|  |
| --- |
| ToR STF 593 (ISG MEC / WG DECODE) |
| Version: 0.7 |
| Author: Walter Featherstone – Date: 2020-05-29 |
| Last updated by: ETSI Secretariat – Date: 2020-07-10 |
| page 1 of 11 |

Terms of Reference –Specialist Task Force Proposal

STF 593 (ISG MEC / WG DECODE)

OpenAPI and Protocol Buffer descriptions for MEC APIs

Summary information

|  |  |  |
| --- | --- | --- |
| Approval status | Approved by Ref. Body ISG MEC (doc ref: MEC(20)000198r2)  | **YES** |
| Approved by Board#128 (24-25 June 2020) | **YES** |
| Reference Body | ISG MEC |
| ETSI Funding | **Maximum budget : 44 000 EUR** |
| Minimum of 4 ETSI Members Support | **YES**  |
| Time scale | **From** | 2020-10-01 |
| **To** | 2021-01-29 |
| Work Items  | MI/MEC-DEC23OpenAPI, created 2017-03-16 |
| Board priority | **Innovation in mature domains** |

Part I – STF Technical Proposal

# Rationale & Objectives

## Rationale

Through its specifications, ISG MEC has developed an edge enablement framework. This framework offers a set of service APIs targeted for consumption by MEC applications and services deployed in an edge cloud environment. These APIs include Radio Network Information (MEC-012), Location (MEC-013), WLAN Information (MEC-028) and Fixed Access Information (MEC-029). In addition, MEC Application LifeCycle Management (LCM) operation are supported (MEC-010-2, MEC-011), including an application developer facing interface (MEC-016).

In addition to the conventional Group Specification (GS), where APIs are specified using text and tables, publically accessible, [OpenAPI™ Specification (OAS)](https://github.com/OAI/OpenAPI-Specification) compliant, descriptions have been provided for each of these APIs. These are available through the [ETSI Forge](https://forge.etsi.org/rep/mec) site, which ISG MEC was instrumental in pioneering in collaboration with ETSI CTI. Subsequently other groups including ETSI NFV have also adopted the ETSI Forge platform.

The OAS compliance descriptions of the APIs can be regarded as a representation of the contents of the corresponding GSs in a machine-readable language. The availability of the descriptions is intended to facilitate the development and validation of solutions (including MEC Applications) exposing or consuming the specified APIs.

OpenAPI descriptions have been created for a number of the MEC service APIs with the help of ETSI CTI and a subset of the ISGs delegates. However, it is now apparent that that the resources required to develop, review, and maintain these specifications are beyond what can be provided on a voluntary basis by the delegates. Moreover, not all delegates are familiar with the OAS language. The current situation is that OpenAPI descriptions are either not available, or not up to date, for published API. For example RNIS (MEC 012) v2.1.1 was published Dec 2019, but only the v1.1.1 OpenAPI description is available. The situation is the same for the Location API (MEC 013). For other APIs there is no description, for example the App Mobility API (MEC 021) that was published Jan 2020.

Therefore the motivation for this application is to ensure up to date OpenAPI descriptions are made available for all MEC API GSs and in addition [protocol buffer language (proto3)](https://developers.google.com/protocol-buffers/docs/proto3) files that describe an “alternative transport” option to [REST](https://www.ics.uci.edu/~fielding/pubs/dissertation/rest_arch_style.htm) (where this is only applicable for a subset of the Service APIs). At the time of writing there are eleven API specifications, but an OpenAPI description does not exist for five of those and the proto3 file has only been provided for MEC-012. In addition, support is required to resolve bugs reported on OpenAPI and proto3 files in a timely manner. The target is within one month. Through generation of the OpenAPI descriptions and proto3 files, feedback is also expected from the STF team on the API GSs themselves

Continued delay in the availability of OpenAPI representations has the potential to negatively impact the development of the MEC ecosystem in a number of ways:

* Impede application developers, hampering MEC Application development and reducing the uptake of the MEC specifications by such developers
* Delay implementation of standardized solutions based on MEC API specifications
* Increase operator’s integration costs resulting from different vendor implementations, particular with regards to MEC 010-2 (Mm1 & Mm3) and MEC 011 (Mp1)
* Delay the availability of automated conformance test specifications.
* Negatively impact the scope of the MEC Sandbox

## Objectives of the work to be executed

The work to be performed is to develop, enhance and maintain the OpenAPI and proto3 (as appropriate) representations of existing and new MEC API specifications in the year 2020/21 (e.g. MEC RNIS, Location, WLAN, Fixed Access & V2X APIs).

## Previous funded activities in the same domain

### Specialist Task Force 551: MEC Testing Framework

<https://portal.etsi.org/STF/STFs/STFHomePages/STF551>

The MEC Testing Framework defines a methodology for development of interoperability and conformance test strategies, test systems and the resulting test specifications for MEC standards. The MEC Testing Framework has been published and is available at:

<https://www.etsi.org/deliver/etsi_gr/MEC-DEC/001_099/025/02.01.01_60/gr_MEC-DEC025v020101p.pdf>

### Specialist Task Force 569: MEC API Conformance Test Specifications

<https://portal.etsi.org/STF/STFs/STFHomePages/STF569>

The MEC API Conformance Test Specifications enable testing activities in the many industrial contexts and segments where MEC technology is relevant. In order to reach this objective, best practices and tools from both the Telecommunication and IT communities were applied. The outputs contain Tests Scripts in both TTCN-3 and Robot Framework languages.

MECDEC-032, part 1: Test Requirements and Implementation Conformance statements (ICS)

MECDEC-032, part 2: Test Suite Structure and Test Purposes (TSS&TP) written in TDL-TO

MECDEC-032, part 3: Test Scripts developed into Abstract Test Suites (ATS)

Robot Framework: <https://forge.etsi.org/rep/mec/gs032p3-robot-test-suite>

TTCN-3: <https://forge.etsi.org/rep/mec/gs032p3-ttcn-test-suite>

Stable draft: <https://docbox.etsi.org/ISG/MEC/Open/> (targeted to transition to final draft at MEC#22, 2-5 June 2020).

### Specialist Task Force 587: MEC Sandbox scenarios and interface development

<https://portal.etsi.org/STF/STFs/STFHomePages/STF587>

This STF will provide a publicly accessible running sandbox environment on the ETSI Forge website for demonstrating and experimenting with the MEC Service APIs. This is targeted at providing sufficient capability to facilitate exploration of selected MEC Service APIs by application developers. The MEC Sandbox will be accessible via a web-portal. It relies on the MEC Service API OpenAPI descriptions in order to expose emulated data in a format conformant to the MEC Specifications. If up to date representations are not available, Sandbox STF resource may be consumed developing the specific MEC Service API descriptions (the current focus of the Sandbox STF is MEC 012, 013 & 028)

## Market impact

## ISG MEC is about to enter its fourth phase, with many MEC Service API specifications in their second, or even third, release. Application developers need to understand what these APIs are able offer and how to interpret the information they provide, in a format that is familiar to them. OpenAPI provides such a format. The availability of such descriptions facilitates the development of the MEC application ecosystem. They also provide critical input into the API conformance testing activities and the ongoing MEC Sandbox development. In addition, future MEC hackathons and Plugtests™ will also be facilitated by the availability of the OpenAPI descriptions, particular with regards to exploring solution interoperability and conformance. For these reasonable OpenAPI description availability is deemed critical to the continued development of the overall MEC ecosystem.

## Consequences if not agreed

The lack of resources within the ISG to support the creation of high-quality OpenAPI descriptions for the ISG’s APIs is leading to significant delays in their development and maintenance. These risks making the existing descriptions on ETSI Forge irrelevant to their target audience, i.e. potential application developers. This will hamper development of the MEC ecosystem. Furthermore, automated generation of conformance test specifications would not be possible if OpenAPI representations were not available. Finally, there are potential impacts to the scope of the ongoing MEC Sandbox development, which relies of the existence of API descriptions to provide emulated data over the Service APIs that is conformant to the format specified by ISG MEC.

# Relation with ETSI strategy and priorities

The activity to be performed by this STF directly relates to the ISG mission of enabling the creation of an open industry ecosystem for MEC that is attractive to third party application developers.

This action supports the ETSI Long Term Strategy item(s) to:

* create high quality standards for global use and with low time-to-market, and
* establish leadership in key areas impacting members’ future activities.

This activity falls into the “Innovation in mature domains” criteria identified in [BOARD(19)123\_014](http://docbox.etsi.org/Board/2019_Board/BOARD%2819%29123_014_STF_priority_criteria_update.docx), as the availability of OpenAPI description, and [protocol buffer language (proto3)](https://developers.google.com/protocol-buffers/docs/proto3) files, for the ISG MEC APIs is a major innovation and an enabler for interoperability in a multi-vendor, multi-provider, multi-operator MEC ecosystem.

|  |  |
| --- | --- |
| **Priority Criteria** | **Rationale** |
| Maintenance of standards in mature domains |  |
| Innovation in mature domains | **X** |
| Emerging domains for ETSI |  |
| Horizontal activities (quality, security, etc.) |  |
| Societal good / environmental |  |

# ETSI Members Support

|  |  |  |
| --- | --- | --- |
| **#** | **ETSI Member** | **Supporting delegate** |
| 1 | Hewlett-Packard Enterprise | Alex Reznik |
| 2 | Huawei Technologies France | Sami Kekki |
| 3 | Nokia Germany | Pekka Kuure |
| 4 | Intel Corporation (UK) Ltd | Dario Sabella |
| 5 | Samsung R&D Institute UK | Walter Featherstone |
| 6 | ZTE Corporation | Yonggang Fang |
| 7 | InterDigital, Inc. | Robert Gazda |

# Deliverables

## Base documents

|  |  |  |  |
| --- | --- | --- | --- |
| **Document** | **Title** | **Status** | **OpenAPI status** |
| ETSI GS MEC 010-2 2.1.1 | Multi-access Edge Computing (MEC);Edge Platform Application Enablement | Published | Not available |
| ETSI GS MEC 011 2.1.1 | Multi-access Edge Computing (MEC);Edge Platform Application Enablement | Published | Available |
| ETSI GS MEC 012 1.1.1 | Multi-access Edge Computing (MEC);Radio Network Information API | Published | Available |
| ETSI GS MEC 012 2.1.1 | Multi-access Edge Computing (MEC);Radio Network Information API | Published | Not available |
| ETSI GS MEC 013 1.1.1 | Multi-access Edge Computing (MEC);Location API | Published | Available |
| ETSI GS MEC 013 2.1.1 | Multi-access Edge Computing (MEC);Location API | Published | Not available |
| ETSI GS MEC 014 1.1.1 | Mobile Edge Computing (MEC);UE Identity API | Published | Available |
| ETSI GS MEC 015 1.1.1 | Mobile Edge Computing (MEC);Bandwidth Management API | Published | Available |
| ETSI GS MEC 015 2.1.1 | Mobile Edge Computing (MEC);Bandwidth Management and Multi-access Traffic Steering service | Published | Not available |
| ETSI GS MEC 016 1.1.1 | Mobile Edge Computing (MEC);UE Application API | Published | Available |
| ETSI GS MEC 016 2.1.1 | Mobile Edge Computing (MEC);UE Application API | Published | Available |
| ETSI GS MEC 016 2.2.1 | Mobile Edge Computing (MEC);UE Application API | Published | Not available |
| ETSI GS MEC 021 2.1.1 | Multi-access Edge Computing (MEC); MEC Application Mobility Service API | Published | Not available |
| ETSI GS MEC 028 2.1.1 | Multi-access Edge Computing (MEC);WLAN Information API | Published | Not available |
| ETSI GS MEC 029 2.1.1 | Multi-access Edge Computing (MEC);Fixed Access Information API | Published | Not available |
| ETSI GS MEC 030 2.1.1 | Multi-access Edge Computing (MEC);MEC V2X API | Published | Not available |

## New deliverables

The deliverables from the STF will be a set of OpenAPI and Protobuf files, available on the ETSI Forge platform (see <https://forge.etsi.org/>) with a repository per GS (but not per GS version).

# Maximum budget

## Task summary/Manpower Budget

|  |  |
| --- | --- |
| **Task short description** | Budget (EUR) |
|
| T0. Project management | 3 000 |
| T1. Update existing OpenAPI descriptions | 15 000  |
| T2. Update existing proto3 descriptions | 2 000 |
| T3. Develop new OpenAPI descriptions | 15 000 |
| T4. Develop new proto3 descriptions | 9 000 |
| **TOTAL** | 44 000 |

## Travel budget

NA

## Other budget line

NA

Part II – Details on STF Technical Proposal

# Tasks, Technical Bodies and other stakeholders

## Organization of the work

A Steering Committee will be created to assist the STF experts in understanding the GSs so as to make sure the OpenAPI files they produce are an accurate translation of the contents of these GSs. The Steering Group will be composed as follows:

* The WG DECODE Chair
* Rapporteur of the MI/MEC-DEC23OpenAPI work item
* A representative from ETSI CTI
* The Rapporteurs of the relevant ETSI MEC API group specifications
* A representative of the Steering Committee of STF 569 or any successor STF in charge of developing API conformance tests.

## Tasks for which the STF support is necessary

It has become apparent within ISG MEC that the translation of conventional API specifications into the OpenAPI and Protocol Buffer (proto3) language requires highly specialised knowledge and significant, concentrated effort. The involvement of STF resources is needed to continue ensuring effective development and maintenance of all OpenAPI and proto3 representations of the MEC APIs specified by ETSI.

Furthermore, it is essential to provide easy access to up-to-date OpenAPI and proto3 representations of all versions of the MEC API specifications through the ETSI Forge hosted repository.

The ISG ME DECODE working group cannot perform this work in a reasonable timeframe on the sole basis of voluntary resources.

## Other interested ETSI Technical Bodies

ETSI OSM, ETSI NFV, and ETSI ZSM will be made aware of the availability of new OpenAPI and proto3 files and encouraged to provide feedback.

## Other stakeholders

Open source communities involved in the development of MEC applications and solutions will be made aware of the availability of new OpenAPI files and encouraged to provide feedback, e.g. Akraino (part of the Linux Foundation), with its dedicated API sub-committee ([https://wiki.akraino.org/display/AK/API+Sub-committee](https://wiki.akraino.org/display/AK/API%2BSub-committee)).

Part III: Execution of Work

# Work plan, time scale and resources

## Task description

Use git tagging according to contribution MEC(18)000026 (MEC023 forge repository branching structure), or propose further development of that as deemed appropriate (and with STF SC approval).

Use OAS 3.0 features, including: links; callbacks; enhanced JSON schema support (oneOf, anyOf, not, nullable, deprecated, writeOnly); & examples.

Provide recommendations on conversion tools to OAS 2.0 (AKA Swagger 2.0), since the server and client communication stub generation tooling is considered more mature for OAS 2.0 (e.g. there is greater choice of programming language support) and such tooling does not always make use of the OAS 3.0 (e.g. support for callbacks).

Use OpenAPI data model generation tool that has been made available by ETSI CTI (<https://forge.etsi.org/rep/cti/doc2oas>) and ensure that it is operational across all ETSI MEC API GSs. NOTE, access to the repository hosting the tool can be requested by emailing CTI\_Support@etsi.org.

|  |  |
| --- | --- |
| **Task 0 (T0)** | **Project management** |
| **Objectives** | 1. Technical lead of the STF
2. Manage the resources assigned to this project
3. Chair periodic meetings of the STF
4. Ensure that the project stays on track and meets all milestone delivery dates
5. 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 STF, reflecting interactions (as shown below).The tasks and schedule in this STF. |
| **Output** | * Progress reports, including report to the WG DECODE after each Steering Committee meeting summarizing the current status of this STF.
* Intermediate reports to the STF Steering Committee
* Final report
 |
| **Interactions** | The Steering Committee for this STF will be consulted for guidance throughout the STF. There will be regular interactions between the experts and the STF Steering Committee.The WG DECODE will review the progress of the ToR tasks (see clause 7.3). |
| **Resources required** | One of the resources required for this STF which is charged with the responsibility to manage the delivery of the tasks according to the milestone table (see clause 7.4), in addition to contributing to other tasks. |

|  |  |
| --- | --- |
| **Task 1 (T1)** | **Update existing OpenAPI descriptions** |
| **Objectives** | Update existing OpenAPI descriptions to latest published draft, plus develop WLAN Information API OpenAPI description.The WLAN Information API is prioritized, since it is required as an input to the ongoing Sandbox (MEC-DEC 034) development. |
| **Input** | * MEC 28 v2.1.1
* MEC 12 v2.1.1
* MEC 13 v2.1.1
* MEC 15 v2.1.1
* MEC 16 v2.2.1
 |
| **Output** | * Final versions of OpenAPI representations for all APIs defined in the input GSs, published on the ETSI Forge platform, reflecting the definition of OpenAPIs, including those resulting from bug reports.
 |
| **Interactions** | The Steering Committee for this STF will be consulted for guidance when processing bug reports and for completing the development of the OpenAPI representation of the APIs. The WG DECODE will approve the final versions of the OpenAPI files. |
| **Resources required** | One or two resources with significant OpenAPI expertise, including one resource with knowledge of ETSI MEC API GSs. |

|  |  |
| --- | --- |
| **Task 2 (T2)** | **Update existing proto3 descriptions** |
| **Objectives** | Update existing proto3 descriptions to latest published draft |
| **Input** | * MEC 12 v2.1.1
 |
| **Output** | * Final versions of Proto representations for all APIs defined in the input GSs, published on the ETSI Forge platform, reflecting the definition of OpenAPIs, including those resulting from bug reports.
 |
| **Interactions** | The Steering Committee for this STF will be consulted for guidance when processing bug reports and for completing the development of the OpenAPI representation of the APIs. The WG DECODE will approve the final versions of the OpenAPI files. |
| **Resources required** | One or two resources with significant OpenAPI expertise, including one resource with knowledge of ETSI MEC GSs. |

|  |  |
| --- | --- |
| **Task 3 (T3)** | **Develop new OpenAPI descriptions** |
| **Objectives** | Develop new OpenAPI descriptions for published specifications |
| **Input** | * MEC 10-2 v2.1.1
* MEC 21 v2.1.1
* MEC 29 v2.1.1
* MEC 30 v2.1.1
 |
| **Output** | Final versions of OpenAPI representations for all APIs defined in the input GSs, published on the ETSI Forge platform, reflecting the definition of OpenAPIs, including those resulting from bug reports. |
| **Interactions** | The Steering Committee for this STF will be consulted for guidance when processing bug reports and for completing the development of the OpenAPI representation of the APIs. The WG DECODE will approve the final versions of the OpenAPI files. |
| **Resources required** | One or two resources with significant OpenAPI expertise, including one resource with knowledge of ETSI MEC API GSs. |

|  |  |
| --- | --- |
| **Task 4 (T4)** | **Develop new proto3 descriptions** |
| **Objectives** | Develop new proto3 descriptions for published specifications |
| **Input** | * MEC 21 v2.1.1
* MEC 28 v2.1.1
* MEC 29 v2.1.1
* MEC 30 v2.1.1
 |
| **Output** | * Final versions of Proto representations for all APIs defined in the input GSs, published on the ETSI Forge platform, reflecting the definition of OpenAPIs, including those resulting from bug reports.
 |
| **Interactions** | The Steering Committee for this STF will be consulted for guidance when processing bug reports and for completing the development of the OpenAPI representation of the APIs. The WG DECODE will approve the final versions of the OpenAPI files. |
| **Resources required** | One or two resources with significant OpenAPI expertise, including one resource with knowledge of ETSI MEC GSs. |

## Milestones

STF 593 Kick-off Meeting

|  |  |  |
| --- | --- | --- |
|  | **Description** | **Cut-Off Date** |
|  | Start of Work planned for Oct 1, 2020. | 1 Oct 2020 |
|  |  |

Milestone A – Final versions available of GS MEC 12, 13, 15, 16 & 28 OpenAPI and GS MEC 12 proto3 representations

|  |  |  |
| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
| **A** | Final versions of all OpenAPI representations covering GS MEC 12 (v2.1.1), MEC 13 (v2.1.1), MEC 15 (v2.1.1), MEC 16 (v2.2.1) & MEC 028 (v2.1.1) available on the ETSI Forge platform.Final versions of all proto3 representations covering GS MEC 12 (v2.1.1) available on the ETSI Forge platform.This milestone is associated with Task 1 & Task 2.Progress report #1 to be approved by TC MEC & WG DECODE | 13 Nov 2020 |
|  | WG DECODE approval of these OpenAPI and proto3 representations is planned for Nov 2020. The STF is expected to provide a contribution for decision to WG DECODE to alert the group of the availability of the descriptions and seek the group’s approval.  |

Milestone B – First drafts available of GS MEC 10-2, 21, 29 & 30 OpenAPI and GS MEC 21, 28, 29 & 30 proto3 representations

|  |  |  |
| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
| **B** | * First draft of all OpenAPI representations covering GS MEC 10-2, 21, 29 & 30 (all v2.1.1) available on the ETSI Forge platform.
* First draft of all proto3 representations covering GS MEC 21, 28, 29 & 30 (all v2.1.1) available on the ETSI Forge platform.
* This milestone is associated with Task 3 & 4.
* Progress report #2 to be approved by TC MEC & WG DECODE
 | 10 Dec 2020 |
|  | No approval required as this is a first draft, though the content must be reviewed as part of this STF to help ensure that the level of detail exceeds expectations and the work is technically sound. |

Milestone C – Final drafts available of GS MEC 10-2, 21, 29 & 30 OpenAPI and GS MEC 21, 28, 29 & 30 proto3 representations

|  |  |  |
| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
| **C** | * Final draft of all OpenAPI representations covering GS MEC 10-2, 21, 29 & 30 (all v2.1.1) available on the ETSI Forge platform.
* Final draft of all proto3 representations covering GS MEC 21, 28, 29 & 30 (all v2.1.1) available on the ETSI Forge platform.
* This milestone is associated with Task 3 & 4.
* Final report to be approved by TC MEC & WG DECODE
 | 29 Jan 2021 |
|  | WG DECODE approval of these OpenAPI and proto3 representations is planned for Jan 2021. The STF is expected to provide a contribution for decision to WG DECODE to alert the group of the availability of the descriptions and seek the group’s approval. |

## Task summary

|  |  |  |  |
| --- | --- | --- | --- |
| **Code** | **Task / Milestone**  | Target Date | Estimated Cost (EUR) |
| From | To |
| M0 | Start of work | 2020-10-01 | 2020-10-01 |  |
| T0 | Project Management | 2020-10-01 | 2021-01-29 | 3 000 |
| T1 | Update existing OpenAPI descriptions | 2020-10-01 | 2020-11-06 | 15 000 |
| T2 | Update existing proto3 descriptions | 2020-11-09 | 2020-11-13 | 2 000 |
| Milestone A | Final versions available of GS MEC 12, 13, 15, 16 & 28 OpenAPI and GS MEC 12 proto3 representationsProgress report#1 to be approved by WG DECODE | 2020-11-13 | 2020-11-13 |  |
| T3 | Develop new OpenAPI descriptions | 2020-11-16 | 2020-12-18 | 15 000 |
| T4 | Develop new proto3 descriptions | 2020-12-21 | 2021-01-21 | 9 000 |
| MilestoneB | First drafts available of GS MEC 10-2, 21, 29 & 30 OpenAPI and GS MEC 21, 28, 29 & 30 proto3 representationsProgress report#2 to be approved by WG DECODE | 2020-12-10 | 2020-12-10 |  |
| MilestoneC | Final drafts available of GS MEC 10-2, 21, 29 & 30 OpenAPI and GS MEC 21, 28, 29 & 30 proto3 representationsFinal report to be approved by WG DECODE & ISG MEC  | 2021-01-29 | 2021-01-29 |  |
|  | **44 000** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Task/ Mil.** | **O** | **N** | **D** |  | **J** | **F** | **M** |
| T1 |  |  |  |  |  |  |  |
| T2 |  |  |  |  |  |  |  |
| MA |  |  |  |  |  |  |  |
| T3 |  |  |  |  |  |  |  |
| T4 |  |  |  |  |  |  |  |
| MB |  |  |  |  |  |  |  |
| MC |  |  |  |  |  |  |  |

# Expertise required

## Team structure

Up to 2 experts with the following experiences and competences:

|  |  |
| --- | --- |
| **Priority** | **Qualifications and competences** |
| High | Expert knowledge of ETSI MEC Group Specifications listed in clause 6.1 |
| High | Expert knowledge of the OpenAPI specification language and supporting drafting tools (e.g. Swagger tools) |
| High | Expert knowledge of the Protocol Buffer language specification |
| High | Experience with software engineering best practices & knowledge of Git |
| High | Expert knowledge of scripting languages (Bash, Python, Javascript) |

Part IV: STF performance evaluation criteria

# Performance Indicators

Contribution from ETSI Members to STF work

* Monthly Steering Committee meetings
* Contributions/comments received from the reference ISG

Contribution from the STF to ETSI work

* Contributions to ETSI Forge and DECODE WG meetings throughout 2020/21
* Presentations in workshops, conferences, stakeholder meetings

Liaison with other stakeholders

* Comments received on OpenAPI and proto3 representations via BugZilla
* Propose resolution to comments received on the DECODE WG mailing list and implement and approve the resolutions on Gerrit

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 ISG
* Comments from quality review by ETSI Secretariat

Time recording

For reporting purposes, the STF experts shall fill in the timesheet provided by ETSI with the days spent for the performance of the services

During the activity, the STF Leader shall collect the relevant information, as necessary to measure the performance indicators. The result will be presented in the Final Report.

# Document history

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Date** | **Author** | **Status** | **Comments** |
| 0.1 | 2020-05-29 | W. Featherstone | Initial Draft |  |
| 0.2 | 2020-06-03 | W. Featherstone | Stable draft | Added supporting companies |
| 0.3 | 2020-06-05 | W. Featherstone | Stable draft | Prioritization of MEC 028 in support of MEC-DEC 034 Sandbox, updated delivery dates accordingly. |
| 0.4 | 2020-06-05 | W. Featherstone | Stable draft | Draft approved by ISG. Added note that ETSI CTI need to be contacted for access to the doc2oas tool.  |
| 0.5 | 2020-06-08 | ETSI Secretariat | Stable draft | Editorial changes before Board submission |
| 0.6 | 2020-06-09 | W. Featherstone | Stable draft | Changes to resolve comments and edits made by ETSI Secretariat  |
| 0.7 | 2020-07-10 | ETSI Secretariat | Board approved | Updates before CL publication |