Terms of Reference

**Testing Task Force (TTF)**

|  |
| --- |
| ***ToR TTF T009 (Ref. Body TC EMTEL)*** |
| Version: 1.3 |
| Author: Wolfgang Kampichler – Date: 2020-08-23 |
| Last updated by: ETSI Secretariat – Date: 2021-06-07 |
| page 1 of 13 |

**Terms of Reference –Testing Task Force Proposal**

**TTF T009 (Ref. Body TC EMTEL)**

**NG112 Advanced Conformance test specification development**

**Summary information**

|  |  |  |  |
| --- | --- | --- | --- |
| Approval status | Approved by Ref. Body (doc ref: EMTEL(21)000026) | | **YES** |
| Reference Body | Ref. Body TC EMTEL | | |
| ETSI Funding | **Maximum budget: 65 000 EUR** | | |
| Minimum of 4 ETSI Members Support | **Google**  **one2many**  **UPV/EHU**  **Frequentis**  **EENA**  **NENA**  **Deveryware** | | |
| Time scale | **From** | 2021-07-01 | |
| **To** | 2022-06-30 | |
| Work Items | Protocol Implementation Conformance Statement (PICS) pro forma and Test Suite Structure and Test Purposes (TSS&TP)  Advanced NG112 API Conformance Testing Specification | | |
| TTF Roadmap reference |  | | |

**Part I –TTF Technical Proposal**

# Rationale & Objectives

## Rationale

ETSI, in partnership with EENA (the European Emergency Number Association), organized the third NG (Next Generation) Emergency Services Plugtests event in 2019. This event was hosted by ETSI, from 28 January to 1 March 2019 in Sophia Antipolis, France.

The aim of the event was to trial independently and jointly all components of the 112-communication chain based on Next Generation networks. Different topics were addressed, including Location Based Emergency Call Routing, Policy Based Emergency Call Routing, and Next Generation Media Types.

15 organizations from around the world, including Asia, Europe, and North America, had the opportunity to connect their equipment to the test infrastructure and validate the interoperability and conformity of their market solutions using different scenarios and test cases on-site from the ETSI headquarters in Sophia-Antipolis, France, as well as from their own labs. In fact, specific remote-only testing sessions involving a US-based organization were carried out. In addition, based on the work of STF 549 conformance test specifications were provided and evaluated with multiple vendors.

Due to the lessons learned and mainly because of the release of the ETSI standards ETSI TS 103 479 (NG112 core services) existing conformance test specifications need to be adapted and additional ones to be implemented. This document therefore proposes the creation of a new TTF in order to adapt and provide the necessary conformance test specifications.

In addition, the European Commission Delegated Regulation (EU) 2019/320, *supplementing of Directive 2014/53/EU of the European Parliament and of the Council with regard to the application of the essential requirements referred to in Article 3(3)(g) of that Directive in order to ensure caller location in emergency communications from mobile devices*, will apply from 17 March 2022. As a result of this, relevant equipment being placed on the market in the European Union will need to be compliant with some of the provisions of ETSI TS 103 625. However no test specification for this ETSI TS exists yet.

## Objectives of the work to be executed

The objective of the present TTF proposal is to reassess the existing TTCN conformance test cases based on the newly released TS 103 479 and the current TTCN Titan Release 7.1. Additionally, advanced test specifications shall be developed and implemented.

* The following interfaces shall be considered
  + LIS interface via HELD or SIP
  + ECRF interface via LOST
  + PSAP interface via SIP, HTTP
  + ESRP interface via SIP, HTTP
  + BCF interface via SIP, HTTP
* Systems Under Test (SUTs)
  + LIS
  + ECRF
  + ESRP
  + PSAP
  + BCF
* Collect Test requirements
* Validate the test suite before and during the next NG112 Plugtests event

It is the intent that the TTF will update the existing test descriptions in machine readable language and add new test descriptions when new requirements are introduced in the base specifications.

In addition, the TTF will develop test descriptions for TS 103 625, Emergency Communications (EMTEL); Transporting Handset Location to PSAPs for Emergency Calls - Advanced Mobile Location.

## Previous funded activities in the same domain

STF549 NG112 Conformance Test Specifications

## Consequences if not agreed

NG112 equipment is currently being deployed in national and international trials with the progression towards fully operational deployment. Thorough conformance testing will increase the level of confidence that equipment from various suppliers will interoperate. This in turn will reduce implementation and rollout times and costs. Not providing timely validated and reliable test specifications, would ultimately delay the deployment of NG112 services. Further consequences are a delay in deploying NG112 equipment paired with a loss of confidence in NG112 as there is a risk that early implementations of NG112 core services are not standard conform or interoperable as expected and serious rework may be needed to solve that.

Manufacturers and Notified Bodies will have difficulties to demonstrate and assess compliance with ETSI TS 103 625.

# ETSI Members Support

|  |  |  |
| --- | --- | --- |
| **#** | **ETSI Member** | **Supporting delegate** |
| 1 | Google | Ed Parsons |
| 2 | one2many | Peter Sanders |
| 3 | UPV/EHU | Fidel Liberal |
| 4 | Frequentis | Wolfgang Kampichler |
| 5 | EENA | Cristina Lumbreras |
| 6 | NENA | Brandon Abley |
| 7 | Deveryware | Bertrand Casse |

# Deliverables

## Base documents

|  |  |  |
| --- | --- | --- |
| **Document** | **Title** | **Status** |
| ETSI TS 103 479 | Core elements for network independent access to emergency services | published |
| ETSI TS 103 698 | EMTEL Lightweight Messaging Protocol for Emergency Service Accessibility | published |
| ETSI TS 103 650-1 | Testing - Conformance test specifications for core elements for network independent access to emergency services (NG112); Part 1: Protocol Implementation Conformance Statement (PICS), Test Suite Structure and Test Purposes (TSS & TP) | published |
| ETSI TS 103 650-2 | Testing - Conformance test specifications for core elements for network independent access to emergency services (NG112); Part 2: Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT) | Published |
| ETSI TS 103 625 | Emergency Communications (EMTEL); Transporting Handset Location to PSAPs for Emergency Calls - Advanced Mobile Location | Published |

## New deliverables

|  |  |  |  |
| --- | --- | --- | --- |
| **Deliv.** | **Work Item code**  **Standard number** | **Working title** | **Expected date for publication** |
| D1 | RTS/EMTEL-00060-1 | Revision of ETSI TS 103 650-1 V1.1.1 (2020-01)  EMTEL; Testing - Conformance test specifications for core elements for network independent access to emergency services (NG112);  Part 1: Protocol Implementation Conformance Statement (PICS), Test Suite Structure and Test Purposes (TSS & TP) | 2022-06-30 |
| D2 | RTS/EMTEL-00060-2 | Revision of ETSI TS 103 650-2 V1.1.1 (2020-01)  EMTEL; Testing - Conformance test specifications for core elements for network independent access to emergency services (NG112);  Part 2: Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT) | 2022-06-30 |
| D3 | DTS/EMTEL-00062 | EMTEL; Testing - Conformance test specifications for Advanced Mobile Location; Test Purposes (TP) for the handsets | 2022-02-28 |

# Maximum budget

## Task summary/Manpower Budget

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| --- | --- |
| **Task short description** | **Budget (EUR)** |
|
| Leadership | 5 000 |
| Migration & Reassessment | 10 000 |
| Development of Test Descriptions for AML | 5 000 |
| Development of Advanced Test Descriptions | 14 000 |
| Implementation of Advanced Test Descriptions | 26 000 |
| Validation | 5 000 |
| **TOTAL** | 65 000 |

**NOTE**: Development refers to the writing of test specifications, whereas implementation refers to implementation of runnable test cases based on an actual test framework (e.g., TTCN-3).

## Travel budget

N/A.

## Other budget line

N/A

**Part II – Details on TTF Technical Proposal**

# Tasks, Technical Bodies and other stakeholders

## Organization of the work

The leading body is TC EMTEL.

## Other interested ETSI Technical Bodies

N/A

## Other stakeholders

The European Emergency Number Association (EENA) is a non-governmental organisation based in

Brussels, Belgium, with the mission to contribute to improving the functioning of emergency services for citizens.

To ensure global interoperability, EENA cooperated strongly with organisations all over the world. Together with ETSI, EENA co-organised the NG112 Communications Plugtests Events and has been working on the development and dissemination of NG112.

Test specification for this technology would suppose a crucial next step to ensure standardised and

interoperable emergency services technologies.

The European Industry that provides solutions for public safety answering points and NG112 Plugtests

will benefit from the available conformance tests. This will allow future certification which is an important element to deployment.

NG9-1-1 is the equivalent standard to NG112 in public safety. In the 9-1-1 industry, NENA is widely recognized as the standard-setting organization, and its members are the experts in 9-1-1. NENA is an organization dedicated to saving lives through the improvement of 9-1-1 services in North America, furthermore NENA is a member of ETSI.

**Part III: Execution of Work**

# Work plan, time scale and resources

## Task description

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| --- | --- |
| **Task #0** | ***Project Management*** |
| **Objectives** | * Technical lead of the TTF * Manage the resources assigned to this project * Chair periodic meetings of the TTF * Ensure that the project stays on track and meets all milestone delivery dates * Identify if/when there are impediments that may affect the delivery of the project at an early stage so that stakeholders can help mitigate potential risks |
| **Input** | Periodic meetings of this TTF, the tasks and schedule in this TTF. |
| **Output** | * Progress reports, including report to the TC EMTEL after each meeting summarizing the current status of this TTF. * Progress Reports * Final Report |
| **Interactions** | The TC EMTEL will be consulted for guidance throughout the TTF. There will be regular interactions between the experts and the TC EMTEL. |
| **Resources required** | One of the resources required for this TTF which is charged with the responsibility to manage the delivery of the tasks according to the milestone table in addition to contributing to other tasks. (See Budget Leadership in Table 4.1) |

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| **Task #1** | ***Reassessment of existing TTCN Code*** |
| **Objectives** | Reassessment of existing TTCN-3 based on the new published TS 103 579 and TTCN Titan 7.1.   * LIS * ECRF * ESRP * PSAP |
| **Input** | Existing TTCN-3 code and test specifications |
| **Output** | Reassessment and refactoring of and enhancements to existing conformance test specifications (TTCN codecs and adapters)  Assessment summary and restructured ATS (WI RTS/EMTEL-00060-2) |
| **Interactions** |  |
| **Resources required** | (See Budget Migration and Reassessment in Table 4.1) |

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| **Task #2** | ***Development of AML Test Descriptions for the handsets*** |
| **Objectives** | Development of Test Descriptions for Advanced Mobile Location for the handsets / Test Purposes |
| **Input** | TS 103 625 |
| **Output** | Documentation of the AML Test Purposes (TP) for the handsets.  (WI DTS/EMTEL-00062) |
| **Interactions** | Regular interaction between the experts and the TC EMTEL |
| **Resources required** | (See Budget Development of Test Descriptions Table 4.1) |

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| **Task #3** | ***Development of Advanced Test Descriptions*** |
| **Objectives** | Develop Advanced Test Descriptions / Test Purposes |
| **Input** | TS 103 479, TS 103 698 |
| **Output** | Updated documentation of the changed Test Descriptions on ETSI Forge.  (WI RTS/EMTEL-00060-1) |
| **Interactions** | Regular interaction between the experts and the TC EMTEL |
| **Resources required** | (See Budget Development of Test Descriptions Table 4.1) |

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| **Task #4** | ***Implementation of Advanced Test Descriptions*** |
| **Objectives** | * Implement Advanced Test Descriptions using a test framework (e.g., TTCN) * Make available to the ETSI Forge. |
| **Input** | Advanced Test Descriptions as output of Task #2 |
| **Output** | * Implementations of the Test Descriptions and test cases * Updated implementation of the changed Test Descriptions on ETSI Forge. * ATS (WI RTS/EMTEL-00060-2) |
| **Interactions** | Regular interaction between the experts and the TC EMTEL |
| **Resources required** | (See Budget Implementation of Test Descriptions Table 4.1) |

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| **Task #5** | ***Test Suite Validation*** |
| **Objectives** | The following SUTs shall be validated: LIS, ECRF, ESRP, BCF and PSAP. In case a NG112 Plugtests event is held during the present TTF is active then part of the Test Suite Validation shall be performed at the event. The Plugtests event is planned to be held at ETSI HQ. |
| **Input** | Migrated and developed implementations of the Test Descriptions |
| **Output** | Validated ATS (WI RTS/EMTEL-00060-2) |
| **Interactions** |  |
| **Resources required** | (See Budget Validation Table 4.1) |

## Milestones

**Milestone A – Early draft of advanced test descriptions**

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| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
|  | Stable draft of AML Test Descriptions for the handsets  Early draft of advanced test descriptions available. Progress report approved (TC EMTEL)  Evaluation and refactoring of existing TTCN-based Testcases | 2021-08-31 |
| *Reference Body Deliverable* | Stable draft of AML Test Descriptions for the handsets in DTS/EMTEL-00062 accepted by Reference Body  Early Draft RTS/EMTEL-00060-1 accepted by Reference Body  Report on progress on RTS/EMTEL-00060-2 accepted by Reference Body |
| *ETSI Deliverable* | Progress report reporting on Tasks 1, 2 and 3 approved by TC EMTEL |

**Milestone B – Stable draft of advanced test descriptions, Early draft of test description implementations**

|  |  |  |
| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
|  | TB Approval of AML Test Descriptions for the handsets. Stable draft of advanced test descriptions available. Early draft of test description implementations available | 2021-12-01 |
| *Reference Body Deliverable* | Approval of Final Draft of AML Test Descriptions for the handsets in DTS/EMTEL-00062by Reference Body  Stable Draft of RTS/EMTEL-00060-1 accepted by Reference Body  Early Draft of RTS/EMTEL-00060-2 accepted by Reference Body |
| *ETSI Deliverable* | Progress report reporting on Tasks 3 and 4 approved by TC EMTEL |

**Milestone C – Stable draft of test description implementations**

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| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
|  | Stable draft of test description implementations available | 2022-03-01 |
| *Reference Body Deliverable* | Stable Draft accepted by Reference Body  (WI RTS/EMTEL-00060-2) |
| *ETSI Deliverable* | Progress Report reporting on Task 4 approved by TC EMTEL |

**Milestone D – Final Report, final drafts approved by SC EMTEL**

|  |  |  |
| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
|  | Final Report, final drafts approved by TC EMTEL | 2022-05-31 |
| *Reference Body Deliverable* | Updated ATS, Final Draft of both WIs for TC EMTEL approval, Evaluation at ETSI NG112 Plugtests  (WI RTS/EMTEL-00060-1)  (WI RTS/EMTEL-00060-2) |
| *ETSI Deliverable* | Final Report reporting on validation. |

**Milestone E – Publication of Deliverables**

|  |  |  |
| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
|  | Publication of Deliverables | 2022-06-30 |
| *Reference Body Deliverable* | (WI DTS/EMTEL-00062)  (WI RTS/EMTEL-00060-1)  (WI RTS/EMTEL-00060-2) |
| *ETSI Deliverable* |  |

## Task summary

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| --- | --- | --- | --- | --- |
| **Code** | **Task / Milestone** | **Target Date** | | **Estimated Cost (EUR)** |
| **From** | **To** |
|  | Start of work |  |  |  |
| T0 | TTF Leadership/Project Management | 2021-07 | 2022-06 | 5 000 |
| T1 | Reassessment of existing TTCN Code | 2021-07 | 2021-08 | 10 000 |
| T2 | Development of AML Test Descriptions for the handsets | 2021-07 | 2021-08 | 5 000 |
| T3 | Development of Advanced Test Descriptions | 2021-07 | 2021-08 | 7 000 |
| MA | Stable draft of AML Test Descriptions for the handsets  Early draft of advanced test descriptions  Progress report#1 reporting on Tasks 1, 2 and 3 approved by TC EMTEL |  | 2021-08-31 |  |
| T3 | Development of Advanced Test Descriptions | 2021-08 | 2021-12 | 7 000 |
| T4 | Implementation of Advanced Test Descriptions | 2021-09 | 2021-12 | 13 000 |
| MB | TB Approval of AML Test Descriptions for the handsets  Stable draft of advanced test descriptions,  Early draft of test cases implementation  Progress report#2 reporting on Tasks 3 and 4 approved by TC EMTEL |  | 2021-12-01 |  |
| T4 | Implementation of Advanced Test Descriptions | 2021-12 | 2022-03 | 13 000 |
| MC | Stable draft of test cases implementation  Progress Report#3 reporting on Task 4 approved by TC EMTEL |  | 2022-03-01 |  |
| T5 | Evaluation before and during Plugtests | 2022-03 | 2022-05 | 5 000 |
| MD | Final Report, final drafts approved by TC EMTEL |  | 2022-05-31 |  |
| ME | Publication of Deliverables  TTF Closed |  | 2022-06-30 |  |
|  | | | | **65 000** |

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

# Expertise required

## Team structure

Two or three participants to ensure the following mix of competences:

|  |  |
| --- | --- |
| **Priority** | **Qualifications and competences** |
| High | expert knowledge of all base standard (TS 103 479), especially HELD, LoST, HTTP and SIP Emergency Calls |
| High | combined knowledge of testing frameworks and the NG112/911 domain |
| High | experienced in ETSI Plugtests and conformance testing |
| Medium | knowledge of Python, C, JS, Linux, Docker, TTCN or Robot Framework |

**Part IV: TTF performance evaluation criteria**

# Performance Indicators

**Contribution from ETSI Members to TTF work**

* *Contributions/comments received from the TC EMTEL*

**Contribution from the TTF to ETSI work**

* *Usage of deliverable in the Plugtests™ events.*

**Quality of deliverables**

* *Approval of deliverables according to schedule.*
* *Respect of time scale, with reference to start/end dates in the approved ToR.*
* *Comments from Quality review by TC EMTEL.*
* *Comments from Quality review by ETSI Secretariat.*

|  |  |
| --- | --- |
| ***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 test–beds, organization of workshops, events)* |  |
| *Steering Group meetings (number of meetings / participants / duration)* |  |
| *Number of delegates directly involved in the review of the deliverables* |  |
| *Contributions/comments received from the Reference Bodies* |  |
| *Contributions/comments received from other Reference Bodies* |  |
|  |  |
| **Contribution from the TTF to ETSI work** | |
| *Contributions to Reference Body meetings (number of documents / meetings / participants)* |  |
| *Contributions to other Reference Bodies* |  |
| *Presentations in workshops, conferences, stakeholder meetings* |  |
|  |  |
| **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* |  |
| *Comments received on drafts (e.g. on WEB site, mailing lists, etc.)* |  |
|  |  |
| **Quality of deliverables** | |
| *Approval of deliverables according to schedule* |  |
| *Respect of time scale, with reference to start/end dates in the approved ToR* |  |
| *Comments from Quality review by Reference Body* |  |
| *Comments from Quality review by ETSI Secretariat* |  |
|  |  |

# Document history

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Date** | **Author** | **Status** | **Comments** |
| 0.1 | 2020-01-28 | W. Kampichler |  |  |
| 0.2 | 2020-09-09 | U. Mulligan |  |  |
| 0.3 | 2020-10-09 | W. Kampichler |  |  |
| 0.4 | 2020-11-19 | U.Mulligan |  |  |
| 0.5 | 2020-11-30 | W.Kampichler |  |  |
| 0.6 | 2020-12-22 | W.Kampichler |  |  |
| 0.7 | 2021-01-20 | W.Kampichler |  |  |
| 0.8 | 2021-04-13 | U Mulligan |  |  |
| 0.9 | 2021-04-14 | Y. Sakho |  |  |
| 1.0 | 2021-04-15 | U Mulligan |  |  |
| 1.1 | 2021-04-19 | ETSI Secretariat | Final | Update before CL publication |
| 1.2 | 2021-05-20 | ETSI Secretariat |  | Updated to add AML testing |
| 1.3 | 2021-06-07 | ETSI Secretariat |  | Minor changes from Chantal |