ETSI NFV POCS AND PLUGTESTS

AS OPPORTUNITIES FOR COLLABORATION … WHILE FOSTERING NFV INTEROPERABILITY

Presented by Silvia Almagia ETSI (CTI)　　　　　ETSI (NFV) meets OpenStack, Denver, September 2017

ABOUT CTI

ETSI Centre for Testing and Interoperability

We support different groups at ETSI (NFV, MEC, 3GPP, OSM …) to achieve and validate the *interoperability, conformance and "implementability"* of standards with :

- Test methodologies and specifications
- Plugtests™ (interop events)
- HIVE (Hub for Interoperability and Validation and ETSI)
- Proofs of Concept

And lately, also:

- Open Source project and community hosting (ETSI OSM)
- OpenAPIs hosting, development and validation

NFV POC FRAMEWORK

- Launched in 2013 with the first set of NFV specs, main goals:
    - Look for practical results and get feedback
    - Foster ecosystem and cross-company collaboration
- Main principles:
    - Multi-vendor PoC Team: min 2 vendors & 1 operator
    - Challenge by choice: PoC scope & goals set by the PoC Team
    - Commitment to provide feedback to ETSI NFV
- Process
    - PoC Team fills in and submits PoC Proposal
    - CTI & TST Chairs review and accept PoC Proposal
    - PoC Team runs PoC & demo(s)
    - PoC Team fills in and submits PoC Report
- 43 multi-vendor NFV PoCs to date, +120 organisations involved
    - Check them out!
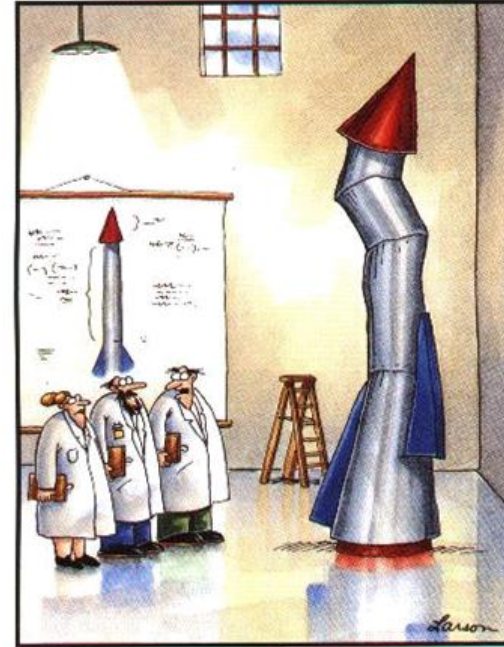

www.etsi.org/nfv-poc

NFV PLUGTESTS

- Provide a neutral and coordinated environment for collaborative testing and validation among different organizations

  - Continuous and ubiquitous environment
  - Periodic face to face events

PLU #2 ——— **PLU #3** ——— Remote Testing ⟶

- ETSI does not certify or endorse participating companies or products

- We provide the framework, the means, the methodology, the procedures, the test plan...

- Actual testing is run collaboratively by participants

- Free and open to any organisation bringing something to test or support the testing

HIVE
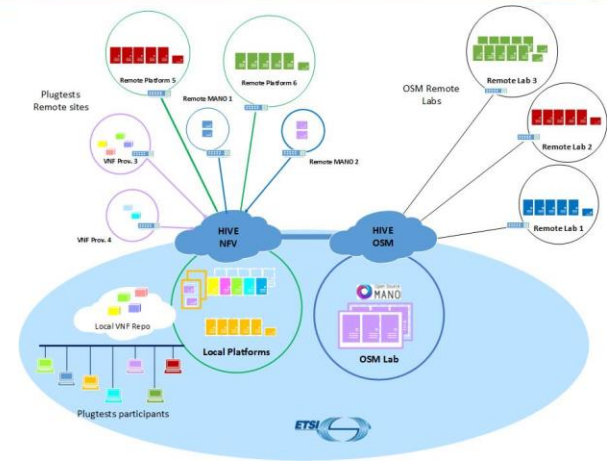
Hub for Interoperability and Validation at ETSI
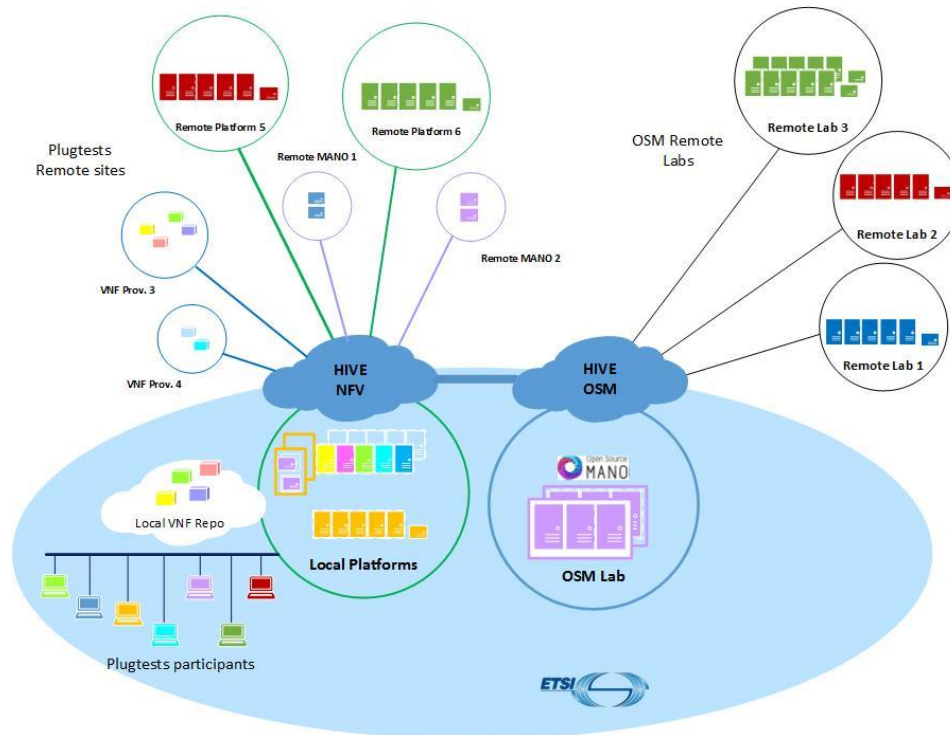
- Allows to securely interconnect remote labs to ETSI
- Seamless access among connected labs and local infrastructure at ETSI
- Supports Plugtests on many different technologies (NFV, MCPTT, Small Cells…)
- Supports OSM Remote Labs network & CI/CD pipeline

1ST NFV PLUGTESTS

- Madrid, January 2017
- 31 participating companies
- 29 remote labs
- 35 Functions Under Test (commercial and open source):
  - 15 VNFs,
  - 9 MANOs,
  - 11 NFVI&VIM
- Several supporting open source communities:
  - ETSI OSM,
  - Open Baton,
  - OPNFV,
  - Open-O
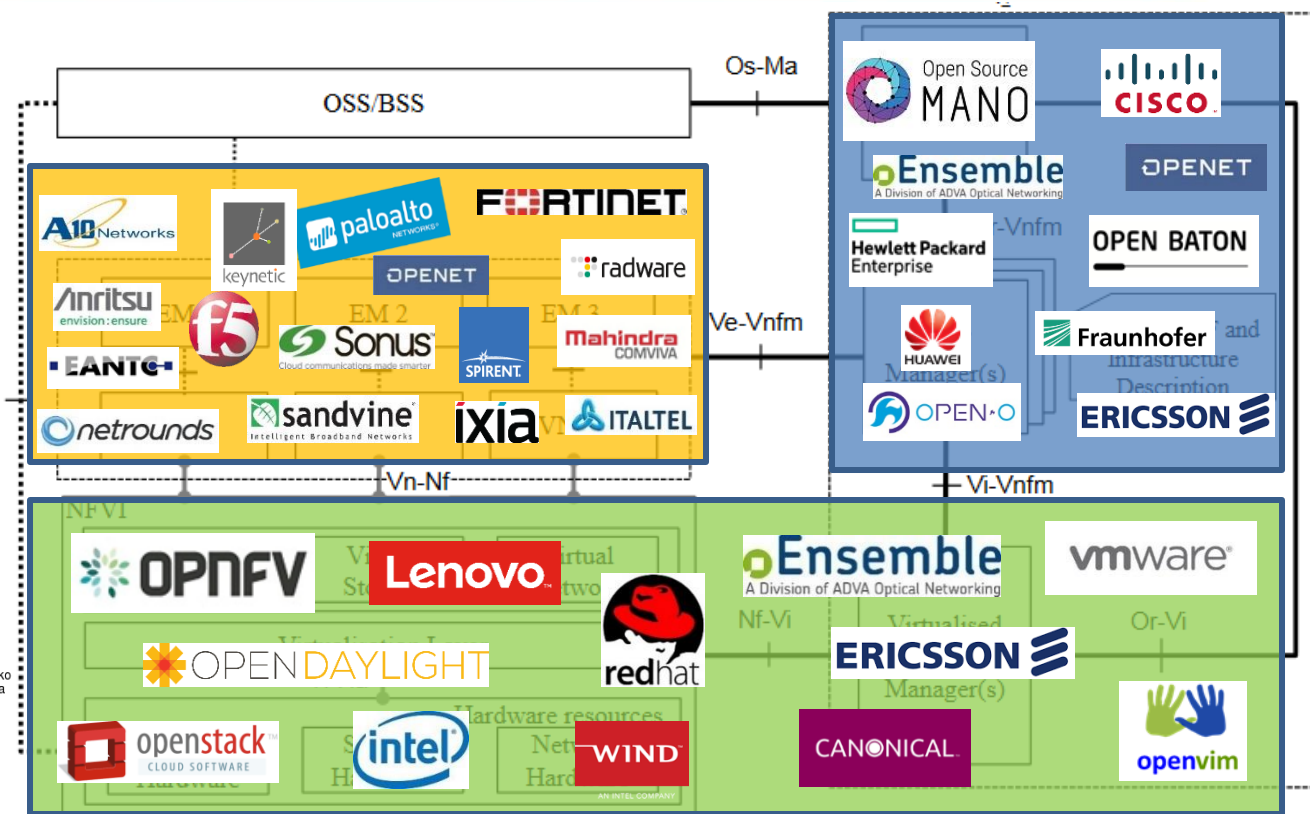
GOALS & SCOPE

- **Interoperability** Test Sessions
  - Among different combinations of Functions Under Test (FUTs): VNFs, MANO, NFVI&VIM
  - At a functional level (conformance not enforced)
- Validate basic **NFV Rel 2 capabilities**:
  - NSD, VNF Package and SW Image Management
  - NS and VNF Life Cycle Management, VR Management
- "**Early**" Plugtests
  - ETSI NFV Data Models and APIs still under development
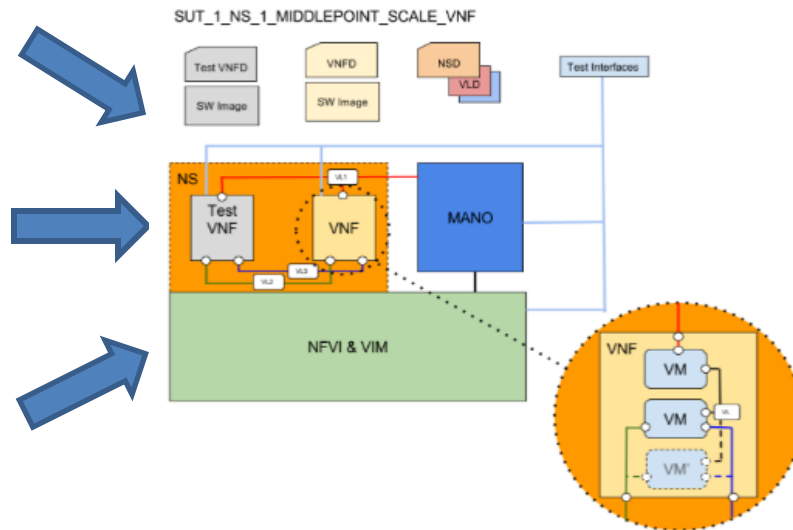 - IOP through open APIs, plugins, …
  - …and remote integration

MANO

VNFs

NFVI&VIM
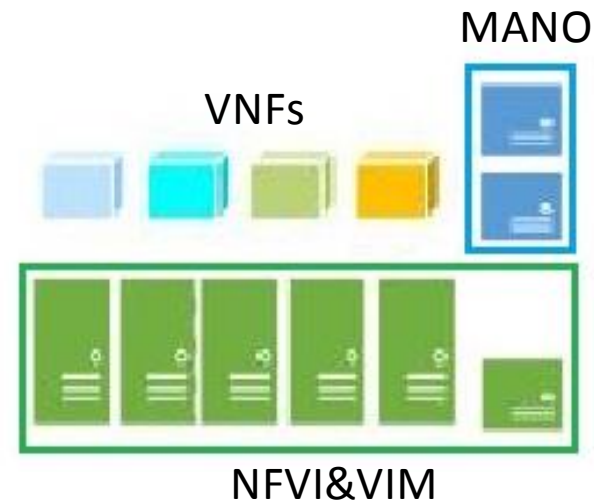
TEST PLAN DEVELOPMENT

- Open & continuous process during Plugtests preparation
- Implementation agnostic, functional level
- Resulting Test Plan was contributed to NFV-TST007

Interoperability Test Description	
Identifier	TD_NFV_NS_LCM_SCALE_OUT_VNF_001
Test Purpose	To verify that a VNF in a NS can be successfully scaled out (by adding VNFC instances (VMs)) when triggered by a MANO operator
Configuration	SUT_1_NS_1_ENDPOINT_SCALE_VNF SUT_1_NS_1_MIDDLEPOINT_SCALE_VNF
References	ETSI GS NFV-IFA005 V2.1.1 (clause 5.3.4) ETSI GS NFV-IFA006 V2.1.1 (clauses 7.3.1, 7.4.1) ETSI GS NFV-IFA013 V2.1.1 (clause 7.3.4) ETSI GS NFV-IFA010 V2.1.1 (clauses 6.2.3, 6.3.3)
Applicability	* MANO can request VIM_NFVI to allocate virtualised resources * VIM_NFVI supports allocating virtualised resources * MANO supports triggering scale out with an operator's action * MANO supports scale out by adding VNFC instances (VMs) * NS/VNF supports scale out by adding VNF instances (VMs)
Pre-test conditions	* NS is instantiated (TD_NFV_NS_LCM_INSTANTIATE_001)

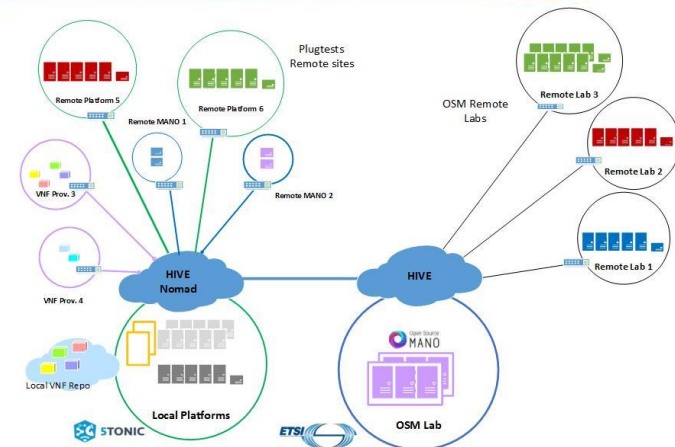| Test Sequence	Step	Type	Description	Result
	1	Stimulus	Trigger NS scale out (by adding VNFC instances (VMs) to a VNF in the NS) in MANO with an operator action	
	2	IOP Check	Verify that the requested resources have been allocated by the VIM according to the descriptors	
	3	IOP Check	Verify that the additional VM(s) have been deployed (i.e by querying the VIM)	
	4	IOP Check	Verify that the additional VM(s) are running and are reachable through the management network	
	5	IOP Check	Verify that the additional VM(s) are connected to the VL(s) according to the descriptors	
	6	IOP Check	Verify that NS has been scaled out by running the end-to-end functional test	
IOP Verdict				

TIMELINE OF THE 1ST NFV PLUGTESTS

- **NOV'16 – JAN'17 : Remote integration and pre-testing**
  - Remote labs connection to HIVE
  - FUT documentation, pre-testing procedures
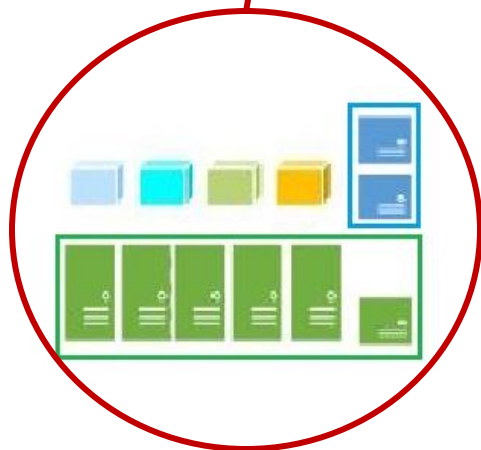 - Test Plan development
  - Weekly conf-calls to sync-up

- **23 JAN-3 FEB'17 : 1st Plugtests Event**
  - At least 1 representative per FUT onsite
  - FUTs local or remote (through HIVE)
  - Test Session Scheduler, goals:
    - Maximise the number of test sessions and tests run
    - Ensure fair and balanced FUT combinations
    - Keep all participants busy all the time!

DAILY SCHEDULE

TEST SESSION REPORTS

1ST PLUGTESTS RESULTS

Results per Test Case (%)

Onboarding & Instantiation
- TD_NFV_SETUP_ONBOARD_VNF_PKG_001
- TD_NFV_SETUP_ONBOARD_NSD_001
- TD_NFV_NS_LCM_INSTANTIATE_001

Scale (+/- VNF i)
- TD_NFV_NS_LCM_SCALE_OUT_001
- TD_NFV_NS_LCM_SCALE_IN_001
- TD_NFV_NS_LCM_SCALE_OUT_002
- TD_NFV_NS_LCM_SCALE_IN_002
- TD_NFV_NS_LCM_SCALE_OUT_003
- TD_NFV_NS_LCM_SCALE_IN_003
- TD_NFV_NS_LCM_SCALE_OUT_004
- TD_NFV_NS_LCM_SCALE_IN_004

Scale VNF (+/- VNFC i)
- TD_NFV_NS_LCM_SCALE_OUT_VNF_001
- TD_NFV_NS_LCM_SCALE_IN_VNF_001
- TD_NFV_NS_LCM_SCALE_OUT_VNF_002
- TD_NFV_NS_LCM_SCALE_IN_VNF_002
- TD_NFV_NS_LCM_SCALE_OUT_VNF_003
- TD_NFV_NS_LCM_SCALE_IN_VNF_003
- TD_NFV_NS_LCM_SCALE_OUT_VNF_004
- TD_NFV_NS_LCM_SCALE_IN_VNF_004

NS Update
- TD_NFV_NS_LCM_UPDATE_STOP_VNF_001
- TD_NFV_NS_LCM_UPDATE_START_VNF_001
- TD_NFV_NS_LCM_UPDATE_ADD_VNF_VL_001
- TD_NFV_NS_LCM_UPDATE_REM_VNF_VL_001

Terminate & Teardown
- TD_NFV_NS_LCM_TERMINATE_001
- TD_NFV_TEARDOWN_DELETE_NSD_001
- TD_NFV_TEARDOWN_DELETE_VNF_PKG_001

160 Test Sessions
+1500 individual test results
Feedback to ETSI NFV

PLUGTESTS OUTCOME

- NFV Plugtests proved to be a great opportunity for collaboration…
  - Hands-on collaboration to "make it work"
  - Meet and test with many other players in the ecosystem working on different solutions
  - Understand usage of own products by 3rd parties, fix a lot of bugs!!
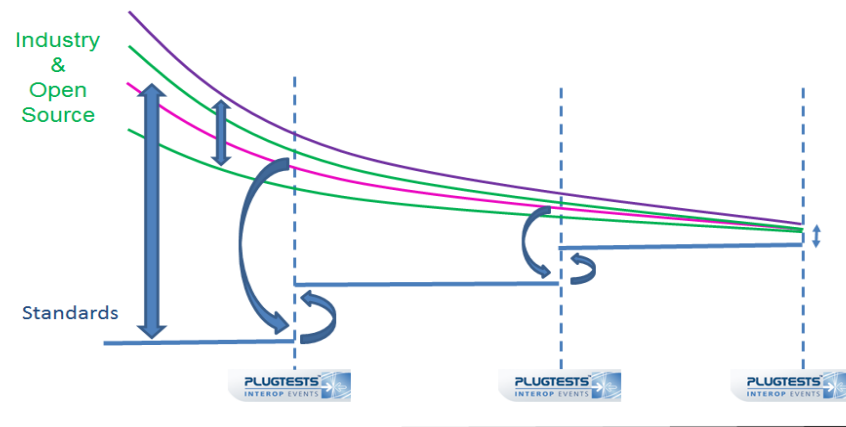
…. and a very powerful tool for standards validation!!
  - Reality check: **align** expectations
  - **Gather consolidated feedback**
  - Help to **reduce gaps** between standards and implementations
- Pointers:
  - 1st NFV Plugtests Test Plan
  - 1st NFV Plugtests Report
 - 1st NFV Plugtests video (2-3 mins)

LOOKING FORWARD

- **2nd NFV Plugtests** event, 15-19 January 2018
  - @ETSI, Sophia Antipolis, FRANCE
    - Registration is **OPEN** (until mid-October)
    - OCT-DEC 2017: Remote integration & pre-testing
  - Building on the learnings of 1st Plugtests
    - Considering new aspects such as fault and performance management, multi-site, network path, enhanced platform awareness, NFV APIs...
  - ETSI OSM, OpenBaton, OPNFV, ... and **OpenStack!** ☺ as supporting open source communities
  - Co-located with 1st ETSI OSM Hackfest
- **3rd NFV Plugtests** event, mid 2018
  - Co-located with OPNFV Plugfest
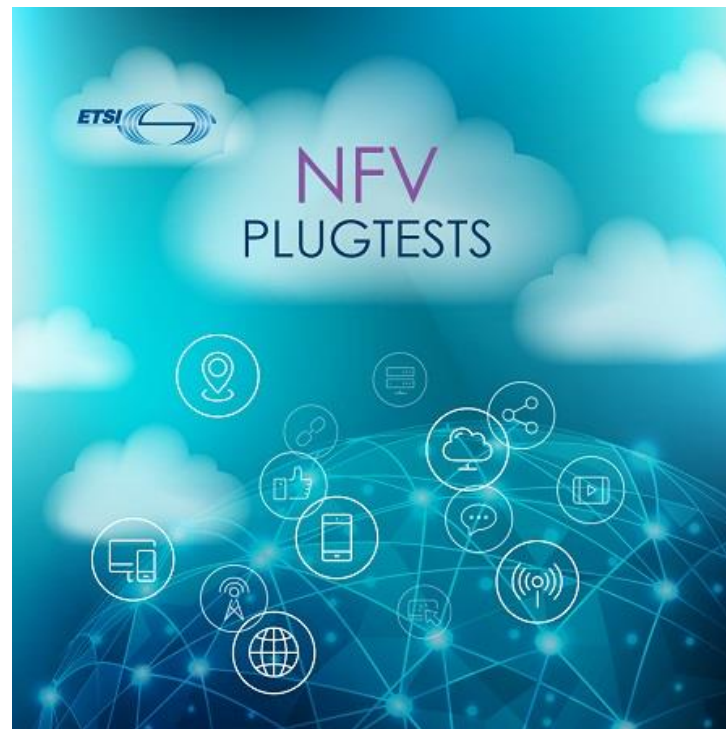
OPPORTUNITIES FOR COLLABORATION

- Submit a [POC Proposal](#)

- Participate to [Plugtests](#)

- Help to shape the next test plan:
  - [Working document (google docs)](#)
  - Input, comments, feedback, … most welcome!

- Other ideas? Let us know!

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Thank you!