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| ToR STF 586 (ISG NFV / WG SOL) |
| Version: 1.3 |
| Author: Bruno Chatras/Vlademir Brusse – Date: 05 July 2019 |
| Last updated by: Youssouf Sakho– Date: 08 October 2019 |
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Terms of Reference – Specialist Task Force

STF 586 (ISG NFV / WG SOL)

OpenAPI Specifications for NFV

Summary information

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| Approval status | Approved by ISG NFV (doc ref: NFV(19)000205r1) on 2019.08.30 | | **YES** |
| Approved by Board#124 (24 September 2019) | | **YES** |
| Reference Body | Ref. Body ISG NFV / WG SOL | | |
| ETSI Funding | **Maximum budget : 69 000 EUR** | | |
| Minimum of 4 ETSI Members Support | **YES** | | |
| Time scale | **From** | 2020-01-13 | |
| **To** | 2020-12-31 | |
| Work Items | RMI/NFV-SOL008ed2020, created 2019-08-30 | | |
| Board priority | [ETSI STF funding criteria](https://portal.etsi.org/STF/STFs/Funding/ETSIbudget.aspx):  **Innovation in mature domains** | | |

Part I – STF Technical Proposal

# Rationale & Objectives

## Rationale

Within the ETSI Industry Specification Group (ISG) on Network Functions Virtualisation (NFV), the Solutions (SOL) working group develops the specifications of a set of APIs enabling access to NFV Management and Orchestration services in a multi-vendor environment. This currently represents over 30 APIs and is expected to increase with the advent of Release 3 & 4. See <https://nfvwiki.etsi.org/index.php?title=API_specifications>. In the rest of this document, these APIs are designated as NFV-MANO APIs.

NFV-MANO API specifications are made available to the industry in two forms:

* A conventional Group Specification (GS) where APIs are specified using text and tables.
* A formal description using the [OpenAPI](https://swagger.io/specification/) specification language, formerly known as Swagger.

The OpenAPI representations of the APIs can be regarded as a representation of the contents of the corresponding GSs in a machine-processable language. The availability of the OpenAPI representations to the industry is intended to facilitate the development and validation of products exposing or consuming the specified APIs. The initial versions of the OpenAPI representations were created, with the help of ETSI CTI, by few WG delegates. The experience has shown that the amount of human resources required to develop, review, and maintain these specifications is beyond what can be provided on a voluntary basis by the delegates. Moreover, not all delegates are familiar with the OpenAPI specification language.

Maintenance versions of GSs are typically revised and approved every six (6) months. For each maintenance version of the GSs describing APIs, updates to the OpenAPI representations are required. Moreover, bugs reported on OpenAPI files need to be resolved and the solution implemented within the OpenAPI representation in less than one month, consistent with the Key Performance Indicators (KPIs) defined by ETSI NFV OpenAPI governance.

## Objectives of the work to be executed

The work to be performed is to develop, enhance and maintain the OpenAPI representations of existing and new NFV-MANO API specifications in the year 2020. This work is the continuation of the work performed by STF 563 in 2019.

## Previous funded activities in the same domain

The completion and maintenance/upgrade of Release 2 specifications and the first version of Release 3 specifications has been performed with the support of STF 563.

So far, the specifications of conformance tests for the NFV-MANO APIs were developed by the ISG with the support of STF 557 on “NFV API conformance test specification”. The ISG will request funding for another STF to continue this work in 2020/2021 timeframe.

## Market impact

The size of the NFV market is large and is expected to continue growing (e.g. ABI Research estimates that total NFV market revenues will reach $38 billion in 2022, Ovum estimates that the NFV market NFV is projected to hit $48bn in 2024.) and the impact of ETSI NFV specifications on this market is undisputable.

The ETSI NFV specifications are referenced and/or used by operators, vendors and open source communities involved in NFV deployments. However, the availability of representations of the ETSI NFV API specifications in the OpenAPI specification language is essential to faster integration of these APIs in industry products. Moreover, this form of machine-processable specifications is essential to automate the development of API conformance test suites.

## Consequences if not agreed

The lack of resources will lead to significant delays in developing and maintaining high-quality OpenAPI representations, at the risk of making them irrelevant to the industry, thereby leading to much longer integration times for operators as they look to piece together an NFV system, and a general loss of confidence in the industry of the NFV system itself. Further, automated generation of conformance test specifications would not be possible if OpenAPI representations were not available. Indeed STF 557 has made a direct use of the OpenAPI representations delivered by STF 563 and the same working method is anticipated to continue to be used in the coming years.

# 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 NFV.

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(19)123_014_STF_priority_criteria_update.docx), as the availability of OpenAPI descriptions is a major innovation and an enabler for interoperability in a multi-vendor NFV ecosystem.

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| **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

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|  | **ETSI Member** | **Supporting delegate** | **Motivation** |
| 1 | Ericsson | Vlademir Brusse | Ericsson believes that this STF will increase the velocity of commercial implementations of ETSI NFV implementations, resulting in improved interoperability and conformance testing on ETSI NFV APIs, and ultimately capturing the “lessons learned” in ETSI NFV specifications. |
| 2 | Orange | Bruno Chatras | Orange believes the timely availability of OpenAPI representations of the APIs specified by the ISG NFV is critical to ensure widespread adoption of ETSI solutions by the industry. |
| 3 | Nokia Germany | Uwe Rauschenbach | Nokia supports this STF proposal, as we believe that the OpenAPI definitions related to the ETSI NFV API specifications help accelerating market adoption of the ETSI NFV APIs. We believe that a dedicated STF will ensure that the creation and maintenance of the OpenAPI definitions is carried out with the required speed, and with a high level of consistency and quality. |
| 4 | DOCOMO Communication Labs. | Yuya Kuno | ETSI NFV standards are regarded by NTT DOCOMO as a key instrument to facilitate the introduction of virtualization in operators’ network. The availability of a full set of OpenAPI representations of the NFV specifications is a major step forward towards ensuring interoperability, conformance testing, and adoption of ETSI NFV by small and large players in the NFV ecosystem. This STF will help to complete and maintain the existing OpenAPI representations. |
| 5 | ZTE | Manchang Ju | ZTE believes that the OpenAPI definitions related to the APIs specified by the ISG NFV is important to speed up promotion and commercial application of ETSI NFV standard. |

# Deliverables

## Base documents

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| **Doc/Specification/Topic** | **Title** | **Current Status** |
| ETSI GS NFV-SOL 002 | Network Functions Virtualisation (NFV) Release 2;  Protocols and Data Models;  RESTful protocols specification  for the Ve-Vnfm Reference Point | Published  (v2.6.1)  v2.7.1 – To be approved in September 2019  v3.3.1 – To be approved by the end of 2019 |
| ETSI GS NFV-SOL 003 | Network Functions Virtualisation (NFV) Release 2;  Protocols and Data Models;  RESTful protocols specification  for the Or-Vnfm Reference Point | Published  (v2.6.1)  v2.7.1 – To be approved in September 2019  v3.3.1 – To be approved by the end of 2019 |
| ETSI GS NFV-SOL 005 | Network Functions Virtualisation (NFV) Release 2;  Protocols and Data Models;  RESTful protocols specification  for the Os-Ma-nfvo Reference Point | Published  (v2.6.1)  v2.7.1 – To be approved in September 2019  v3.3.1 – To be approved by the end of 2019 |
| OpenAPI Representations | OpenAPI representation for ETSI GS NFV-SOL 002  (<https://forge.etsi.org/rep/nfv/NFV-SOL002>) | v2.5.1 – SOL WG approved  v2.6.1 (to be completed by the end of 2019) |
| OpenAPI Representations | OpenAPI representation for ETSI GS NFV-SOL 003  (<https://forge.etsi.org/rep/nfv/NFV-SOL003>) | v2.5.1 – SOL WG approved  v2.6.1 (to be completed by the end of 2019) |
| OpenAPI Representations | OpenAPI representation for ETSI GS NFV-SOL 005  (<https://forge.etsi.org/rep/nfv/NFV-SOL005>) | v2.5.1 – SOL WG approved  v2.6.1 (to be completed by the end of 2019) |
| Contribution NFVSOL(18)000228 | OpenAPI Bug Tracking and Reporting Enhancements | ETSI CTI is prioritizing the recommendations in this contribution from the perspective of tooling. |
| NFV SOL Wiki[[1]](#footnote-1) | ETSI NFV OpenAPI Governance | Existing ETSI NFV OpenAPI governance procedures. |
| ETSI GS NFV-SOL 013 | Network Functions Virtualisation (NFV) Release 3;  Protocols and Data Models;  Specification of common aspects for RESTful NFV MANO APIs | Published  (v2.6.1)  v3.3.1 – To be approved by the end of 2019 |
| ETSI GS NFV-SOL 009 | Network Functions Virtualisation (NFV) Release 3;  Protocols and Data Models;  RESTful protocols specification for the management of NFV-MANO | v3.3.1 – To be approved by the end of 2019 |
| ETSI GS NFV-SOL 011 | Network Functions Virtualisation (NFV) Release 3;  Protocols and Data Models;  RESTful protocols specification for the Or-Or Reference Point | v3.3.1 – To be approved by the end of 2019 |
| ETSI GS NFV-SOL 012 | Network Functions Virtualisation (NFV) Release 3;  Protocols and Data Models;  RESTful protocols specification for the Policy Management Interface | v3.3.1 – To be approved by the end of 2019 |
| ETSI GS NFV-SOL 015 | Network Functions Virtualisation (NFV);  Protocols and Data Models;  Specification of Patterns and Conventions for RESTful NFV-MANO APIs | last version approved |

NOTE: These specifications are currently planned to be published every 6 months as part of the maintenance plan 2020.

## New deliverables

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| **Deliv.** | **Work Item code**  **Standard number** | **Working title**  **Scope** | **NFV Approval date** |
| D1 | RMI/NFV-SOL008ed2020 | Working title: OpenAPI Work Programme 2020  Scope: This work item aims at creating and managing the OpenAPI work programme. This will enable the ETSI NFV OpenAPI work to be tracked within the ETSI Work Programme to assess progress towards the completion of deliverables. | 31 December 2020 |

NOTE: This work item frames the activities of the ETSI NFV SOL working group on the development and maintenance of OpenAPI representations. The actual deliverables from the STF will be a set of OpenAPI files, available on GitLab on the ETSI Forge platform (see <https://forge.etsi.org/>).

# Maximum budget

## Task summary/Manpower Budget

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|  | **Task short description** | Estimated cost  (EUR) | |
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| T0 | Project management | 3 000 | |
| T1 | OpenAPI Representations Quality Management | 6 000 | |
| T2 | Create and maintain ETSI NFV Release 2 OpenAPI Representations (v2.7.1) | 12 000 | |
| T3 | Create and maintain OpenAPI Representations for GSs propagated in Release 3 (SOL002, SOL003, SOL005) | 18 000 | |
| T4 | Create and maintain OpenAPI Representations for new Release 3 GSs (SOL009, SOL011, SOL012) | 21 000 | |
| **TOTAL** | | 60 000 |

## Travel budget

9 000 EUR to travel to 3 NFV ISG meetings: 2 in Europe + 1 overseas (US or Asia) during 2Q2020, 3Q2020 and 4Q2020.

## Other budget line

void

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 Rapporteur of the RMI/NFV-SOL008ed2020 work item

- A representative from ETSI CTI

- The Rapporteurs of the relevant GSs for ETSI NFV Releases 2 and 3 (i.e., GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 and new Release 3-specific GSs to be created)

- Designated experts from the ETSI NFV SOL working group currently involved in the development of OpenAPI files

- A representative of the Steering Committee of STF 557 or any successor STF in charge of developing API conformance tests.

## Tasks for which the STF support is necessary

Experience during the past four years has shown that the translation of conventional API specifications into the OpenAPI 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 representations of the NFV-MANO APIs specified by ETSI.

Furthermore, it is essential to provide easy access to up-to-date OpenAPI representations of all versions of the NFV API specifications. This requires maintaining a set of Wiki Pages.

The ISG NFV SOL working group cannot perform this work in a reasonable timeframe on the sole basis of voluntary resources. STF 563 resources have been used during the past two years to perform this work.

## Other interested ETSI Technical Bodies

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

## Other stakeholders

Open source communities involved in the development of NFV management and orchestration solutions will be made aware of the availability of new OpenAPI files and encouraged to provide feedback.

Part III: Execution of Work

# Work plan, time scale and resources

## Task description

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| **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 SOL WG 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 SOL WG 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. |

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| **Task 1 (T1)** | **OpenAPI Representations Quality Management** |
| **Objectives** | The OpenAPI Representations Quality Management task is composed by three subtasks:   1. Evaluate and update/refine the methodology used to define OpenAPI representations of NFV-MANO APIs. 2. Recommend ETSI CTI tool enhancements on a quarterly basis to help improve the bug tracking and reporting capabilities available and enable better management of the OpenAPI work programme. 3. Review and update OpenAPI governance procedures to determine if the OpenAPI governance procedures/criteria continue to meet the needs of ETSI NFV. |
| **Input** | 1. Available OpenAPI representations and contents of the NFV-SOL Wiki pages. 2. Available ETSI CTI tools and ETSI CTI tools enhancement recommendations made in ETSI NFV SOL WG contribution NFVSOL(18)000228. 3. Current OpenAPI governance procedures published on the public and private ETSI NFV Wikis.   Publicly available information from other SDOs (e.g., TM Forum) about their governance procedures that can be potentially leveraged within ETSI NFV. |
| **Output** | 1. A contribution to the ETSI NFV SOL WG to propose evolutions of the methodology, if any. 2. Input to ETSI CTI proposing recommendations for additional ETSI CTI tool enhancements. 3. A contribution to the ETSI NFV SOL WG to propose recommendations for enhancements to OpenAPI governance procedures. |
| **Interactions** | 1. The Steering Committee for this STF will be consulted to produce the design considerations. 2. The Steering Committee for this STF will be consulted to propose recommendations for ETSI CTI enhancements pertaining to OpenAPI representations. 3. The Steering Committee for this STF will be consulted to propose enhancements to the OpenAPI governance procedures. |
| **Resources required** | All STF resources are required to be a participant in this task, whereby  at least one resources shall have significant OpenAPI expertise and be familiar with open source tools such as Swagger, BugZilla, GitLab and Jenkins. |

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| **Task 2 (T2)** | **Create and maintain Release 2 GS OpenAPI Representations, versions 2.7.1** |
| **Objectives** | Completion and maintenance of OpenAPI representations for versions 2.7.1. This includes the maintenance of versions 2.6.1. |
| **Input** | * Versions 2.7.1 and 2.6.1 of ETSI GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005. * Version 2.7.1 of ETSI GS NFV-SOL 013 and last approved version of GS NFV-SOL 015. * OpenAPIs for version 2.6.1 of GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005. |
| **Output** | * Final versions of OpenAPI representations for all APIs defined in the input GSs, published on the ETSI Forge platform and referenced from both the public and private SOL WG Wiki pages, reflecting the definition of OpenAPIs, including those resulting from bug reports. * Maintenance of versions 2.6.1. |
| **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 SOL WG will approve the final versions of the OpenAPI files. |
| **Resources required** | At least two resources with significant OpenAPI expertise, including one resource with knowledge of ETSI NFV-SOL GSs on NFV-MANO APIs. |

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| **Task 3 (T3)** | **Create and maintain OpenAPI Representations for ETSI NFV-MANO APIs propagated in Release 3.** |
| **Objectives** | Develop and maintain OpenAPI representations for Versions 3.4.1 and 3.5.1 of the APIs defined in ETSI GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005. This includes the maintenance of the OpenAPI representations of Versions 3.3.1 of these GSs. |
| **Input** | 1. Input for version 3.4.1:   Versions 3.3.1 of ETSI GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005.  Version 3.3.1 of ETSI GS NFV-SOL 013 and last approved version of GS NFV-SOL 015.  OpenAPIs for version 3.3.1 of GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005.   1. Input for version 3.5.1:   Versions 3.4.1 of ETSI GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005).  OpenAPIs for version 3.4.1 of GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005. |
| **Output** | 1. Final versions of OpenAPI representations for all APIs defined in version 3.4.1 of the input GSs, published on the ETSI Forge platform and referenced from both the public and private SOL WG Wiki pages, including those resulting from bug reports. 2. Final versions of OpenAPI representations for all APIs defined in version 3.5.1 of the input GSs, published on the ETSI Forge platform and referenced from both the public and private SOL WG Wiki pages, including those resulting from bug reports. 3. Maintenance of versions 3.3.1. |
| **Interactions** | See Task 2. |
| **Resources required** | See Task 2. |

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| **Task 4 (T4)** | **Create and maintain OpenAPI Representations for Release-3 specific ETSI NFV-MANO APIs.** |
| **Objectives** | Develop and maintain OpenAPI representations for Versions 3.4.1 and 3.5.1 of the APIs defined in ETSI GS NFV-SOL 009, GS NFV-SOL 011, and GS NFV-SOL 012. This includes the maintenance of the OpenAPI representations of Version 3.3.1 of these GSs. This might also include the completion of some of the OpenAPI representations of Versions 3.3.1 of some of the APIs defined in those GSs. |
| **Input** | 1. Input for version 3.4.1   Versions 3.3.1 of ETSI GS NFV-SOL 009, GS NFV-SOL 011, and GS NFV-SOL 012.  Version 3.3.1 of ETSI GS NFV-SOL 013 and last approved version of GS NFV-SOL 015.  OpenAPIs for version 3.3.1 of ETSI GS NFV-SOL009, GS NFV-SOL 011, and GS NFV-SOL 012.   1. Input for version 3.5.1   Versions 3.4.1 of ETSI GS NFV-SOL 009, GS NFV-SOL 011, and GS NFV-SOL 012.  OpenAPIs for version 3.4.1 of ETSI GS NFV-SOL 009, GS NFV-SOL 011, and GS NFV-SOL 012. |
| **Output** | 1. Final versions of OpenAPI representations for all APIs defined in version 3.4.1 of the input GSs, published on the ETSI Forge platform and referenced from both the public and private SOL WG Wiki pages, including those resulting from bug reports. 2. Final versions of OpenAPI representations for all APIs defined in version 3.5.1.of the input GSs, published on the ETSI Forge platform and referenced from both the public and private SOL WG Wiki pages, including those resulting from bug reports. 3. Maintenance of versions 3.3.1. |
| **Interactions** | See Task 2. |
| **Resources required** | See Task 2. |

## Milestones

Milestone 0 (M0) – STF DV Kick-off Meeting

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| **Milestone** | **Description** | **Cut-Off Date** |
| **M0** | Meeting to be held during the NFV#28 F2F Plenary Meeting  Start of Work planned for January 2, 2020. | January 2, 2020 |
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Milestone 1 – First drafts available of GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 OpenAPI representations for Release 2 (v2.7.1)

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| **Milestone** | **Description** | **Cut-Off Date** |
| **M1** | * First draft of all OpenAPI representations covering GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 (all v2.7.1) available on the ETSI Forge platform. * This milestone is associated with Task 2. | 28 February 2020 |
| MI/NFV-SOL008ed2020 | 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 2 (M2) – Final versions available of GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 OpenAPI representations for Release 2 (v2.7.1)

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| **Milestone** | **Description** | **Cut-Off Date** |
| **M2** | Final versions of all OpenAPI representations covering GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 (all v2.7.1) available on the ETSI Forge platform.  This milestone is associated with Task 2. | 31 March 2020 |
| MI/NFV-SOL008ed2020 | SOL WG approval of these OpenAPI representations is planned for early April 2020. |

Milestone 3 (M3) – First drafts available of GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 OpenAPI representations for Release 3 (v3.4.1)

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| **Milestone** | **Description** | **Cut-Off Date** |
| **M3** | * First draft of all OpenAPI representations covering GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 (all v3.4.1) available on the ETSI Forge platform. * This milestone is associated with Task 3. | 30 April 2020 |
| MI/NFV-SOL008ed2020 | 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 4 (M4) – Final versions available of GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 OpenAPI representations for Release 3 (v3.4.1)

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| **Milestone** | **Description** | **Cut-Off Date** |
| **M4** | * Final versions of all OpenAPI representations covering GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 (all v3.4.1) available on the ETSI Forge platform. * This milestone is associated with Task 3. | 31 May 2020 |
| MI/NFV-SOL008ed2020 | SOL WG approval of these OpenAPI representations is planned for early June 2020. |

Milestone 5 (M5) – First drafts available of GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 OpenAPI representations for Release 3 (v3.5.1)

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| **Milestone** | **Description** | **Cut-Off Date** |
| **M5** | * First draft of all OpenAPI representations covering GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 (all v3.4.1) available on the ETSI Forge platform. * This milestone is associated with Task 3. | 30 June 2020 |
| MI/NFV-SOL008ed2020 | 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 6 (M6) – Final versions available of GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 OpenAPI representations for Release 3 (v3.5.1)

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| **Milestone** | **Description** | **Cut-Off Date** |
| **M6** | * Final versions of all OpenAPI representations covering GS NFV-SOL 002, GS NFV-SOL 003, and GS NFV-SOL 005 (all v3.5.1) available on the ETSI Forge platform. * This milestone is associated with Task 3. | 30 July 2020 |
| MI/NFV-SOL008ed2020 | SOL WG approval of these OpenAPI representations is planned for early August 2020. |

Milestone 7 (M7) – First drafts available of Release 3 GS NFV-SOL 009, GS NFV-SOL 011, GS NFV-SOL 012, OpenAPI representations (v3.4.1)

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| **Milestone** | **Description** | **Cut-Off Date** |
| **M7** | * First draft of all OpenAPI representations covering Release 3 API GSs (all v3.4.1) available on the ETSI Forge platform. * This milestone is associated with Task 4. | 30 September 2020 |
| MI/NFV-SOL008ed2020 | 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 8 (M8) – Final versions available of Release 3 GS NFV-SOL 009, GS NFV-SOL 011, GS NFV-SOL 012 OpenAPI representations (v3.4.1)

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| **Milestone** | **Description** | **Cut-Off Date** |
| **M8** | * Final version of all OpenAPI representations covering Release 3 API GSs (all v3.4.1) available on the ETSI Forge platform. * This milestone is associated with Task 4. | 31 October 2020 |
| MI/NFV-SOL008ed2020 | SOL WG approval of these OpenAPI representations is planned for early November 2020. |

Milestone 9 (M9) – First drafts available of Release 3 GS NFV-SOL 009, GS NFV-SOL 011, GS NFV-SOL 012, OpenAPI representations (v3.5.1)

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| **Milestone** | **Description** | **Cut-Off Date** |
| **M9** | * First draft of all OpenAPI representations covering Release 3 API GSs (all v3.5.1) available on the ETSI Forge platform. * This milestone is associated with Task 4. | 30 November 2020 |
| MI/NFV-SOL008ed2020 | 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 10 (M10) – Final versions available of Release 3 GS NFV-SOL 009, GS NFV-SOL 011, GS NFV-SOL 012 OpenAPI representations (v3.5.1)

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| **Milestone** | **Description** | **Cut-Off Date** |
| **M10** | * Final version of all OpenAPI representations covering Release 3 API GSs (all v3.5.1) available on the ETSI Forge platform. * This milestone is associated with Task 4. | 31 December 2020 |
| MI/NFV-SOL008ed2020 | SOL WG approval of these OpenAPI representations is planned for late December 2020. |

**Milestone 11 (M11) – STF Closed**

Planned at the end of December 2020.

## Task summary

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| **N** | **Task / Milestone / Deliverable** | Target date | | | Estimated cost  (EUR) |
| From | | to |
| M0 | Start of work | 6 January 2020 |  | |  | |
| T0 | Project management | 6 January 2020 | 31 Dec 2020 | | 3 000 | |
| T1 | OpenAPI Representations Quality Management | 6 January 2020 | 31 Dec 2020 | | 6 000 | |
| T2 | Create and maintain ETSI NFV Release 2 OpenAPI Representations (v2.7.1) | Ongoing over M1 to M2 | | | 12 000 | |
| M1 | First drafts available of SOL002, SOL003, and SOL005 OpenAPI representations Rel-2 (v2.7.1) |  | 28 February 2020 | |  | |
| M2 | Final versions available of SOL002, SOL003, and SOL005 OpenAPI representations Rel-2 (v2.7.1)  Progress Report#1 to be approved by STF Steering Group (SG) |  | 31 March 2020 | |  | |
| T3 | Create and maintain OpenAPI Representations for GSs propagated in Release 3 (SOL002, SOL003, SOL005) | Ongoing over M3 to M6 | | | 18 000 | |
| M3 | Early drafts of SOL002, SOL003, and SOL005 OpenAPI representations for Release 3 (v3.4.1) |  | 30 April 2020 | |  | |
| M4 | Final versions of SOL002, SOL003, and SOL005 OpenAPI representations for Release 3 (v3.4.1) |  | 31 May 2020 | |  | |
| M5 | Early drafts of SOL002, SOL003, and SOL005 OpenAPI representations for Release 3 (v.3.5.1) |  | 30 June 2020 | |  | |
| M6 | Final versions of SOL002, SOL003, and SOL005 OpenAPI representations for Release 3 (v3.5.1)  Progress Report#2 to be approved by STF Steering Group (SG) |  | 31 July 2020 | |  | |
| T4 | Create and maintain OpenAPI Representations for new Release 3 GSs (SOL009, SOL011, SOL012) | Ongoing over M7 to M10 | | | 21 000 | |
| M7 | Early drafts of SOL009, SOL011, and SOL012 OpenAPI representations for Release 3 (v3.4.1) |  | 30 Sept 2020 | |  | |
| M8 | Final versions of SOL009, SOL011, and SOL012 OpenAPI representations for Release 3 (v3.4.1) |  | 31 Oct 2020 | |  | |
| M9 | Early drafts of SOL009, SOL011, and SOL012 OpenAPI representations for Release 3 (v3.5.1) |  | 30 Nov 2020 | |  | |
| M10 | Final versions of SOL009, SOL011, and SOL012 OpenAPI representations for Release 3 (v3.5.1)  Final Report and SOL008ed2020 (D1) approved by ISG NFV |  | 31 Dec 2020 | |  | |
| M11 | STF closed |  | 31 Dec 2020 | |  | |
| **Total** | | |  | | **60 000** | |

|  |  |
| --- | --- |
| **Task Milestone** | **Description** |
| **J** | **F** | **M** | **A** | **M** | **J** | **J** | **A** | **S** | **O** | **N** | **D** |
| T0 | Project Management |  |  |  |  |  |  |  |  |  |  |  |  |
| T1 | OpenAPI Representations Quality Management |  |  |  |  |  |  |  |  |  |  |  |  |
| T2 | Create and maintain ETSI NFV Release 2 OpenAPI Representations (v2.7.1) |  |  |  |  |  |  |  |  |  |  |  |  |
| M1 | First drafts available of SOL002, SOL003, and SOL005 OpenAPI representations (v2.7.1) |  |  |  |  |  |  |  |  |  |  |  |  |
| M2 | Final versions available of SOL002, SOL003, and SOL005 OpenAPI representations (v2.7.1) |  |  |  |  |  |  |  |  |  |  |  |  |
| T3 | Create and maintain OpenAPI Representations for GSs propagated in Release 3 (SOL002, SOL003, SOL005) |  |  |  |  |  |  |  |  |  |  |  |  |
| M3 | Early drafts of SOL002, SOL003, and SOL005 OpenAPI representations for Release 3 (v3.4.1) |  |  |  |  |  |  |  |  |  |  |  |  |
| M4 | Final versions of SOL002, SOL003, and SOL005 OpenAPI representations for Release 3 (v3.4.1) |  |  |  |  |  |  |  |  |  |  |  |  |
| M5 | Early drafts of SOL002, SOL003, and SOL005 OpenAPI representations for Release 3 (v3.5.1) |  |  |  |  |  |  |  |  |  |  |  |  |
| M6 | Final versions of SOL002, SOL003, and SOL005 OpenAPI representations for Release 3 (v3.5.1) |  |  |  |  |  |  |  |  |  |  |  |  |
| T4 | Create and maintain OpenAPI Representations for new Release 3 GSs (SOL009, SOL011, SOL012) |  |  |  |  |  |  |  |  |  |  |  |  |
| M7 | Early drafts of SOL009, SOL011, and SOL012 OpenAPI representations for Release 3 (v3.4.1) |  |  |  |  |  |  |  |  |  |  |  |  |
| M8 | Final versions of SOL009, SOL011, and SOL012 OpenAPI representations for Release 3 (v3.4.1) |  |  |  |  |  |  |  |  |  |  |  |  |
| M9 | Early drafts of SOL009, SOL011, and SOL012 OpenAPI representations for Release 3 (v3.5.1) |  |  |  |  |  |  |  |  |  |  |  |  |
| M10 | Final versions of SOL009, SOL011, and SOL012 OpenAPI representations for Release 3 (v3.5.1) |  |  |  |  |  |  |  |  |  |  |  |  |
| M11 | STF final report approved by the ISG NFV, STF Closed |  |  |  |  |  |  |  |  |  |  |  |  |

# Expertise required

## Team structure

2 participants to ensure the following mix of competences:

|  |  |
| --- | --- |
| **Priority** | **Qualifications and competences** |
| High | Expert knowledge of ETSI NFV Group Specifications listed in clause 6.1 |
| High | Expert knowledge of NFV management and orchestration |
| High | Expert knowledge of the OpenAPI specification language |
| High | Experience with software engineering best practices and excellent knowledge of Git |
| High | Expert knowledge of scripting languages (Bash, Python, Javascript) |
| High | Knowledge of the tools for OpenAPIs drafting and reporting (in particular Swagger tools) |

Part IV: STF performance evaluation criteria

# Performance Indicators

Contribution from ETSI Members to STF work

* Bi-weekly Steering Committee meetings
* Contributions/comments received from the reference TBs

Contribution from the STF to ETSI work

* Contributions to SOL WG meetings throughout 2020
* Presentations in workshops, conferences, stakeholder meetings

Liaison with other stakeholders

* Comments received on OpenAPI representations via BugZilla
* Propose resolution to comments received on the SOL 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 TB
* Comments from Quality review by ETSI Secretariat

Time recording

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

During the course of 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.

Time recording

For reporting purposes, the STF experts shall fill in the time sheet 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** |
| 1.0 | 30 July 2019 | B. Chatras  V. Brusse |  | Initial Version |
| 1.1 | 30 Aug 2019 | L;Vreck |  | Applied new STF ToR template |
| 1.2 | 12 Sep 2019 | Y. Sakho | ISG Approved | Editorials before BOARD/OCG consultation |
| 1.3 | 08 Oct 2019 | Y. Sakno | Board Approved | Update before CL publication |

1. <https://nfvprivatewiki.etsi.org/index.php?title=OpenAPI_development_guidelines> [↑](#footnote-ref-1)