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| ToR TTF T022 (TC MTS / WG TDL) |
| Version: 0.7 |
| Authors: Ulrich, Kristoffersen, Makedonski – Date: 2021-08-13 |
| Last updated by: ETSI Secretariat – Date: 2022-04-28 |
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Terms of Reference –Testing Task Force Proposal

TTF T022 (TC MTS / WG TDL)

TOP/TDL Enhancements for Better User Experience

Summary information

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| --- | --- | --- |
| Approval status | Approved by TC MTS (doc ref: MTSTDL(22)000006) | **YES** |
| Reference Body | TC MTS / WG TDL |
| ETSI Funding | **Maximum budget : 123.400 EUR** |
| Minimum of 4 ETSI Members Support | **YES** |
| Time scale | **From** | 2022-06-20 |
| **To** | 2023-06-30 |
| Work Items  | See clause 3.2 below |
| TTF Roadmap reference | [https://docbox.etsi.org/MTS/MTS/05-CONTRIBUTIONS/2020//MTS(20)080001\_TDL\_Roadmap.docx](https://docbox.etsi.org/MTS/MTS/05-CONTRIBUTIONS/2020//MTS%2820%29080001_TDL_Roadmap.docx) |

Part I –TTF Technical Proposal

# Rationale & Objectives

## Rationale

The ETSI TC MTS provides technologies, tools, and guidelines on conformance and interoperability testing and certification of protocols and other systems, including AI systems, that are under standardisation at various ETSI groups and committees. The Test Description Language (TDL) is such a testing technology that has been elaborated over the last few years. [Its standards](https://tdl.etsi.org/index.php/downloads) that define formal textual and graphical notations and transformations to deliver test objectives and executable test specifications have reached a mature state. In parallel to the standardisation work on TDL, the [ETSI TDL Open-Source Project (TOP)](https://tdl.etsi.org/index.php/open-source) was created. Its initial purpose was to serve as a test bed for the validation of new TDL language features and to offer a kick-start to early technology adopters.

The last two years have seen an increasing interest in TDL at ETSI. It has been also driven by new and up-coming technologies such as RESTful micro-service architectures in cloud and edge computing environments, Internet of Things, Machine-to-Machine communication, as well as the development of new telecommunications services. Serving the increasing demand, the TDL editor developed under the TOP project needs to be kept up-to-date and provide features for convenient use by end-users. Other developments such as the collaborative platform for drafting ETSI and 3GPP specifications, called [New Working Methods (NWM)](https://nwmwiki.etsi.org/docs/), and the trend towards remote working that has been accelerated by the Covid-19 pandemic require adequate tool support for creating and maintaining test specifications, among other things.

It can be observed, however, that the current use of TDL stops mainly at the specification of test objectives which are only the initial part in the test process. The full power of TDL that links abstract test specifications with test execution has not been fully unleashed yet. Addressing these upcoming demands, the last MTS TTF013 on “TDL and TOP Enhancements for RESTful API Services Testing” which runs until March 2022 took up this challenge and initiated the development of a [comprehensive open-source tool suite](https://labs.etsi.org/rep/top) based on TDL for test specification and test execution. The TTF will demonstrate the tools’ applicability on testing systems with REST APIs. This work will be taken as the starting point to improve the tooling of TOP towards executability of TDL specifications and make the tools generally applicable to a wider range of applications, as well as provide further enhancements to the TDL standards, including a standardised textual syntax.

The continued work on TDL enables the application of modern model-based development techniques within ETSI standardisation processes for the benefit of all ETSI members. It also puts ETSI in the leading position to address new testing challenges coming from distributed computing platforms in the cloud and AI domains.

## Objectives of the work to be executed

The work of this TTF will focus on implementation of TDL features in TOP to ensure coherent tool-support for a TDL-based test development process from requirements over test descriptions to test execution. This shall provide easy access to all standardized features of TDL using the TOP tools. In addition, the TOP tool implementation activities will concentrate on a close integration with the New Working Methods (NWM) platform to ensure easy access to TOP tools in a web-based environment for the work on test standards development within ETSI. In detail the following objectives will be achieved:

* Provision of a first version of a web-based TDL editor as a possible contribution to the NWM platform; the tool supports editing of TDL specifications and provides hooks for integration of further features such as analysis and code generation.
* Design of a tool architecture that enables the execution of completely specified TDL specifications and is adjustable to a wide range of conformance tests of protocols and systems developed and standardised at ETSI, including the specification of a TDL Runtime Interface (TRI).
* Implementation of code generation features within the existing TOP project that enable the execution of TDL specifications in test runs, in particular also for ASN.1-based protocol descriptions; implementation of additional features to improve the user experience of the existing TDL editor.
* An updated methodology and guideline document to reflect the latest advances in TDL and a TOP feature demonstration that concludes all implementation efforts of this TTF.

The TOP tool development will be performed following the conceptual tool architecture, shown below, that will be refined to concrete building blocks using state-of-the-art software development technologies.



## Previous funded activities in the same domain

The previous standardisation efforts on TDL and TOP can be briefly summarised as follows. They provide the foundation of work proposed in this ToR.

* [TTF 013](https://portal.etsi.org/STF/STFs/STF-HomePages/T013) added support for RESTful API testing using OpenAPI, extended the TDL data type system and worked towards a test execution engine. It also provided a new standardized textual syntax for TDL. Moreover, the TDL methodology guidelines for test description derivation from test objectives were updated to support semi-automatic workflows.
* STF 577 focussed on maintenance and enhancements, including inheritance support to improve reusability of TDL specifications and improved separation of totally ordered and locally ordered test descriptions, as well as improved guidelines for different usage scenarios.
* STF 522 established the connection between the two standardised ETSI languages TDL and TTCN-3, enabling the semi-automatic generation of executable tests from TDL and allowing the re-use of existing TTCN-3 tools and frameworks for test execution.
* Earlier STFs, the first one started in 2013, laid the foundation of TDL and defined its principal building blocks of abstract syntax (meta-model), concrete syntax (textual, graphical and transfer syntax), and the principal tool architecture and its integration into ETSI’s test specification process.

## Consequences if not agreed

The focus of this TTF on the TOP implementation to provide comprehensive tool support for the TDL standard and ensure close integration with the ETSI New Working Methods (NWM) would be severely affected if not performed. This could cause a delay in the availability of essential TDL tools and may cause different technologies being used in ETSI test standardisation work. This would lead to more overhead in the handling and maintenance of ETSI test standards.

Establishing this TTF as a continuation of the work done in the previous TTF 013 as well as earlier STFs will speed up progress in the adoption of TDL by making the tooling in TOP easier to use by end-users, without the strict need to download and setup the tooling locally. A cloud-based platform will provide an easier alternative for end-users to get started with using TDL and collaborating on TDL test specifications. This also provides key capabilities for integration with the NWM platform. Without this TTF, the application of the TDL standard by end-users such as other ETSI technical bodies and industrial partners will likely be delayed. Users will continue with their largely informal solutions that are typically designed ad-hoc and thus, without proper tool support, tend to be error-prone and become progressively more expensive during long-term maintenance.

In addition, more and more practices on system and software design are influenced from open-source technologies that implement commonly agreed approaches in system and software engineering and make them freely available. This development could lead to a fragmented landscape of system and test specification languages that might not be in ETSI’s interest as it needs a common, strong, and sound formal approach to certification and other ways of testing of the complex systems it designs. Moreover, ETSI might lose influence in the area of modern system and software engineering practices if there is a standstill on this proposed work.

# ETSI Members Support

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| **#** | **ETSI Member** | **Supporting delegate** |
| 1 | Cinderella ApS | Finn Kristoffersen |
| 2 | Elvior LLC | Martti Käärik |
| 3 | Ericsson Hungary Ltd | Dr. György Réthy |
| 4 | Fraunhofer FOKUS | Dr. Axel Rennoch |
| 5 | Institut für Informatik, Universität Göttingen | Prof. Dr. Dieter Hogrefe |
| 6 | Siemens AG | Dr. Andreas Ulrich |

# Deliverables

## Base documents

|  |  |  |
| --- | --- | --- |
| **Document** | **Title** | **Status** |
| ES 203 119-1 V1.6.1 | Methods for Testing and Specification (MTS); The Test Description Language (TDL); Part 1: Abstract Syntax and Associated Semantics | Final draft |
| ES 203 119-2 V1.5.1 | Methods for Testing and Specification (MTS); The Test Description Language (TDL); Part 2: Graphical Syntax | Final draft |
| ES 203 119-3 V1.5.1 | Methods for Testing and Specification (MTS); The Test Description Language (TDL); Part 3: Exchange Format | Final draft |
| ES 203 119-4 V1.5.1 | Methods for Testing and Specification (MTS); The Test Description Language (TDL); Part 4: Structured Test Objective Specification (Extension) | Final draft |
| ES 203 119-6 V1.3.1 | Methods for Testing and Specification (MTS); The Test Description Language (TDL); Part 6: Mapping to TTCN-3 | Final draft |
| ES 203 119-7 V1.3.1 | Methods for Testing and Specification (MTS); The Test Description Language (TDL); Part 7: Extended Test Configurations | Final draft |
| ES 203 119-8 V1.1.1 | Methods for Testing and Specification (MTS); The Test Description Language (TDL); Part 8: Textual Syntax | Final draft |
| TR 103 119 V1.3.1 | Methods for Testing and Specification (MTS); The Test Description Language (TDL); Reference Implementation and User Guidelines | Final draft |
| EG 203 647 V1.1.1 | Methods for Testing and Specifications (MTS); Methodology for RESTful APIs specifications and testing | Published |

## New deliverables

The main deliverable of this TTF is the TDL TOP tools available for download as a configured package to install. The deliverable will potentially include a means to access and use the TOP tools in an online platform, also in combination with the NWM platform. Updated versions of the base TDL standards parts may also be part of the deliverable of the TTF.

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| **Deliv.** | **Work Item code****Standard number** | **Working title** | **Expected date for publication** |
| D1 | RTS/TR 103 119 V1.4.1 | Methods for Testing and Specification (MTS); The Test Description Language (TDL); Reference Implementation and User Guidelines | 2023-07 |
| D2\* | RES/ES 203 119-1 V1.7.1 | Methods for Testing and Specification (MTS); The Test Description Language (TDL); Part 1: Abstract Syntax and Associated Semantics | 2023-07 |
| D3\* | RES/ES 203 119-8 V1.2.1 | Methods for Testing and Specification (MTS); The Test Description Language (TDL); Part 8: Textual Syntax | 2023-07 |

\*) Work items of the TDL standard series which are not affected by CRs will not be updated. If other parts of the TDL standard series are affected by CRs, they will be opened as work items during the work of the TTF as well.

# Maximum budget

## Task Summary and Manpower Budget

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| --- | --- |
| **Task short description** | **Budget (EUR)** |
|
| **T0** Project Management | 5.870 |
| **T1** TOP Requirements and Validation | 8.800 |
| **T2** TOP Architecture Design | 17.610 |
| **T3** TOP Features Implementation | 60.800 |
| **T4** Web-based TOP platform exploration | 14.680 |
| **T5** TDL Methodology, Enhancements, and Maintenance | 11.740 |
| **TOTAL** | **119.500** |

## Travel budget

Travel is required for the TTF lead or deputy to attend the three MTS Plenary Meetings and TDL Work Group Meetings to discuss the achieved progress. Additional budget is required for promotion activities at conferences and workshops inside and outside ETSI. Given the persistent trend towards virtual meetings caused by the Covid-19 pandemic, the estimated costs are only indicators for potential travels.

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| **Expected travels** | **Cost estimate (EUR)** |
| Participation at MTS#87 (Sep 2022) | 800 |
| Participation at MTS#88 (Jan 2023) | 800 |
| Participation at MTS#89 (May 2023) | 800 |
| Participation at UCAAT 2022 to promote TDL and TOP (to be determined) | 1.500 |
| **TOTAL** | **3.900** |

## Other budget line

None.

Part II – Details on TTF Technical Proposal

# Tasks, Technical Bodies and other stakeholders

## Organization of the work

The working group MTS TDL will, acting as a steering group, oversee and advise the work of the proposed TTF. It will plan regular meetings between the TTF working sessions to monitor the progress of the work and provide technical advice.

The major goal of this TTF is to handle existing and incoming user requests for updates to the TDL standards and the TDL open-source project. It is essential for the continued growth of the TDL user community that TDL is maintained and the TDL open-source project is aligned with these changes. It targets stakeholders both within ETSI and within the industry. The work is organized around the activities necessary to maintain the TDL standards and the TDL open-source project (TOP) based on feedback from various stakeholders who have been adopting TDL early on. The activities are focused on maintaining the existing standards and the tool implementations within TOP according to new and changing requirements as well as providing further information and guidelines to streamline the adoption of TDL.

Intermediate stable drafts and final drafts will be delivered at milestones set in regular intervals which coincide with the plenary sessions of TC MTS. Once draft versions of the TDL updated standards become available, they will be sent out to ETSI MTS and parties outside of ETSI for review and feedback. There are multiple milestones intended for soliciting feedback such that there is enough room for delivering enhanced and improved TDL standards and updates of the tools that fit the needs of different organizations and users.

## Other interested ETSI Technical Bodies

In principle, MTS expect interest in TDL and TOP from ETSI Technical Bodies that already investigated into TTCN-3. But other TBs that are interested in test specifications are in focus, too. The following ETSI TBs are expected to contribute to the TTF by providing feedback on the developed TDL methodology: NFV, MEC, INT, ITS, ERM, oneM2M, 3GPP.

## Other stakeholders

Additionally, the following organizations are expected to be interested in the outcome from this TTF: OMA, TCCA (former TETRA Association), Ipv6Forum. Standardisation bodies from other domains such as automotive run similar initiatives in providing solutions for their specific needs in testing. These initiatives should be also interested in the results of the proposed TTF.

Part III: Execution of Work

# Work plan, time scale and resources

## Task description

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| **Task 0** | **Project Management** |
| **Objectives** | Planning, organisation, and preparation of TTF meetingsOn-going reportingParticipation at TC/WG meetingsDelivery of the TTF final report |
| **Input** | This ToRInformation from the preparatory meetingExpertise availability information and other project management dataTDL CRs in the ETSI Mantis system and reports from the TOP ETSI Labs project |
| **Output** | Session planningMaterials for WG and TC meetingsProgress reportsFinal report |
| **Interactions** | The TTF leader will interact with the MTS TDL Working Group and the MTSCommunicating with other stakeholders and TTFsAdditional support will be provided by the ETSI secretariat |
| **Resources required** | Resource planning, reporting, and coordination5.870 € |

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| **Task 1** | ***TOP Requirements and Validation*** |
| **Objectives** | Functional specification of use-case scenarios and workflows to be supported by the TOP implementation to address the needs of frequent ETSI applicationsAnalysis and prioritisation of supported subset of TDL features for execution frameworkDemonstration of implemented use-case scenarios and workflows |
| **Input** | TDL TOP implementation as available end of TTF013Identification of the TDL feature limitations in the current TDL TOP implementationOpenAPI examples and ASN.1 examplesCRs raised on missing TOP features Collection of issues raised on user-friendliness of the TOP tool implementation accessibility and installation guidance. |
| **Output** | The agreed set of use-case scenarios and workflows and definition of check list for the TOP tool access and user-guidanceSuccessful demonstration of these use-cases and their validation |
| **Interactions** | The TDL Working Group shall be involved in this initial task to ensure that the agreed set of requirements for the TOP tool implementation can be verified |
| **Resources required** | Selection and description of requirements in terms of use-cases and workflow examples, validation and demonstration of the implementation8.800 € |

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| **Task 2** | **TOP Architecture Design** |
| **Objectives** | Design of the TDL execution framework (independently from TTCN-3)Specification of the TDL runtime interface (TRI)Specification of the codec interface; requirements on the codec for encoding/decodingSpecification of the interface for test execution reporting (test logging interface) |
| **Input** | Latest version of TR 103 119 from TTF 013 |
| **Output** | Input for the revised version of TR 103 119, material for a NWI on the specificationsDocumentation of the design in the TDL/TOP Methodology TR |
| **Interactions** | The TDL Working Group is involved to provide technical advice in case there are conflicting opinions on technical mattersAdditional discussions with users and tool vendors (via Mantis) according to the submitted CRs |
| **Resources required** | Review of current design, evaluation of available technologies, architecture evolution17.610 € |

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| **Task 3** | **TOP Features Implementation** |
| **Objectives** | **Highest Priority**Implementation of identified use-cases and workflows (Task 1 output)Improvement of textual editor for TDL standardized syntax by support of following features: auto-complete, auto-formatting, syntax highlighting, refactoring, code templates for complex syntactical elements, integration of Eclipse problem markers, TDL predefined elementsImprovement of diagram editor: updated graphical elements according to currently supported features of the underlying diagramming framework (Sirius), editing support for all TDL features, implementation of layout algorithms for sequence and package diagrams, integration of Eclipse problem markersImplementation of importers that produce TDL data models from external protocol descriptions for the following formats: OpenAPI, ASN.1Improvement of TDL meta-model implementation by support of following features: implementation of standardized validation constraints, (automatic) invocation of the constraints, reporting of constraint violations for consumption by TDL editorsIntegration of a TDL perspective into the Eclipse IDE including UI elements for invoking available functionality (e.g., code analysis, import/export, test execution)Maintenance of existing functionalityImplementation of TDL model library as input for testing existing and added features of the implementations listed aboveBuild automation (pipeline) – GitLab CI/CDTechnical documentation of the implementation work including instructions for development, setup, and usage**Next Priority**Implementation of (non-TTCN-3) execution framework and code generator/interpreter (potentially based on existing prototype)Adaptation of the execution framework to (at least one) supported protocols (OpenAPI, ASN.1) and an open-source test framework/environment (such as JUnit)Test automation as part of the build pipeline |
| **Input** | The TOPDescription of use-cases and workflows from Task 1CRs from the TOP issue tracking systemRevised versions of the input documents from Task 5 (working and final drafts)Interim versions of TR 103 119 from Task 2 and Task 5 |
| **Output** | The updated TOP project and TOP libraries (plug-ins) |
| **Interactions** | The TDL Working Group is involved to provide technical advice in case there are conflicting opinions on technical mattersAdditional discussions with users and tool vendors (via Mantis/ETSI Labs) according to the submitted CRs |
| **Resources required** | CR resolution, software maintenance, new feature development60.800 € |

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| **Task 4** | **Web-based TOP platform exploration** |
| **Objectives** | Assessment of technologies for web-based viewing and editing of TDL specifications in textual and graphical formsRecommendations for the design and implementation of web-based TDL editor(s) |
| **Input** | The TOP projectThe NWM platform and associated documentationEclipse Theia, EMF.cloud and related technologies |
| **Output** | Documented recommendations for the design and implementation of web-based TDL editor(s), including potential integration options into the NWM platformProof of concept for an online platform with web-based TDL editor(s) |
| **Interactions** | The TDL Working Group is involved to provide technical advice in case there are conflicting opinions on technical mattersCoordination with the NWM Working Group at CTI (roadmap, potential interfaces, etc.)Additional discussions with users and tool vendors (via Mantis/ETSI Labs) according to the submitted CRs |
| **Resources required** | Technology review, assessment, and recommendations, PoC preparation14.680 € |

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| **Task 5** | **TDL Methodology, Enhancements, and Maintenance** |
| **Objectives** | Improvement of the unified language for stepwise refinement from Test Objectives and Test Descriptions, e.g., relaxed syntax and semantics to allow mixed formal/informal specificationsUpdate of the Methodology TR 103 119, restructuring if requiredDocumentation of use-cases and workflows supported in TOPResolving CRs for TDL |
| **Input** | CRs from ETSIs Bug Tracker (Mantis)All base documents mentioned in Section 3.1The current TDL and TOP tool online documentation |
| **Output** | Revised versions of the series of TDL standard documents ES 203 119-xRevised version of TR 103 119 and existing examples and online documentation |
| **Interactions** | The TDL Working Group is involved to provide technical advice in case there are conflicting opinions on technical mattersCommunicating with other stakeholders, TCs and TTFs |
| **Resources required** | CR resolution, elaborating the approach and documentation11.740 € |

## Milestones

Milestone A – Title

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| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
| **A** | First progress report to TC MTS | 2022-09-30 |
| Reference Body Deliverable | First progress report to be approved by TC MTSFirst TOP tool feasibility demo |
| ETSI Deliverable |  |

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| **Milestone** | **Description** | **Cut-Off Date** |
| **B** | Second progress report to TC MTS | 2023-01-31 |
| Reference Body Deliverable | Second progress report to be approved by TC MTSStable drafts to be accepted b TC MTSSecond TOP tool feasibility demo |
| ETSI Deliverable | Stable drafts submitted to TC MTS |

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| **Milestone** | **Description** | **Cut-Off Date** |
| **C** | Final drafts and final progress report to TC MTS | 2023-05-31 |
| Reference Body Deliverable | Final drafts and final report to be approved by TC MTSThird TOP tool feasibility demo |
| ETSI Deliverable | Final drafts and final report submitted to TC MTS |

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| **Milestone** | **Description** | **Cut-Off Date** |
| **D** | Deliverables published, new TOP tool version published, TTF closed | 2023-06-30 |

## Task summary

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| --- | --- | --- | --- |
| **Code** | **Task / Milestone**  | Target Date | Estimated Cost (EUR) |
| From | To |
|  | Start of work | 2022-06-20 |  |  |
| T0 | Project Management | 2022-06-20 | 2023-06-30 | 5.870 |
| T1 | TOP Requirements and Validation | 2022-06-20 | 2022-09-30 | 8.800 |
| T2 | TOP Architecture Design | 2022-07-01 | 2022-01-31 | 17.610 |
| T3 | TOP Features Implementation | 2022-07-01 | 2023-05-31 | 60.800 |
| T4 | Web-based TOP platform exploration | 2023-01-01 | 2023-05-31 | 14.680 |
| T5 | TOP Methodology + Maintenance | 2022-10-01 | 2023-05-31 | 11.740 |
| MA | First progress report to be approved by TC MTSFirst TOP tool feasibility demo | MTS#87 | 2022-09-30 | 37.900 |
| MB | Second progress report to TC MTSStable drafts to be accepted by TC MTSSecond TOP tool feasibility demo | MTS#88 | 2023-01-31 | 37.900 |
| MC | Final drafts and final report approved by TC MTSThird TOP tool feasibility demo | MTS#89 | 2023-05-31 | 37.900 |
| MD | Deliverables published, TTF closed |  | 2023-06-30 | 5.800 |
|  | **119.500** |

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| **Task/ Mil.** | **J** | **F** | **M** | **A** | **M** | **J** | **J** | **A** | **S** | **O** | **N** | **D** |  | **J** | **F** | **M** | **A** | **M** | **J** | **J** | **A** | **S** | **O** | **N** | **D** |
| T0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T5 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MA |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MB |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MC |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MD |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

# Expertise required

## Team structure

(Up to) 4 participants to ensure the following mix of competences:

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| **Priority** | **Qualifications and competences** |
| High | Deep understanding of the existing TDL and its application. |
| Medium | Understanding of black-box testing and testing of communicating real-time systems. |
| High | Experiences in the model-based implementation of software languages, including graphical and textual syntax implementation, syntactic and semantic model validation. |
| Low | Experiences in modelling and description techniques such as TTCN-3, UML, MSC. |
| High | Experiences in Eclipse ecore meta-modelling and tooling. |
| Medium | Experiences in the design of software languages and compiler/transformation techniques. |

Part IV: TTF performance evaluation criteria

# Performance Indicators

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| --- |
| **Select relevant Performance indicators applicable for these ToR (X)** |
| Contribution from ETSI Members to TTF work |
| Direct financial contribution (co-funding) |  |
| Support to the TTF work (e.g., provision of testbeds, organization of workshops, events) |  |
| Steering Group meetings (number of meetings / participants / duration) | X |
| Number of delegates directly involved in the review of the deliverables | X |
| Contributions/comments received from the Reference Bodies | X |
| Contributions/comments received from other Reference Bodies | X |
|  |  |
| **Contribution from the TTF to ETSI work** |
| Contributions to Reference Body meetings (number of documents / meetings / participants) | X |
| Contributions to other Reference Bodies |  |
| Presentations in workshops, conferences, stakeholder meetings | X |
|  |  |
| **Liaison with other stakeholders** |
| Stakeholder participation in the project (category, business area) |  |
| Cooperation with other standardization bodies |  |
| Potential interest of new members to join ETSI |  |
| Liaison to identify requirements and raise awareness on ETSI deliverables  | X |
| Comments received on drafts (e.g. on WEB site, mailing lists, etc.) |  |
|  |  |
| **Quality of deliverables** |
| Approval of deliverables according to schedule | X |
| Respect of time scale, with reference to start/end dates in the approved ToR | X |
| Comments from Quality review by Reference Body | X |
| Comments from Quality review by ETSI Secretariat | X |
|  |  |

# Document history

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Ver.** | **Date** | **Author** | **Status** | **Comments** |
| 0.1 | 2021-08-05 | Kristoffersen | Initial |  |
| 0.2 | 2021-08-13 | Ulrich | Revised |  |
| 0.3 | 2021-08-14 | Makedonski | Revised |  |
| 0.4 | 2022-03-30 | Ulrich | Revised |  |
| 0.5 | 2022-03-31 | Ulrich | Final | Ready for approval |
| 0.6 | 2022-04-13 | U Mulligan | Final | Added TTF number, added text for milestone descriptions. |
| 0.7 | 2022-04-28 | ETSI Secretariat | Final  | Update before CL publication |

Annex I Response to the Request for Proposals
CfE – TTF T022 (TC MTS) Deadline: 30 May 2022

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| --- | --- |
| **Contractor name \****Indicate the Company/Organization Name* |  |

|  |
| --- |
| **Contractor information \*** |
| **Contact person for the technical aspects** | **Contact person for Decision on ETSI financial offer to this project (if any)** |
| Title |  | Title |  |
| First name |  | First name |  |
| Last name  |  | Last name  |  |
| Role |  | Role |  |
| e-mail |  | e-mail |  |
| Phone |  | Phone |  |
|  |
|  | **Yes** | **No** |
| Do you or any employee of your Company/Organization hold an elected or appointed position in the Reference Body requesting the TTF T022 creation? | 🞏Indicate in which position:----------------------------------- | 🞏 |
| **If you are self-employed candidate:**Do you currently have other contracts in progress with ETSI? | 🞏 | 🞏  |

**1.1 Introduction**

*A short presentation of the technical structure responsible for this activity, e.g.:*

* Business area, number of employees, link to WEB site,
* Department(s)/team(s)/experts in charge of the technical activities related to the TTF,
* Reference to products/services of your Company/Organization to which the standards developed by the TTF will apply,
* Motivation for your Company/Organization to participate in the TTF.

**1.2 Proposed approach**

**Proposed contribution to tasks & related cost**

Identify the tasks to which your Company/Organization is proposing to contribute and provide a description of the proposed approach, competences, reference to related activities:

* Explain the scope that your Company/Organization will cover,
* Explain your approach to the management of the quality and,
* Explain your approach to the management of the risks and their mitigation,
* Describe and justify the proposed costs to achieve the project objectives.

Annex II Terms and Conditions
CfE – TTF T022 (TC MTS) Deadline: 30 May 2022

**2.1 Submission of Proposals**

All proposals in response to this CfE shall be submitted before the deadline indicated in thisCollective Letter, using exclusively the WEB application on the ETSI Portal at the following address: <https://portal.etsi.org/cfe>.

Proposals shall be composed of Curriculum Vitae of the proposed service providers’ personnel and the Annex I of this CfE duly filled-out.

Proposals that will be partial or incomplete at the deadline will not be accepted.

The Terms and Conditions in this Annex will apply.

**2.2 Modification and Withdrawal of Proposals**

Applicants may, without prejudice to themselves, modify or withdraw their proposal by written request, provided that the request is received by ETSI prior to the due date and time, at the address to which their proposal was submitted. The applicant may submit a new proposal provided that such new proposal is received prior to the deadline for responding which is specified in this Collective Letter.

**2.3 Assessment of Proposals**

The ETSI Director-General, in consultation with the Reference Body Chairman, is responsible for the selection of the service providers that will be contracted to perform the TTF work. The ETSI Director-General and the Reference Body Chairman may be assisted by a Selection Panel to assess the applications received and make the final decision.

As per article 1.10.4 of the ETSI Directives, the Director-General may discard proposals that could be identified as creating potential conflict of interest.

The ETSI Secretariat will only communicate to the applicants the result of the selection (accepted or not accepted). Should applicants need more information on the rationale for the selection, they must address a formal request to the ETSI Director-General.

The following evaluation criteria will be applied to all proposals, in order of priority:

* Evidence that the applicant has the necessary structure and expertise to ensure delivery
* Reference to current or previous activities in the specific technical domain of this project
* Critical review of the most efficient way to achieve the objectives in the TTF ToR
* Effective proposed approach/methodology for the execution of the tasks
* Implementation schedule
* Clear pricing policy

Compliance with the first two (2) criteria is mandatory.

Proposals that are not considered compliant with these criteria will be discarded.

Priority will be given to technical quality of the proposals. Pricing considerations will be taken into account to ensure that the best value for money is achieved. Compatibility with the maximum budget allocated to this TTF will be verified before placing a Service Contract.

Following the assessment process, ETSI reserves the right to grant contracts to other than the cheapest proposals, to accept or reject any offer completely or in part, or to reject all proposals, without providing the reasons. If no offer is accepted, ETSI may decide to abandon the work or proceed in any other manner ETSI may select.

**2.4 IPR and confidentiality Agreements**

The information provided in this CfE, as well as the fact that the applicant has received the CfE, is considered confidential and protected under copyright laws. The applicant may not discuss, share, or use the information in this CfE for any purpose other than the response to this CfE.

ETSI will not disclose the content of any proposals to other applicants or any other party, with the exception of the persons involved in the assessment process described in §2.3 above.

However, ETSI reserves the right to make use of the information provided in this proposal to improve the project definition for the purpose of this CfE or any other manner in which ETSI may decide to proceed to select the service providers.

If successful, the applicant will be required to sign a Service Contract, which includes IPR and Confidentiality clauses aligned with the relevant policies in the ETSI Directives.

**2.5 Preparation cost**

ETSI will not be responsible for any costs or expenses that the applicant may incur in preparing and/or submitting the proposal.

**2.6 Service Contract**

A Service Contract will be proposed to the applicants that will be selected to perform the work.

Details on the Terms and Conditions of this contract can be found on the ETSI Portal, at the following address: <https://portal.etsi.org/STF/STFs/Contracts.aspx>