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| **Title\*:** | Specification and testing of REST API in ETSI | | |
|  |  | | |
| from **Source**\*: | ETSI | | |
| Contact: | Michele Carignani | | |
|  |  | | |
| input for **Committee**\***:** | MTS | | |
|  |  | | |
| Contribution **For\*:** | Decision |  |  |
|  | Discussion | **X** |  |
|  | Information |  |  |
|  |  | | |
| Submission date**\***: | 2018-09-18 | | |
|  |  | | |
| Meeting & Allocation: | **MTS#75** - | | |
| Relevant WI(s), or deliverable(s): |  | | |
|  | | | |

**ABSTRACT:***Call for a discussion and action in TC MTS about supporting REST APIs and service based architectures in ETSI technical groups.*

# Rationale

More and more telecommunication and digital interfaces are designed using the REST paradigm and “RESTful protocols” (e.g. HTTP(S), CoAP, MQTT). This phenomenon is spreading in ETSI standardization activities for several technologies, often quite different in nature.

As adoption raises, it is clear that “REST API” or simply API development needs to be:

* Fast: the interfaces are simpler than other approaches and tend to have shorter lifespan;
* Automatable: Given the high number of conventions in the design of an API, parts of the specification, implementation and testing process are well suited to be automated;
* Developer friendly: developer need support in the discovery and implementation of the interfaces by using tools and methodologies close to the software development.

The development of official ETSI guides for API specification and testing would support:

* Consolidation of efforts: TBs and PPs would be able to leverage from others’ experience
* Delivery time of specifications
* Standards quality (specification, testability, interoperability)

# Related work in the ETSI TBs

Technical groups and Partnership projects that specifies APIs in ETSI include (but are not limited to) the following.

## OneM2M Partnership project

OneM2M defines a RESTful APIs for its internal and external interfaces, in an abstract way with respect to the protocol.

## ISG NFV

* Specification of REST APIs for Management and Orchestration currently in the following work items:
  + NFV SOL 002
  + NFV SOL 003
  + NFV SOL 005
* Guidelines and conventions for APIs in the following contribution:
  + <https://docbox.etsi.org/ISG/NFV/SOL/05-CONTRIBUTIONS/2018//NFVSOL(18)000100r1_ETSI_NFV_SOL_REST_API_Conventions.zip>
* Conformance testing for NFV APIs
  + NFV TST 010

## ISG MEC

* Specification of REST APIs for MEC Services and Application enablement currently in the following work items:
  + MEC 011
  + MEC 012
  + MEC 013
  + MEC 014
  + MEC 015
  + MEC 016

## ISG CIM

* Context Information Management (CIM), Application Programming Interface (API)
  + CIM 004

# Topics for discussion

The content of the discussion or study includes but is not limited to the following items:

* **API Specification**
  + Which are the best practices for API specification in terms of design, to be clear, functional, versionable, maintainable.
  + Which are the best specification languages for REST APIs (OpenAPIs, Swagger, RAML, GraphQL, etc.) to enable design and publication of APIs in a formalized way, to enable automation in the process of adoption, maintenance and feedback to the standardized interface.
  + What are the development platforms who could support ETSI groups in drafting, editing and enabling feedback for APIs
  + Normative and informative provisions necessary for a testable and interoperable specification of APIs
* **API Testing**
  + Testing methodology i.e. what should be tested and how.
  + Using ETSI Standards to specify test for REST API (TTCN, TDL)
  + Test execution best practices

# Call for a discussion in ETSI TC MTS

Given the above, we call for a discussion and evaluation in TC MTS on possible actions to undertake, such as:

* Publication of an **ETSI White Paper**
* Activation of a **work item** (normative or informative)
* Request for external expertise in the **support of active or planned work items**