OpenSlice
by ETSI

An overview

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History

Last 5 years
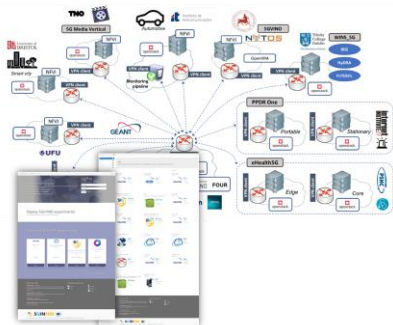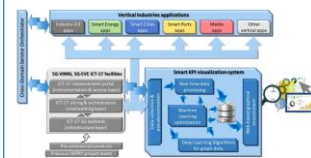

2018

2019

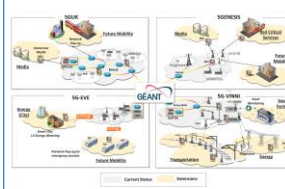**2020**

2021

2022

2023

5GinFIRE: First approach (2018)
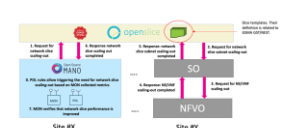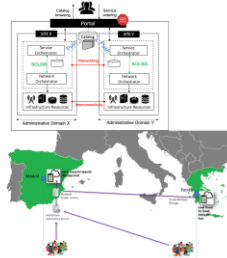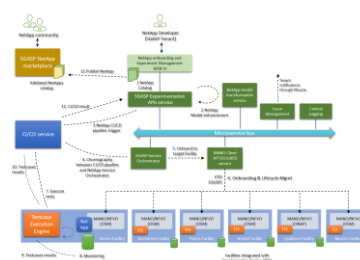
5G-VINNI

5G SOLUTIONS

5G VICTORI

ETSI ZSM PoC #2

"Automated Network Slice Scaling in Multi-Site Environments".

5GASP

FIDAL

ACROSS

INCODE

Scope

OpenSlice

OpenSlice
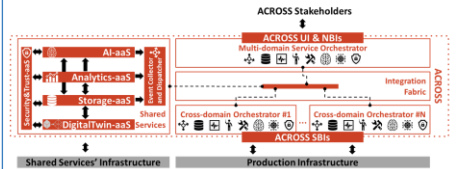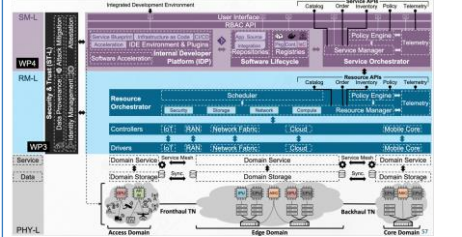
OpenSlice is an open source, service-based Operations Support System (OSS) prototype for delivering NSaaS and in general NaaS following specifications from main Standards Development Organizations (SDOs), including ETSI, TM Forum, GSMA 3GPP.

OpenSlice was originally developed in the context of EU funded project 5G-VINNI (now completed) and has been adopted and received contribution from several other research projects.

OpenSlice complements other future network activities at ETSI (NFV, ZSM, OSM, TFS) and facilitates prototyping, experimentation and validation of complex telco use cases.

Early experimentation and regular feedback to standardization groups will contribute to higher quality standards and faster time to market.
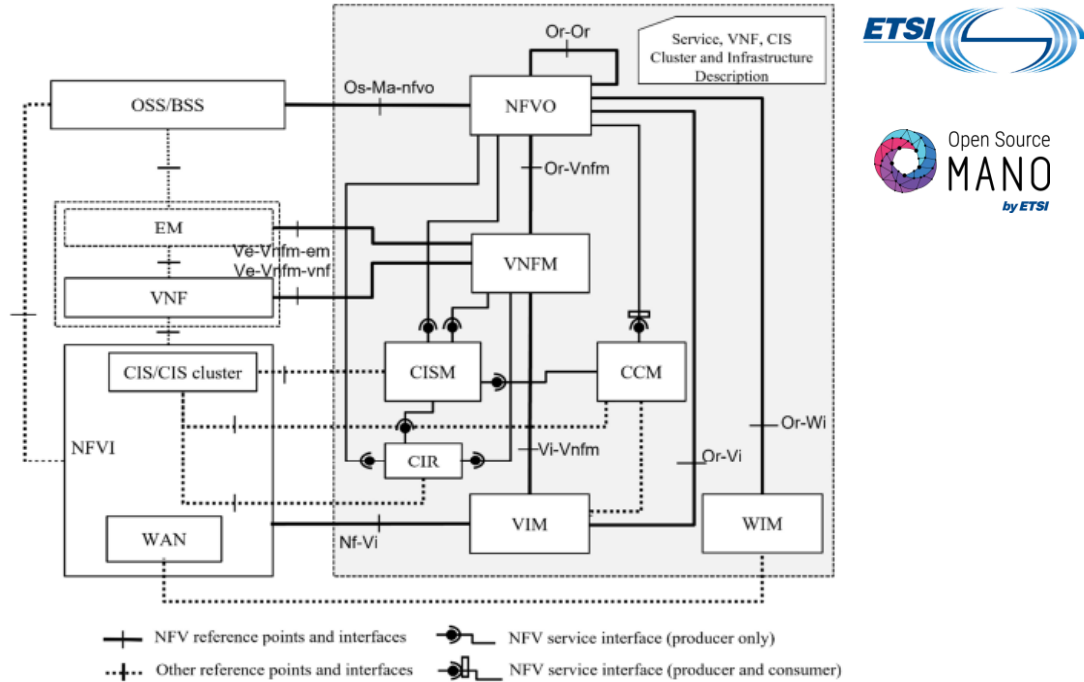
General usage

Figure 5.2-3: NFV-MANO architectural framework with support for containers

ETSI GS NFV006
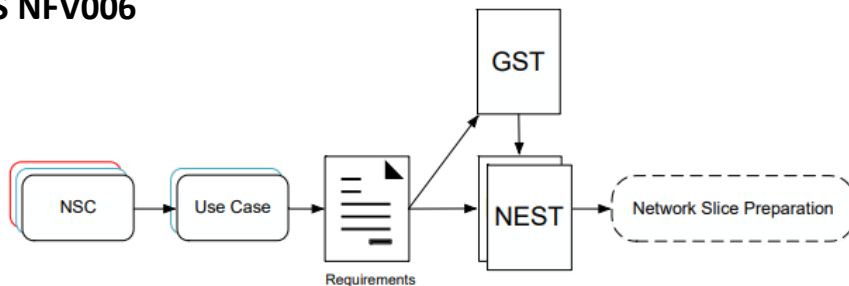
Figure 6.1.1-1: GST and NEST in context of the network slice lifecycle

ETSI GS ZSM 0003

- OpenSlice is an open source Operations Support System (OSS) prototype as described in the **ETSI NFV** Architectural Framework.

- It offers **NSaaS** following **ETSI NFV, TMFORUM, 3GPP** and **ETSI ZSM** principles.

- It exposes **TM Forum OpenAPIs** and interacts with NFV Orchestrators through **ETSI NFV** APIs and Data Models, which makes it interoperable with **Open Source MANO (OSM).**

- Network Slices are described according to **GSMA** Generic Slice Template characterized to enable exposing **TM Forum NaaS** API Suite.

3GPP Network Slice journey (NSaaS model) - high-level call flow

Figure A.2: Network Slice journey (NSaaS model) – high-level call flow
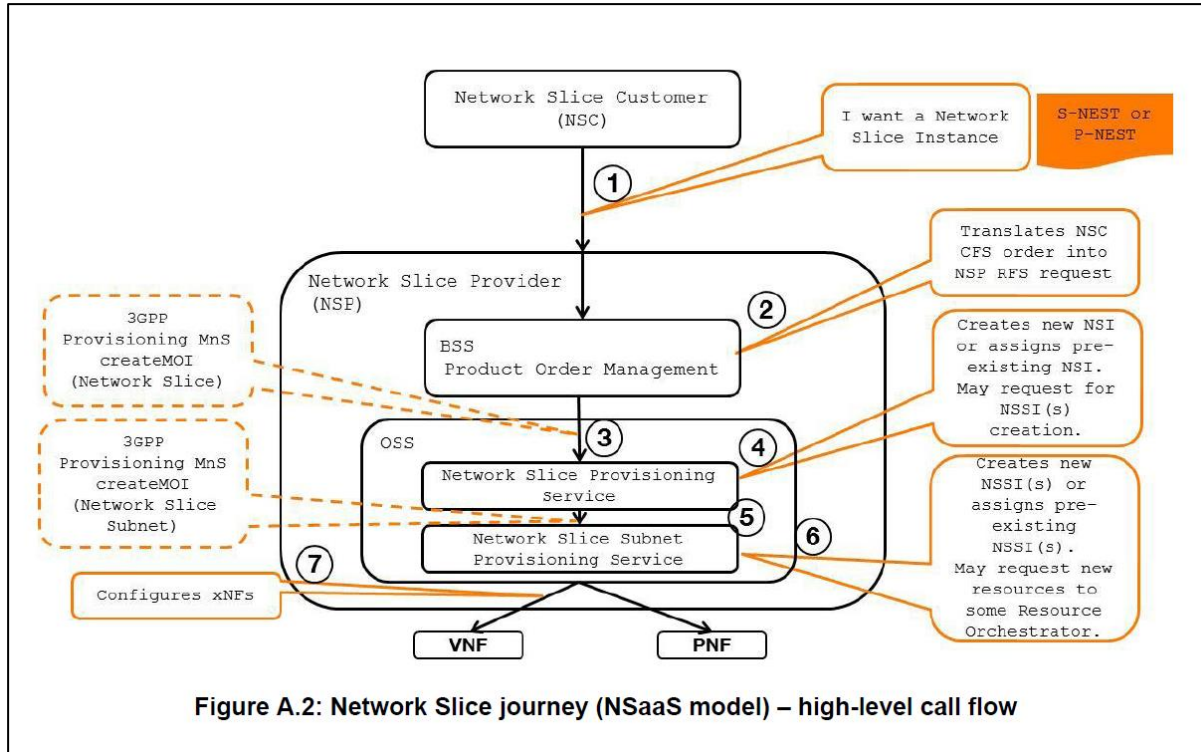
Release 16 3GPP TS 28.531 V16.6.0 (2020-07)

Figure A.1: From GST to S-(/P-)NEST based product ordering

Rel.16 3GPP TS 28.541 V16.5.0 (2020-06)

TM Forum

Figure 1. Operational Domain Management Functions and Capabilities
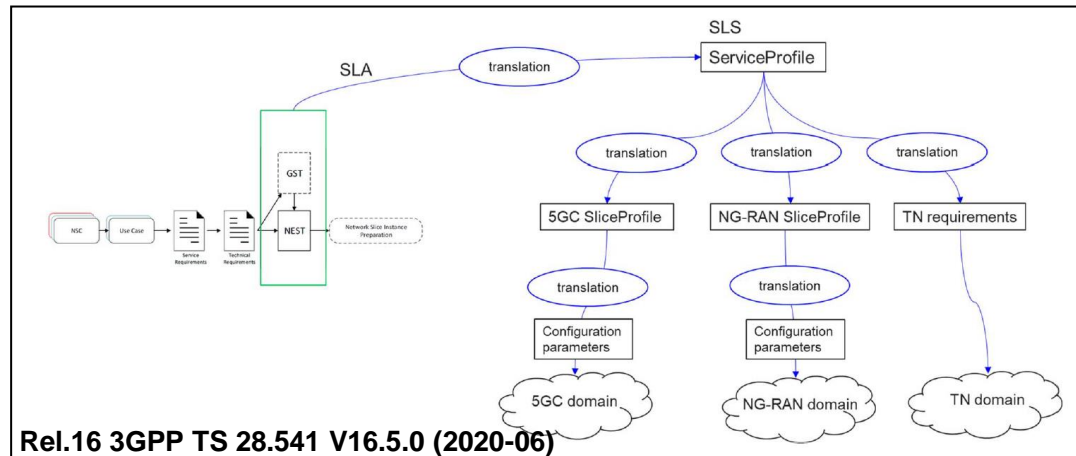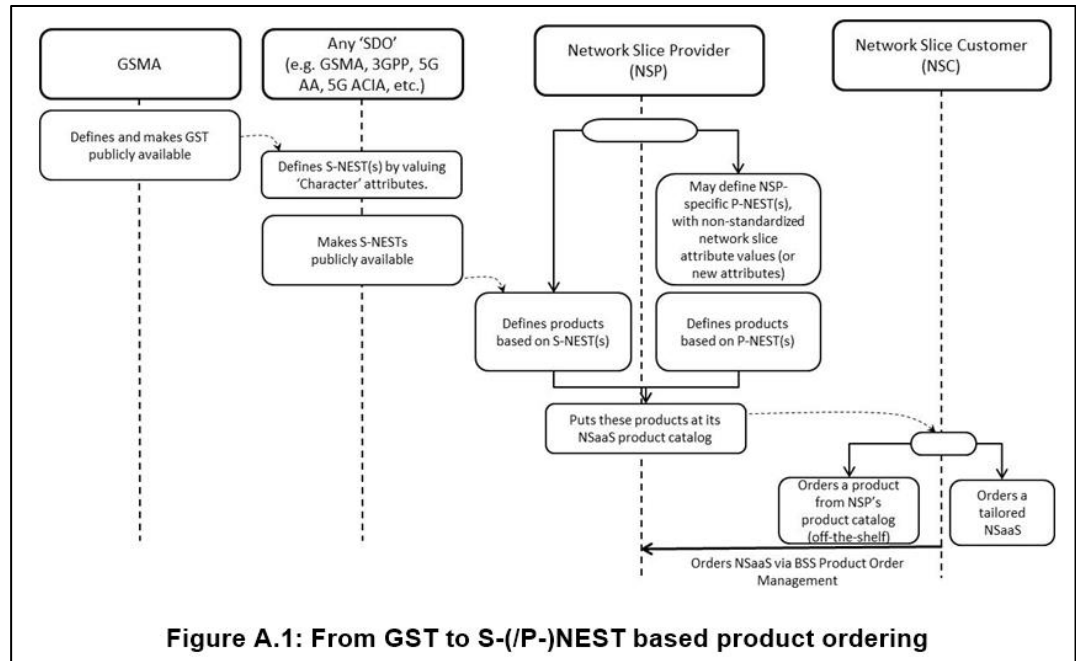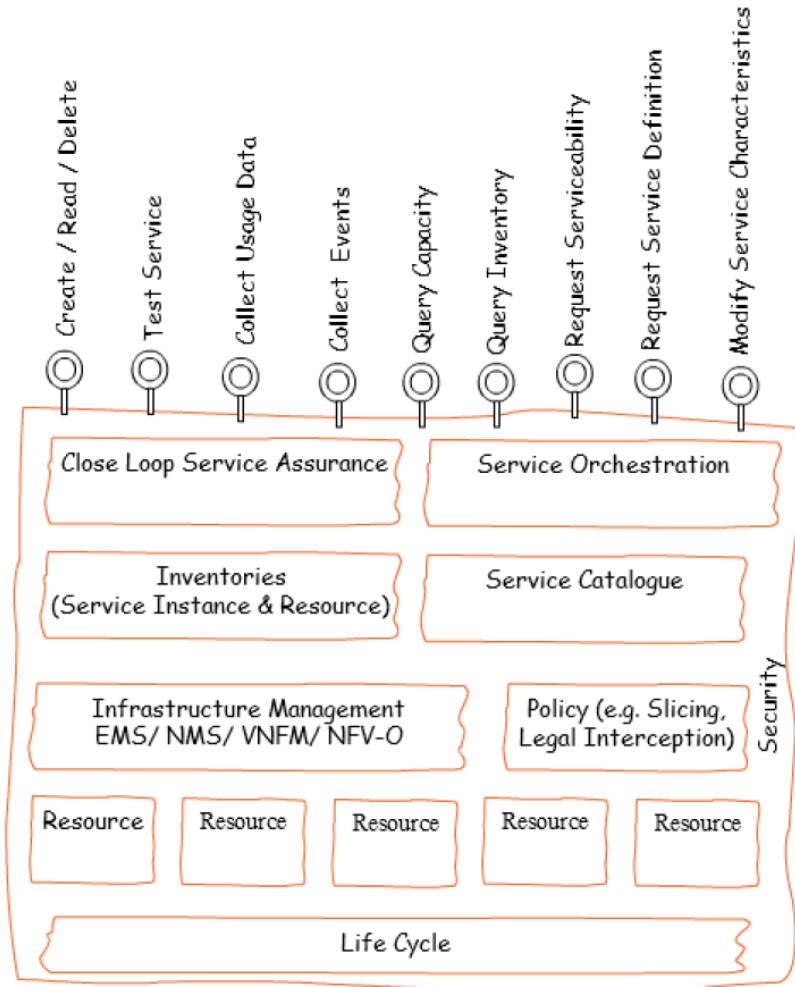
TMF909 Network as a Service Management API REST Specification (2020)

The NaaS API component suite supports the lifecycle functions required to manage the network capabilities exposed as Network as a Service and managed by operational domains.

Architecture and services overview

Architecture

OpenSlice

5G Vertical Customers
Service Providers/Admins

NFV Developer

Applications

| Services portal | Resource portal | Testing portal | Product portal | NFV Catalog Management WEB UI |

TMF APIs service

3rd party VNF/NSD Management API service

Kroki
kroki

mysql

Bugzilla

elastic

KEYCLOAK
Auth Service

Bugzilla client

Central Log Elastic Client

Service/Resource/Test/...
Specifications Catalogs

VNF/NSD Catalog

Service Bus

OSOM: Service Order and Service Orchestration

OAS: Assurance Service

MANO Client API (SOL005) service

ACTIVEMQ

TMF APIs

ETSI
SOL005

Openslice Services information exchange with multiple OSSs or SOs

OSS/BSS and External Service Orchestrators

MANO/NFVO

Openslice NFV information exchange with multiple MANOs/NFVOs

Example UIs

OpenSlice

Services catalog

Product catalog

NFV artifacts

Supported TMF Open APIs

Endpoint	Title	Description	Version
/tmf-api/serviceCatalogManagement/v4	633 Service Catalog Management	Provides a catalog of services.	4.0.0
/tmf-api/productCatalogManagement/v4/	620 Product Catalog Management	Provides a catalog of products.	4.0.0
/tmf-api/productOrderingManagement/v4/	622 Product Ordering	Provides a standardized mechanism for placing a product order.	4.0.0
/tmf-api/resourceCatalogManagement/v4	634 Resource Catalog Management	This is Swagger UI environment generated for the TMF Resource Catalog Management specification.	4.0.0
/tmf-api/serviceInventory/v4/	638 Service Inventory Management	Provides a consistent/standardized mechanism to query and manipulate the Service inventory.	4.0.0
/tmf-api/serviceOrdering/v4	641 API ServiceOrdering	Provides a standardized mechanism for managing Service Order.	4.0.0
/tmf-api/serviceQualityManagement/v2	657 Service Quality Management	This is Swagger UI environment generated for the TMF Service Quality Management specification.	2.0.0
/tmf-api/partyRoleManagement/v4/	669 Party Role Management	This is Swagger UI environment generated for the TMF Party Role Management specification.	4.0.0
/tmf-api/party/v4/organization	632 API Party	Provides standardized mechanism for party management such as creation, update, retrieval, deletion and notification of events.	4.0.0
/tmf-api/agreementManagement/v2/	651 Agreement Management	This is Swagger UI environment generated for the TMF Agreement Management specification.	2.0.0
/tmf-api/resourceOrderingManagement/v4	652 Resource Order Management-v4.0.0	This is Swagger UI environment generated for the TMF 652-Resource Order Management-v4.0.0 specification.	4.0.0
/tmf-api/accountManagement/v4	666 Account Management	This is Swagger UI environment generated for the TMF Account Management specification.	4.0.0
/tmf-api/customerManagement/v4	629 Customer Management	TMF Customer Management	4.0.0
/tmf-api/userinfo	691 Federated ID	TMF Federated ID	1.0.0
/tmf-api/ServiceActivationAndConfiguration/v3/	640 API Service Activation and Configuration	Provides the ability to activate and configure Services.	3.0.0
/tmf-api/alarmManagement/v4/	642 API Alarm		4.0.0
/tmf-api/serviceTestManagement/v4	653 Service Test Management	Provides the ability to manage tests of provisioned Services.	4.0.0
/tmf-api/resourceInventoryManagement/v4	639 API Resource Inventory Management	Provides the ability to manage Resources.	4.0.0
/tmf-api/lcmrulesmanagement/v1/	LCM Rules	Custom API environment for LCM Rules	1.0.0
/tmf-api/resourcePoolManagement/v1	685 Resource Pool Management	Resources that can be reserved are only in one pool.	1.0.0

Related Research Activities

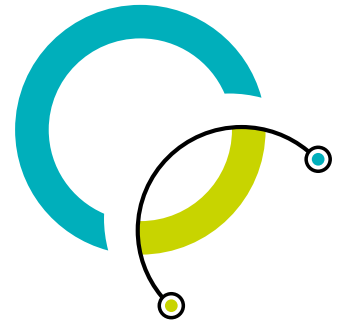| EU funded project	Status	URL
5G-VINNI	Completed	https://www.5g-vinni.eu/
5G-SOLUTIONS	Completed	https://5gsolutionsproject.eu/
5GinFIRE	Completed	https://5ginfire.eu
5G-VICTORI	Ongoing	https://www.5g-victori-project.eu/
5GASP	Ongoing	http://5gasp.eu
ACROSS	Ongoing	http://across-he.eu/
FIDAL	Ongoing	http://fidal-he.eu/
INCODE	Ongoing	https://www.incode-project.eu/

Others....

License Considerations

◉ Code seeds have been contributed and published under Apache 2.0

◉ Apache 2.0 will be used in the software developed and published by SDG OSL

◉ Apache Software License 2.0 is

  ◉ Well-known and widely adopted by the Telecom ecosystem

  ◉ Business friendly

  ◉ Already in use at ETSI in OSM, TeraFlowSDN and ISG ARF

◉ SDG OSL will not directly develop ETSI standards, only software

  ◉ Standardization work will happen in appropriate groups (TM Forum, 3GPP, ETSI ISG NFV, ETSI ISG ZSM, etc.) according to their IPR rules

ETSI OSL Founding Members

- ⦿ ETSI members:
  - ⦿ Telefónica SA, Spain
  - ⦿ University of Murcia, Spain
  - ⦿ Instituto de Telecomunicações, Portugal
  - ⦿ Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain
  - ⦿ University of Patras, Greece
- ⦿ Participants:
  - ⦿ Ubitech, Greece
  - ⦿ Odin Solutions, Spain
  - ⦿ K3Y, Bulgaria

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by ETSI

Thank You!