effects in alt statemets.

- [0007148](http://forge.etsi.org/mantis/view.php?id=7148): Parameters of functions started as PTC behaviour.

- [0007149](http://forge.etsi.org/mantis/view.php?id=7149): Allow to skip actual out parameters.

- [0007155](http://forge.etsi.org/mantis/view.php?id=7155): Running and alive operation should not be forbidden for MTC.

- [0007156](http://forge.etsi.org/mantis/view.php?id=7156): Missing restriction on exception values.

- [0007164](http://forge.etsi.org/mantis/view.php?id=7164): Content of the from clause not properly explained.

- [0007168](http://forge.etsi.org/mantis/view.php?id=7168): Invalid description of redirect assignment of message fields in receive operation.

- [0007171](http://forge.etsi.org/mantis/view.php?id=7171): Make a template list restriction explicit.

- [0007172](http://forge.etsi.org/mantis/view.php?id=7172): Is variable initialization with undefined function result allowed?.

- [0007173](http://forge.etsi.org/mantis/view.php?id=7173): Semantic description of Assignments is contradictory.

- [0007179](http://forge.etsi.org/mantis/view.php?id=7179): Minor issues with restriction on address references in receive operations.

- [0007180](http://forge.etsi.org/mantis/view.php?id=7180): Implicit from clause.

- [0007183](http://forge.etsi.org/mantis/view.php?id=7183): Return value not mentioned in the section describing @decoded clause of getreply.

- [0007184](http://forge.etsi.org/mantis/view.php?id=7184): Template instance in the value part of reply operations.

- [0007185](http://forge.etsi.org/mantis/view.php?id=7185): BNF productions TemplateInstance vs. InLineTemplate.

- [0007186](http://forge.etsi.org/mantis/view.php?id=7186): Simplify BNF of the return statement.

- [0007196](http://forge.etsi.org/mantis/view.php?id=7196): start operation with altstep should be allowed.

- [0007200](http://forge.etsi.org/mantis/view.php?id=7200): Allow ranges and value list for enumerated types.

- [0007213](http://forge.etsi.org/mantis/view.php?id=7213): Example is wrong.

- [0007215](http://forge.etsi.org/mantis/view.php?id=7215): Clarify the what the enumerated value's "type context" means.

- [0007217](http://forge.etsi.org/mantis/view.php?id=7217): Add language string for the coming version.

- [0007272](http://forge.etsi.org/mantis/view.php?id=7272): matching symbols should be uniformly formatted.

Draft ES 201 873-4 (100% of all Part-4 CRs):

- [0006803](http://forge.etsi.org/mantis/view.php?id=6803): Implementation of CR 0006775: getverdict from other component in Part 4.

- [0007214](http://forge.etsi.org/mantis/view.php?id=7214): Lazy and Fuzzy evaluation of variables and parameters is not mentioned in the operational semantics.

- [0007212](http://forge.etsi.org/mantis/view.php?id=7212): Update Operational Semantics: Visibility of Definitions (public, friend, private).

Draft ES 201 873-6 (100% of all Part-6 CRs):

- [0007041](http://forge.etsi.org/mantis/view.php?id=7041): Typo in the TciCDProvided.

- [0007059](http://forge.etsi.org/mantis/view.php?id=7059): constraints of TTCN-3 types unavailable at TCI level.

Draft ES 201 873-9 (84% of all Part-9 CRs):

- [0006766](http://forge.etsi.org/mantis/view.php?id=6766): enumeration facet applied to a union-simple-type-derivation should yield an enumeration type.

- [0006800](http://forge.etsi.org/mantis/view.php?id=6800): In TTCN-3 "XSD\_typeTypes" should never be used for sending XML messages, instead use "XSD\_elementTypes"!

- [0006867](http://forge.etsi.org/mantis/view.php?id=6867): Handling XSD type aliases.

- [0006868](http://forge.etsi.org/mantis/view.php?id=6868): XSD.GYear does not allow years greater than 9999.

- [0006869](http://forge.etsi.org/mantis/view.php?id=6869): AnyType in XSD module is missing embed\_values field.

- [0006875](http://forge.etsi.org/mantis/view.php?id=6875): sequence nested in sequence is mapped wrong in EXAMPLE 2 in 7.6.5.4.

- [0007056](http://forge.etsi.org/mantis/view.php?id=7056): Fields are mixed up in example.

- [0007080](http://forge.etsi.org/mantis/view.php?id=7080): Few errors in examples.

- [0007082](http://forge.etsi.org/mantis/view.php?id=7082): Further errors in examples.

- [0007083](http://forge.etsi.org/mantis/view.php?id=7083): Misleading XSD and TTCN-3 comments.

- [0007084](http://forge.etsi.org/mantis/view.php?id=7084): Placeholder for the draft of V4.7.1.

- [0007087](http://forge.etsi.org/mantis/view.php?id=7087): Change order of memberTypes in union examples.

- [0007094](http://forge.etsi.org/mantis/view.php?id=7094): Paragraph text mentions 3, but 4 postfixing rules defined.

- [0007100](http://forge.etsi.org/mantis/view.php?id=7100): Mapping of XSD id attributes.

- [0007111](http://forge.etsi.org/mantis/view.php?id=7111): Several errors in examples.

- [0007125](http://forge.etsi.org/mantis/view.php?id=7125): Nillable section needs correction.

- [0007189](http://forge.etsi.org/mantis/view.php?id=7189): Wrong templates in substitution examples.

- [0007193](http://forge.etsi.org/mantis/view.php?id=7193): Delete type of the substitution group element in example.

- [0007194](http://forge.etsi.org/mantis/view.php?id=7194): More explanation to type substitution would be useful.

- [0007201](http://forge.etsi.org/mantis/view.php?id=7201): Missing conversion for unnamed <list> derivations.

- [0007210](http://forge.etsi.org/mantis/view.php?id=7210): How to decode an empty element when an optional sequence includes optional elements only.

- [0007240](http://forge.etsi.org/mantis/view.php?id=7240): Error in example 1 of clause 8.1.1.

The details of the CRs and also the work of the STF can be followed in detail in ETSI’s Mantis system at

<http://forge.etsi.org/mantis/view_all_bug_page.php>.

## Technical risk, difficulties encountered and corrective actions taken

**34 new CRs** have been received after the first working session of the STF. The STF has proposed to TB MTS to move **4 CRs**, related to matching mechanisms, to a **new language extension package** on “Advanced Matching Mechanisms”, and be handled by the next STF in 2016. This proposal was approved by MTS#66 and the related new work item has been created and approved. Except these 4 CRs, the leftover of the STF is 14 CRs, requiring more technical discussions to find the consistent solution.

No other technical risk or difficulties has been encountered.

## Lessons learnt

The CR handling process in place allows resolving CRs and follow-up CR status in an efficient way. Also, introduced from previous STFs, the last session was primarily focusing on the consolidation of already progressed CRs and developing the concrete text changes for technically agreed CRs. This helped to produce the final deliverables in time.

In this STF and in earlier language maintenance STFs practically no time was available for a general review of the standards and check their consistency. This kind of activity should be included into the ToR of future language maintenance STFs, in case time is left after resolving concrete CRs.

## Recommendations for future activities in related domains

Use a Mantis-based change handling process whenever it is possible. It both makes the STF’s internal work allocation, management and follow-up more efficient and increases external transparency.

# ETSI deliverables

|  |  |
| --- | --- |
| Deliverable: RES/MTS-201873-1 T3ed481Current status: Final draft submitted to MTS#67Working title: TTCN-3 ed.V4.8.1: Core | **Achieved date** |
| Creation of WI by WG/TB | 2014-10-03 |
| TB adoption of WI | 2014-10-03 |
| Start of work | 2015-08-03 |
| Stable draft | 2015-12-15 |
| Final draft for approval | 2015-01-05 |
| TB approval |  |
| Draft receipt by ETSI Secretariat |  |
| Publication |  |
| Deliverable: RES/MTS-201873-4 T3ed461Current status: Final draft submitted to MTS#67Working title: TTCN-3 ed.V4.6.1: OS | **Achieved date** |
| Creation of WI by WG/TB | 2014-10-03 |
| TB adoption of WI | 2014-10-03 |
| Start of work | 2015-08-03 |
| Stable draft | 2015-12-29 |
| Final draft for approval | 2015-01-05 |
| TB approval |  |
| Draft receipt by ETSI Secretariat |  |
| Publication |  |
| Deliverable: RES/MTS-201873-6 T3ed481Current status: Final draft submitted to MTS#67Working title: TTCN-3 ed.V4.8.1: TCI | **Achieved date** |
| Creation of WI by WG/TB | 2014-10-03 |
| TB adoption of WI | 2014-10-03 |
| Start of work | 2015-08-03 |
| Stable draft | 2015-12-30 |
| Final draft for approval | 2015-01-05 |
| TB approval |  |
| Draft receipt by ETSI Secretariat |  |
| Publication |  |
| Deliverable: RES/MTS-201873-9 T3ed471Current status: Final draft submitted to MTS#67Working title: TTCN-3 ed. V4.7.1: Use of XSD | **Achieved date** |
| Creation of WI by WG/TB | 2014-10-03 |
| TB adoption of WI | 2014-10-03 |
| Start of work | 2015-08-03 |
| Stable draft | 2015-12-09 |
| Final draft for approval | 2015-01-05 |
| TB approval |  |
| Draft receipt by ETSI Secretariat |  |
| Publication |  |

Please note that other deliverables in the ToR didn’t receive any CR or no CR is resolved, therefore according to the STF’s ToR, no new version is published.

# In-kind contribution

## In-kind contribution objectives achieved

Not applicable.

## In-kind contribution objectives not achieved

Not applicable.

1. Performance indicators
	1. Performance Indicators objectives achieved

No EC/EFTA requirements are applicable.

**Effectiveness:**

* TTCN-3 Change Requests received in the CR handling system (ETSI Mantis)

Though the STF’s ToR didn’t set concrete figure for this indicator, as the inflow is not known at the time the ToR is approved, the STF has resolved approximately the same amount of CRs as in years 2009-2013 (91, 89, 97, 95 and 85).

* Classify CRs according to their contributor[[1]](#footnote-1), technical value and complexity. At least 60 % of the STF time shall be spent on resolving high priority CRs.[[2]](#footnote-2)

Fulfilled.

* Approval of deliverables according to schedule

The schedule to deliver drafts for approval in the STF ToR is 28-Feb-2016, all final drafts for TB approval have been submitted on 05-Jan-2016.

**Stakeholder engagement, including dissemination of results:**

* Voluntary work of experts (free of charge or with partial remuneration)

Has been provided according to the ToR

* Steering Group meetings (number of participants/duration)

TTCN-3 steering has been done during TB MTS meetings. There was no issue that needed escalation to the SG.

* The STF may liaise with 3GPP STF 160 and any other users within or outside ETSI

The STF has regularly exchanged emails with STF160 to clarify urgency of STF160 CRs; also participated at STF160s TTCN-3 tool vendors meetings.

**Impact:**

* Contributing the TTCN-3 standards to ITU-T SG17 for endorsement and assisting the endorsement process

Didn’t require any specific action from the STF, it will be handled by TB MTS according to the normal procedure.

* 1. Performance Indicators objectives not achieved
* CRs, contributions and liaisons received from other ETSI TBs

No CR is received directly from other TB (though several CRs received from STF160).

* TTCN-3 tools implementing newest TTCN-3 features

New features added by this STF will be implemented only after publishing the STF’s deliverables. The STF doesn’t receive information directly about which language features are implemented by which tool vendor.

1. Resources allocated and spent

**Author: STF Administration**

**Period covered: From: 11-May-2015 To: 31-March-2016**

**Status: Final**

**Status date: 29-January-2016**

Comments: None

* 1. EC/EFTA contract conditions
		1. Total action cost

Not applicable, no EC/EFTA contract is in place.

* + 1. Travels

None.

* + 1. Contribution in kind

Not applicable, no EC/EFTA contract is in place.

* 1. Summary of resources allocated and spent (real cost)

The following tables present the summary of the activities carried out by the STF in the period . Status date: 29 January 2016.

Table 1: Status of EC/EFTA resources funded and spent

|  |
| --- |
| **EC/EFTA contribution (funded)** |
|  | **Manpower** | **Travel** | **Subc.** | **Other** | **Total** |
|  | Days | Rate | EUR | EUR | EUR | EUR | EUR |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Total funded** |  |  |  |  |  |  |  |
| **EC/EFTA contribution (spent)** |
|  | **Manpower** | **Travel** | **Subc.** | **Other** | **Total** |
|  | Days | Rate | EUR | EUR | EUR | EUR | EUR |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Total spent** |  |  |  |  |  |  |  |
| **Balance** |  |  |  |  |  |  |  |

Notes (e.g. if there are provisional figures for some items, indicate the reason)

Table 2: Partner contribution

|  |
| --- |
| **ETSI contribution (equivalent amount)** |
| **In-kind** | **Days** | **Rate** | **EUR** | **Notes** |
| Required |  |  |  |  |
| **Achieved** |  |  |  |  |
| Delegates participation |  |  |  |  |
| Experts’ voluntary work |  |  |  | Exclusive voluntary work (no remunerated contract) |
| **Eligible IK contribution** |  |  |  |  |
| **% Achieved** |  |  |  |  |
| **Additional voluntary work**  | **Days** | **Rate** | **EUR** | **Notes** |
| Experts |  |  |  | Other experts, exceeding remunerated contract |
| CTI |  |  |  |  |
| **Total voluntary work** |  |  |  |  |

Table 3a: Time spent by experts (remunerated)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Company / ETSI Member** | **Expert** | **Work days** | **Rate** | **Cost****(EUR)** |
| Fraunhofer FOKUS | Axel Rennoch | 20 | 600 | 12000 |
| University of Goettingen | Jens Grabowski | 20 | 600 | 12000 |
| Ericsson Hungary Ltd. | Gyorgy Rethy | 23 | 600 | 13800 |
| Testing Technologies | Jacob Wieland | 20 | 600 | 12000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **Total** |  |  |  | **49800** |

Table 3b: Time spent by ETSI Secretariat / CTI (remunerated)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CTI contribution** | **Expert** | **Work days** | **Rate** | **Cost****(EUR)** |
| ETSI |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **Total** |  |  |  |  |

Table 4a: Time spent by experts (voluntary)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Company / ETSI Member** | **Expert** | **Work days** | **Equiv. rate** | **Equiv. amount****(EUR)** |
| Fraunhofer FOKUS | Axel Rennoch | 5 | 600 | 3000 |
| University of Goettingen | Jens Grabowski | 5 | 600 | 3000 |
| Ericsson Hungary Ltd. | Gyorgy Rethy | 5 | 600 | 3000 |
| Testing Technologies | Jacob Wieland | 5 | 600 | 3000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **Total** |  |  |  | **12000** |

Table 4b: Time spent by ETSI Secretariat / CTI (voluntary)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CTI contribution** | **Expert** | **Work days** | **Equiv. rate** | **Equiv. amount****(EUR)** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **Total** |  |  |  |  |

Table 5: Travels

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Expert** | **Event** | **Place** | **Date****from** | **Dur. days** | **Cost****(EUR)** | **Notes** |
| Gyorgy Rethy | MTS#66 | Berlin | 2015-09-30 | 2 | 348,17 |  |
| Gyorgy Rethy | MTS#67 | Berlin | 2015-09-27 | 2 | 500 | Estimated cost |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |
| **Total** |  |  |  |  |  |  |

Table 6: Subcontracts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Subject** | **Subcontractor** | **Date****from** | **Date****to** | **Cost****(EUR)** | **Notes** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **Total** |  |  |  |  |  |

Table 7: In-kind contribution

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Start date** | **Event description** | **Num part** | **Total days** | **Equiv. amount****(EUR)** | **Notes** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Total** |  |  |  |  |  |  |

1. User requirements should have higher priority. [↑](#footnote-ref-1)
2. It should be targeted to close high priority CRs within the lifetime of the STF. It is noted that resolving high priority but technically more complex CRs increase the time needed to find the technical solution and thus may decrease the overall number of CRs resolved in overall. [↑](#footnote-ref-2)