

Validation as a Service (VaaS)

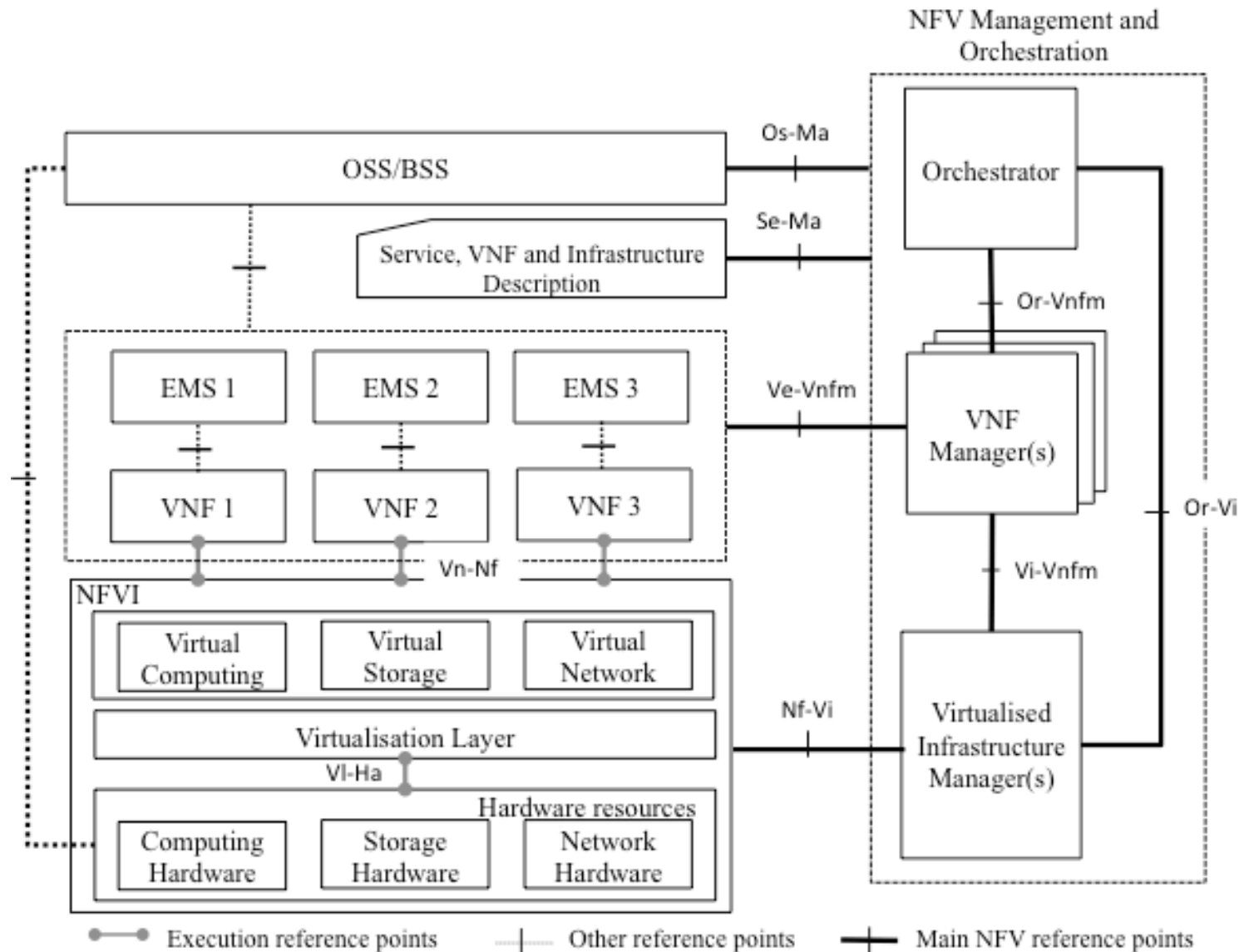
Wen-Pai Lu, Ph.D.

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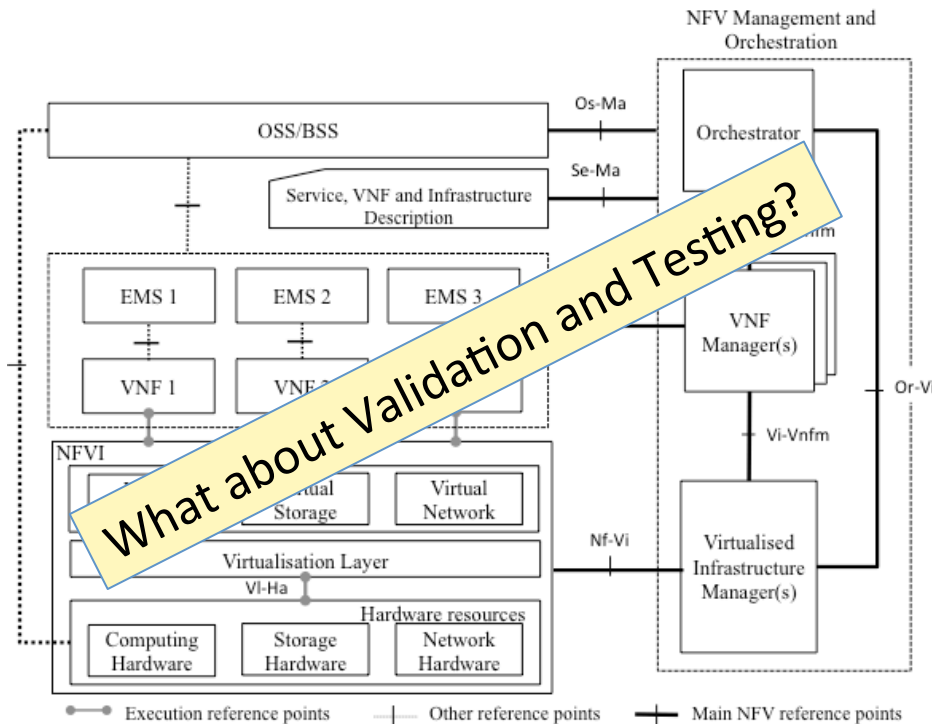
Federated Test Beds Workshop

May 3rd, 2016

Let's Look at the ETSI NFV Framework

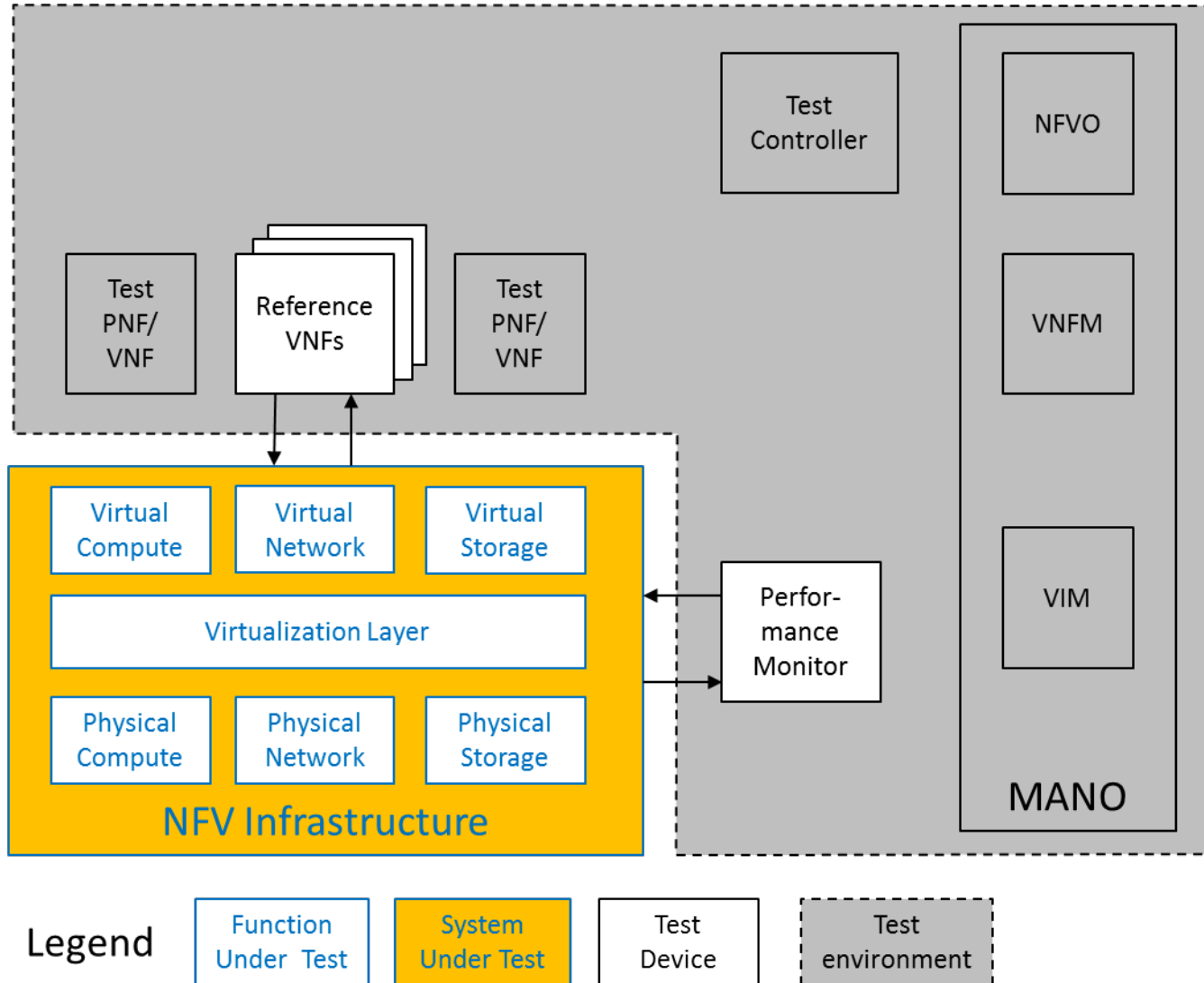


What Have Been Focus?

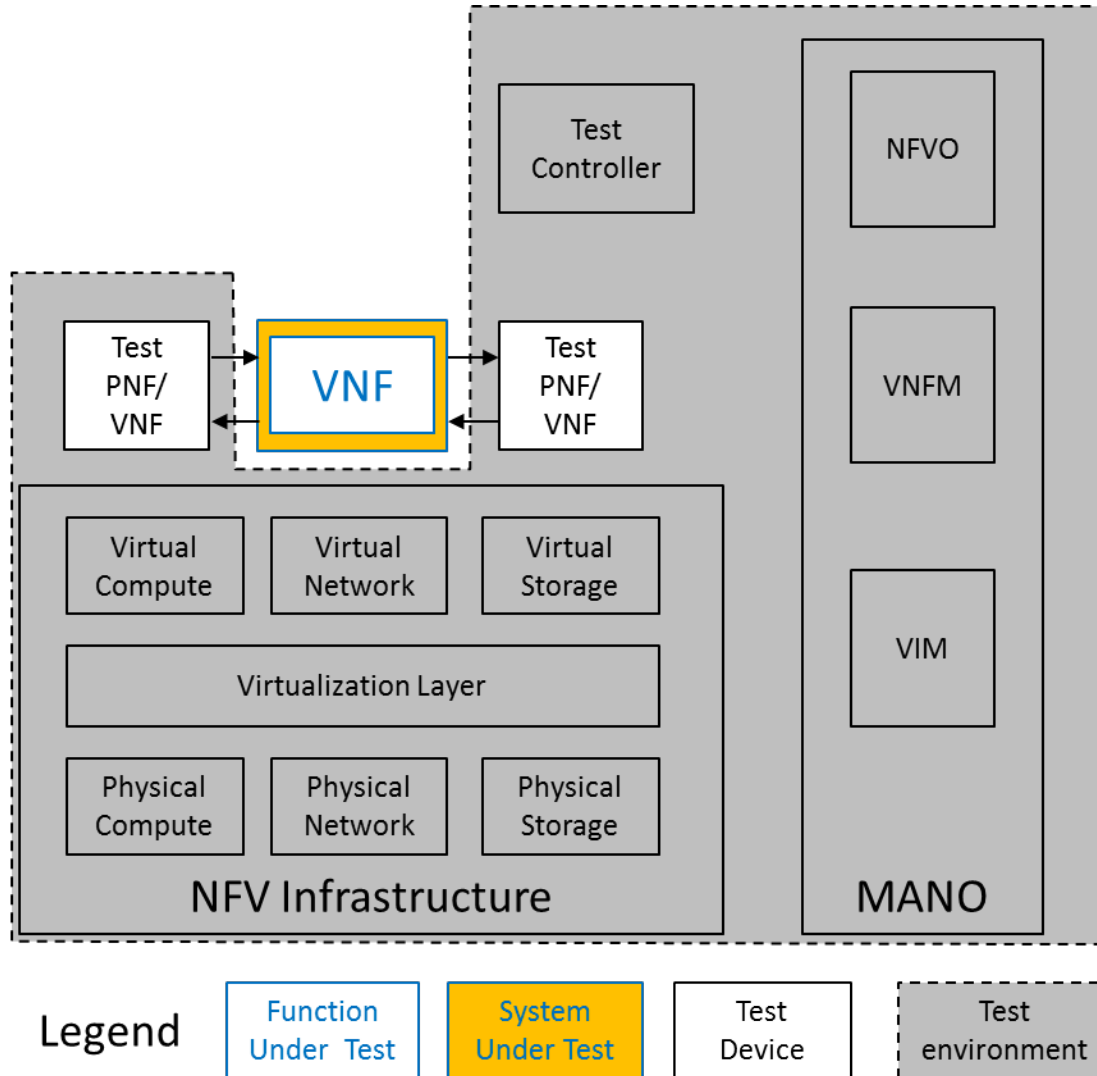


- NFVI
 - OpenStack
 - OPNFV
 - Virtualization
 - Data Plane
 - vNIC
 - Chip architecture
- VNF
 - FW, LB, vRtr, etc. from various vendors
 - VNFM
- MANO
 - OpenSource
 - NFVO
 - VNFM
 - VIM
 - Service Chaining
 - Service Orchestration
 - Resource Orchestration
- POC, Lab Trials, etc.

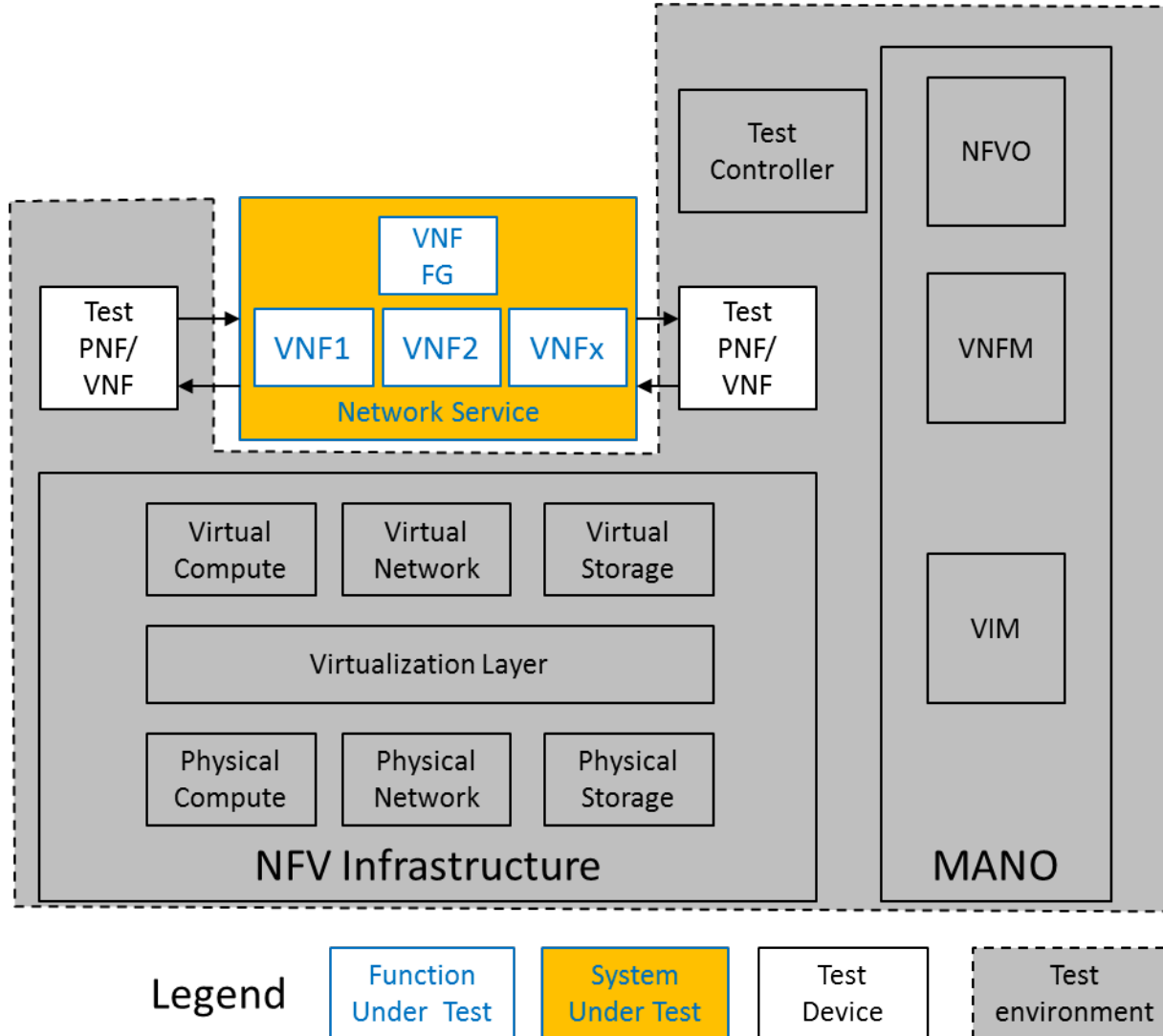
NFVI under Test



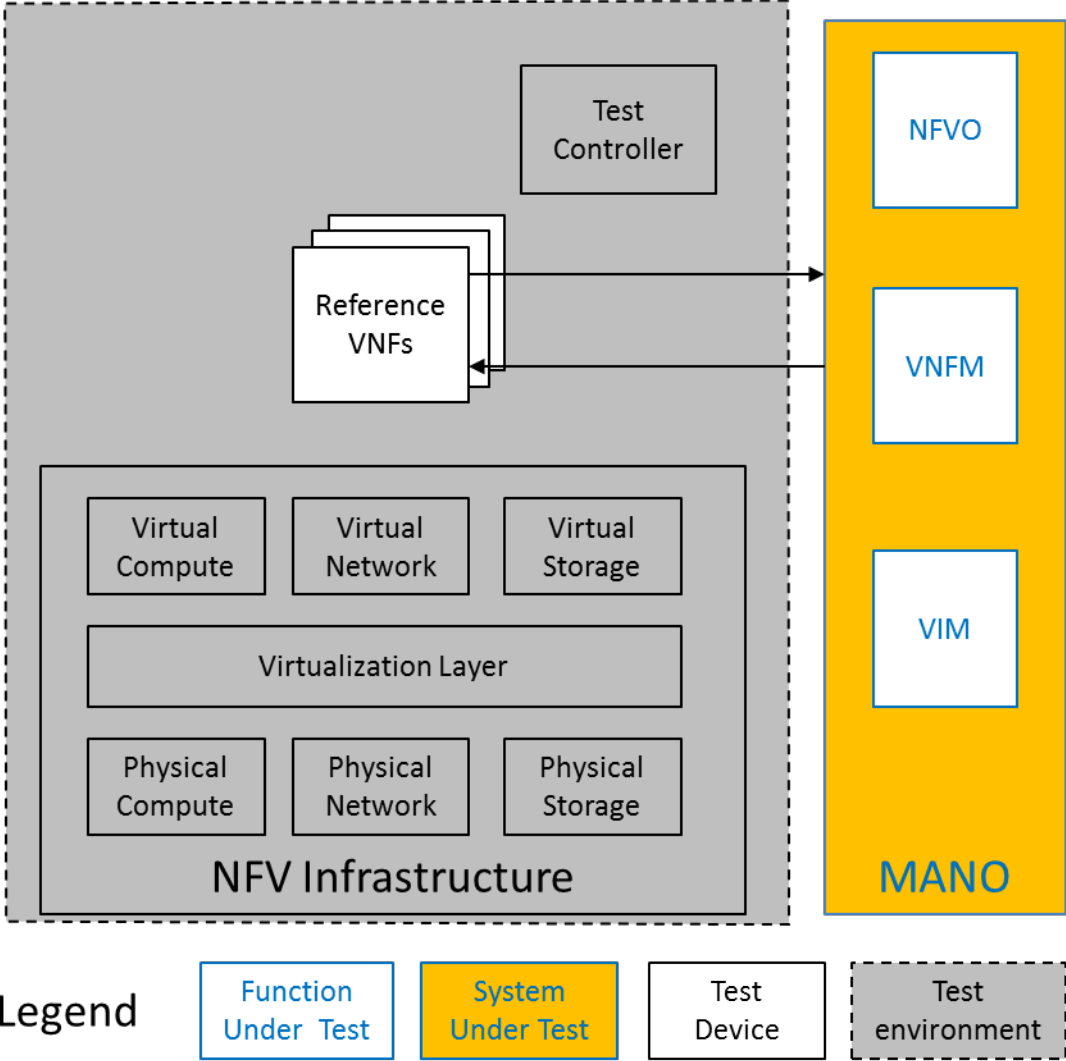
VNF under Test



Network Services under Test



Management and Orchestration under Test



Issues and Challenges

- Variations in VNF Functions
 - Vendor specific
 - Associated with their VNFM
 - Performance
- Network Service (NS) behaviour when deployed in the network
 - VNFs from multiple vendors
 - Overall NS system functions
 - Dependency on the NFV infrastructure
- Commodity hardware \neq ASIC appliance
- Modularization of the NFV components
- Various Test Types
 - Functional tests
 - Performance tests
 - Regression tests
 - Conformance tests
- Manual process in test environment

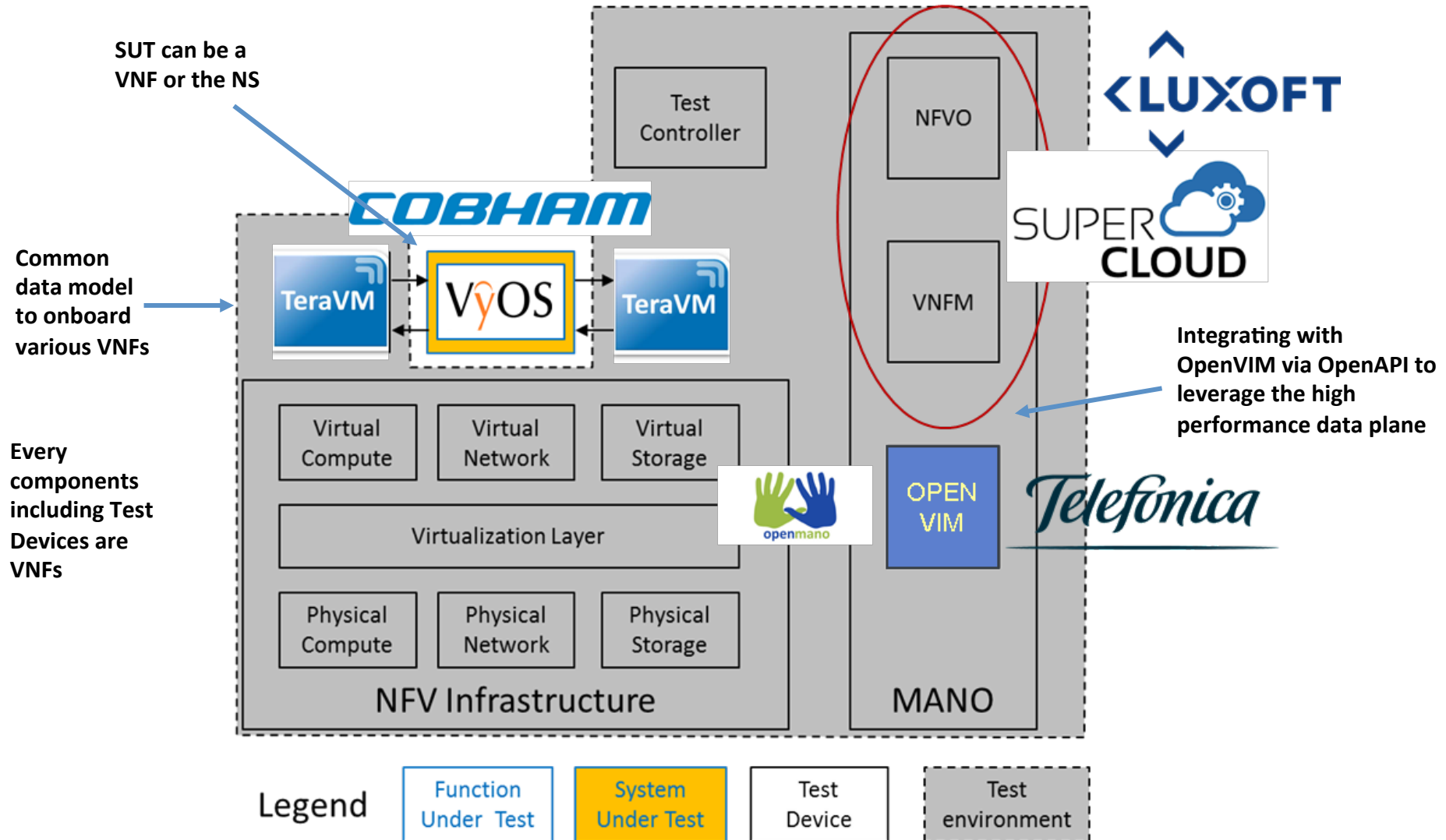
Solutions Implementation Details

APPROACHES, ISSUES AND LESSONS LEARNED

What Do We Try to Accomplish?

- Automate the Test Environment
 - Template Driven
 - Dynamic
 - Flexible
 - Easy to use and setup
- Tests and Validation Processes
- Integrating different NFV components
 - NFVO
 - VNFM
 - Open-Source

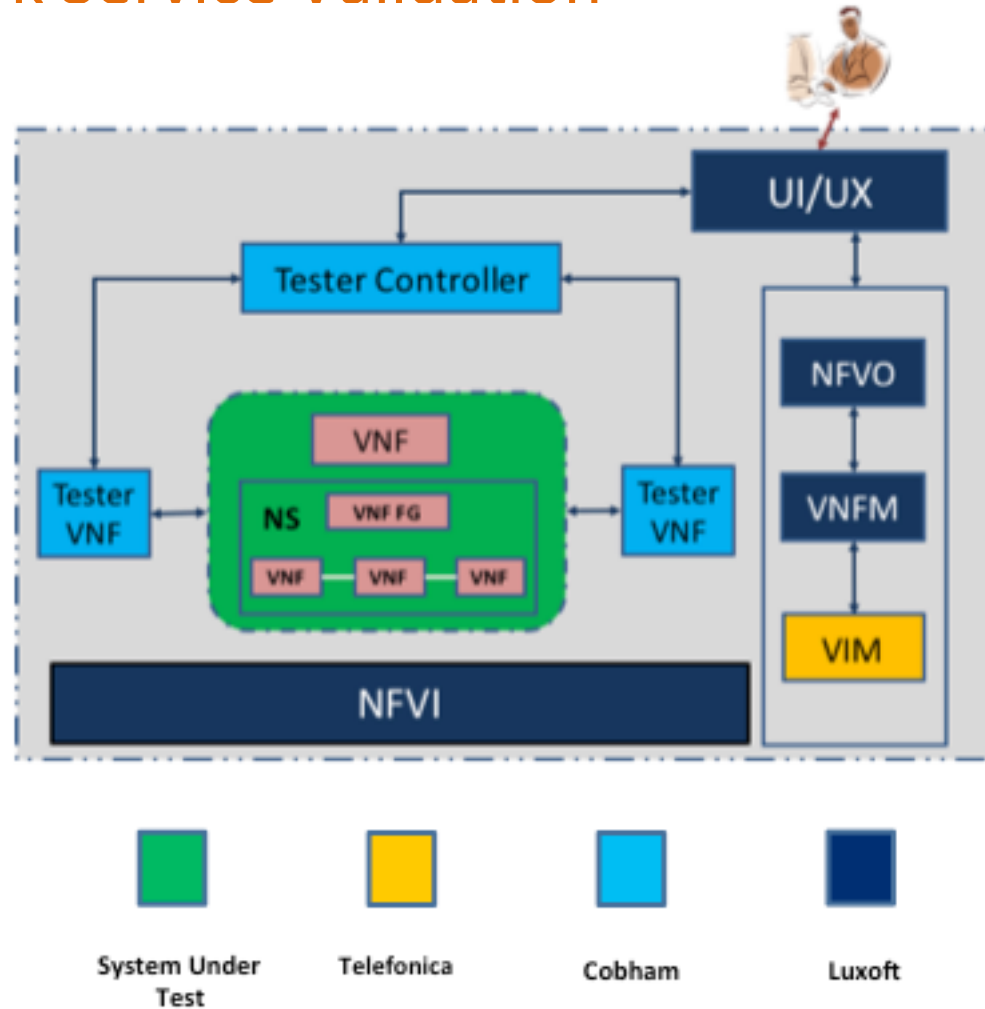
Mapping to NFV Framework (per TST001)



Solutions Component Overview

VNF and Network Service Validation

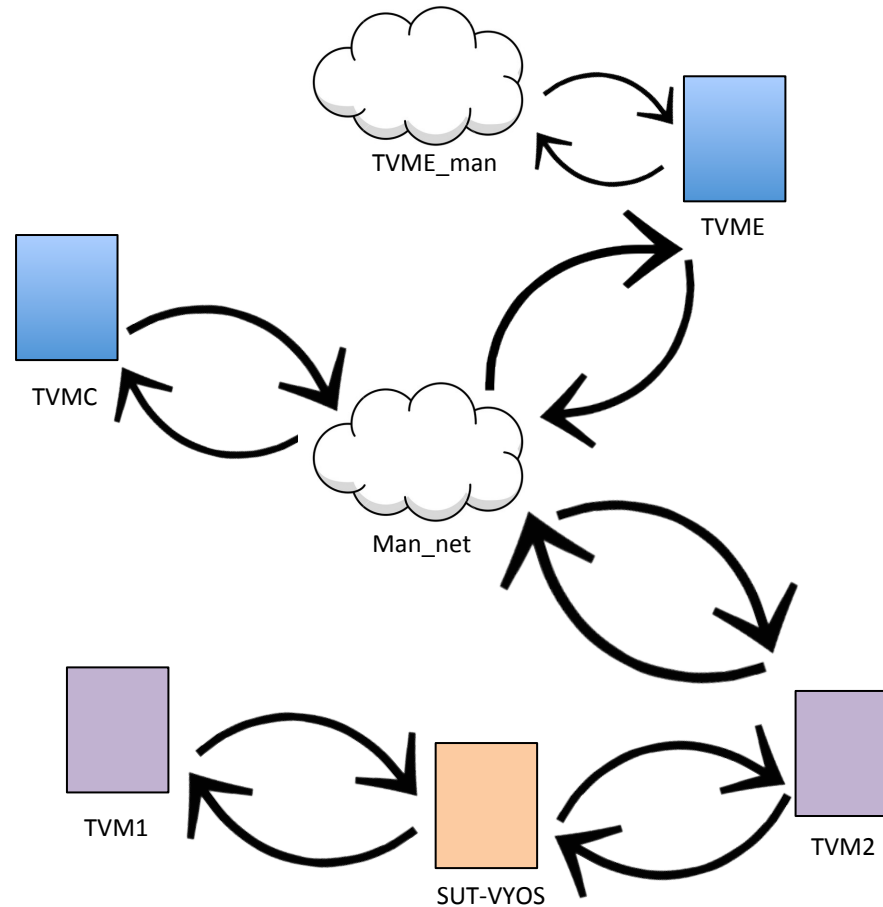
- Orchestration & Management – Luxoft SuperCloud
 - Tenant Management
 - Abstraction of network complexity
 - Managing and orchestrating NFV resources
 - VNF Catalog management
 - VNF/NS onboarding and deployment
 - VNF Manager
- Cobham Test Framework
 - TeraVM – Network function tester
 - TeraVM Controller – Network function test control
 - TeraVM Executive – Management role for TVMC and TVM (plus other functions)
- OpenVIM
 - Infrastructure Manager
 - Resource orchestration



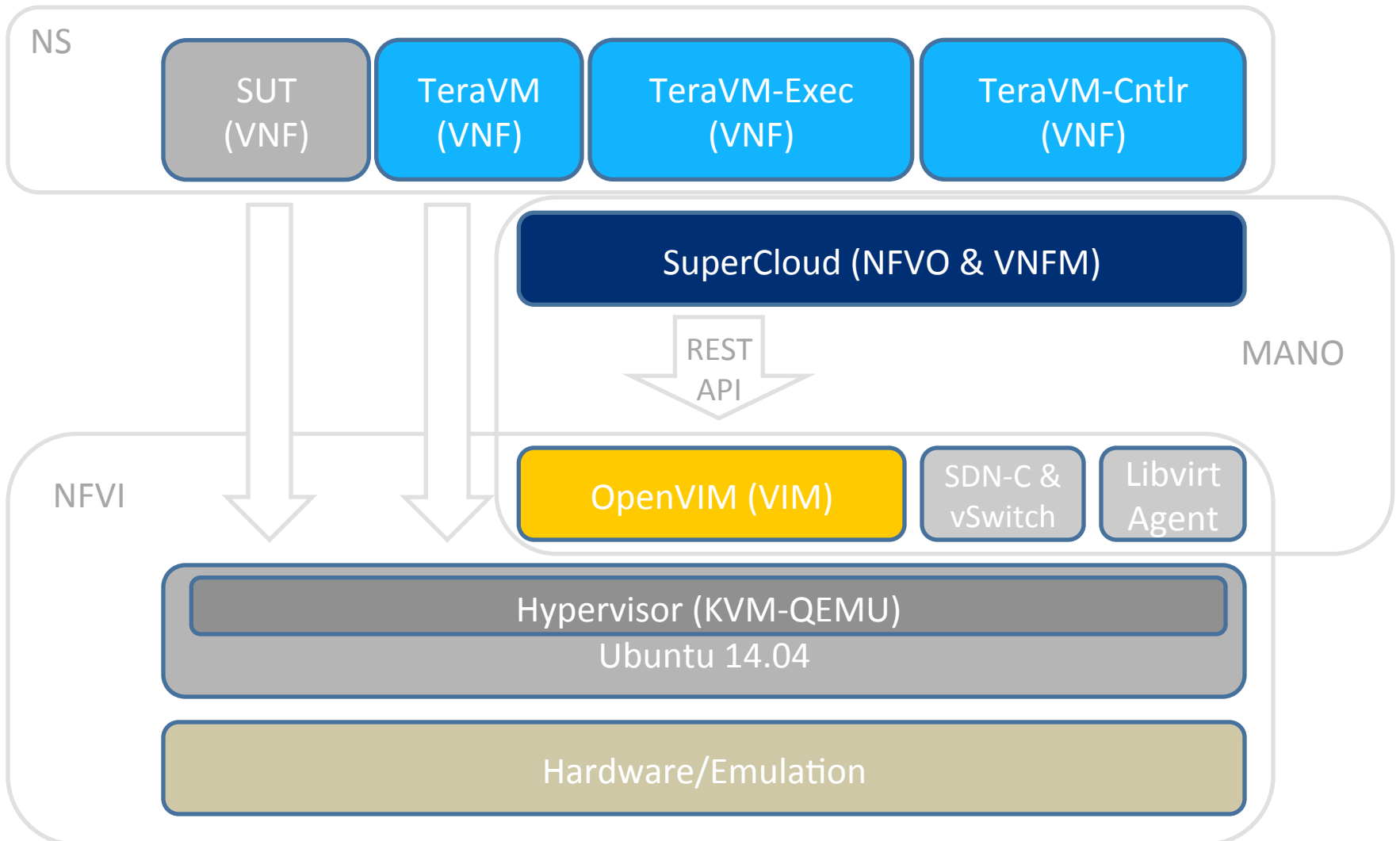
Execution Process

- Define test topology as a template
- Using the data model to describe the VNF – build specific VNF and NS descriptor
- Build test topology template using WebUI via GUI
- Onboard and instantiation via service orchestration and resource orchestration
- Instantiate test services – select test cases, test topology and activate the test
- Test results display on dashboard and deliver in different formats

Building Test Topology Template



Solutions Platform Architecture



Steps and Actions for VNF Validation

- Preliminary Steps by Administrator
 - Create Tester VNF (VNF Descriptor)
 - Create Test Bed Topology Templates
 - Import Test Topology
 - On-boarding Tester VNF (TeraVM)
- Steps Taken by (Test) User
 - Create SUT Template
 - Attach SUT Template to Test Topology
 - Attach Tests to SUT' s Test Topology Interfaces
 - Manage the Test(s)
 - Execute the Test(s)
 - Obtain and view the test results

Lessons Learned

- Template-driven model works
 - An optimal Test Topology (NS) config is saved as a template
 - NS instantiated on-demand
 - All NS configs driven via REST API's
- New VNF creation was all done manually for the demo
 - It needs to be automated (data model and descriptor) => less time
- Service Orchestrator performed by SuperCloud
- Resource Orchestration can be performed by OpenVIM
- Tests are managed via Test Framework
- NFV components can be modularized
- Adapt to Open Source

