Open Source

MANO

OSM WORKSHOP

SDN WORLD CONGRESS OCT’16

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OSM TSC Chair

AGENDA

- Architectural Principles
- Scope & Mapping to ETSI NFV
- Status Update & Releases
- Data Model

OSM ARCHITECTURAL PRINCIPLES

Open Source MANO

Layering

Abstraction

Architectural Principles

Modularity

Simplicity

OSM SCOPE & MAPPING TO ETSI NFV MANO

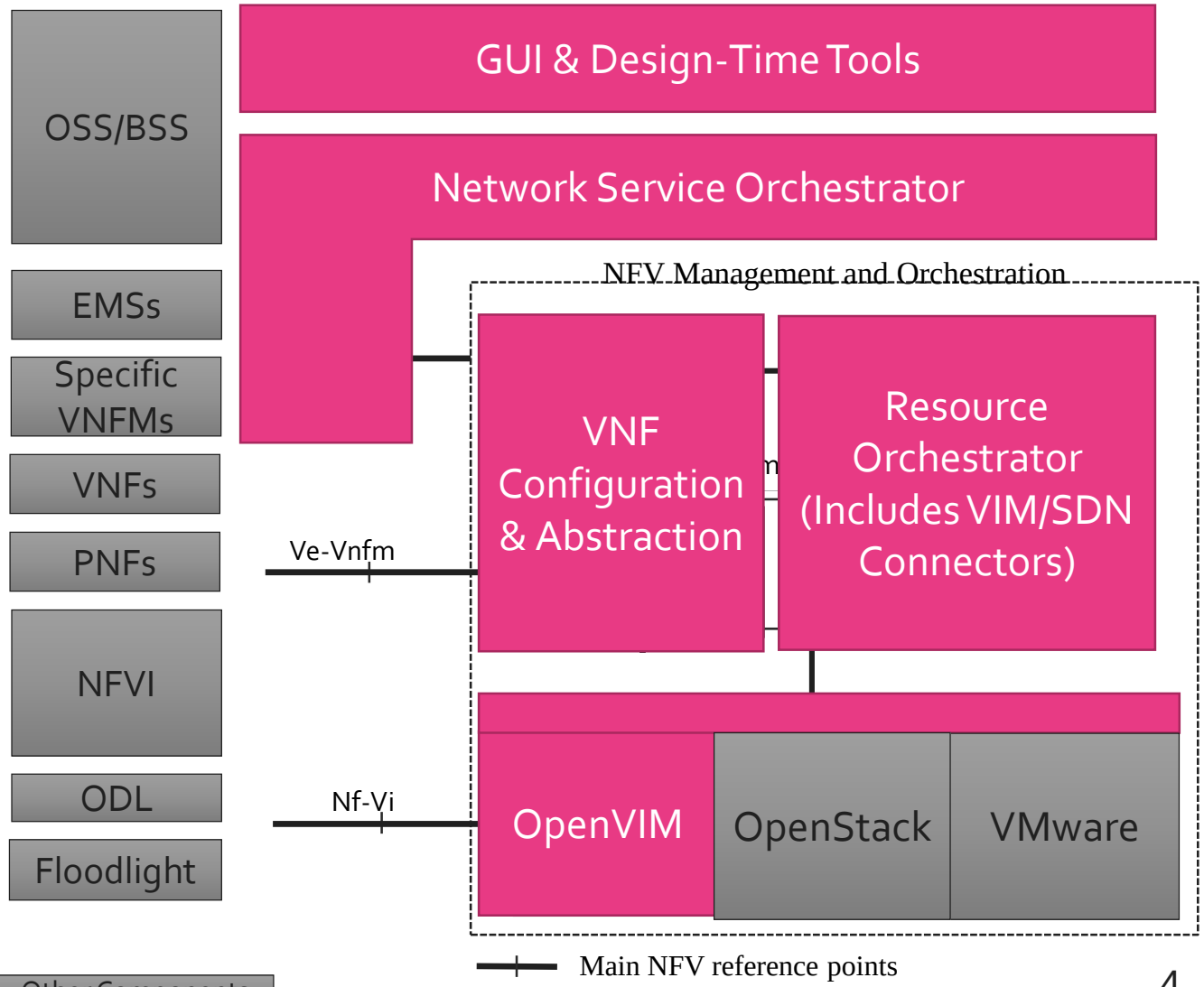
Open Source MANO

Run-Time Scope

- Automated end-to-end Service Orchestration
- Superset of ETSI NFV MANO
- Plugin model for multiple VIMs/SDN Controllers
- Generic VNFM style functionality with support for integrating Specific VNFMs
- Physical Network Function integration
- Greenfield and brownfield deployments
- GUI

Design-Time Scope

- Network Service Definition (CRUD operations)
- Model-Driven Environment with Data Models aligned with ETSI NFV
- VNF Package Generation
- GUI



Extract from Figure 4: NFV Reference Architecture Framework, ETSI GS NFV 002 V1.2.1 (2014-12)

OSM: DEVELOPMENT THEMES

Open Source MANO

On-boarding & VNF Packaging

Simplified install & upgrade process

Improved development environment

Service Modelling

Enhanced Platform Awareness

Multiple VIMs & SDN Controllers

Multiple Sites

RELEASE ZERO HIGHLIGHTS

Open Source MANO

Community Release

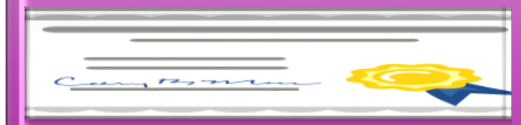
- Ahead of schedule on May 26, 2016

Single entry point

- VNF and NS packages.

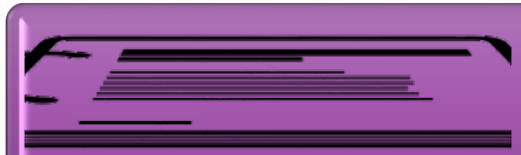
Readability

- YAML



Apache 2.0 licenced

- Clean code base

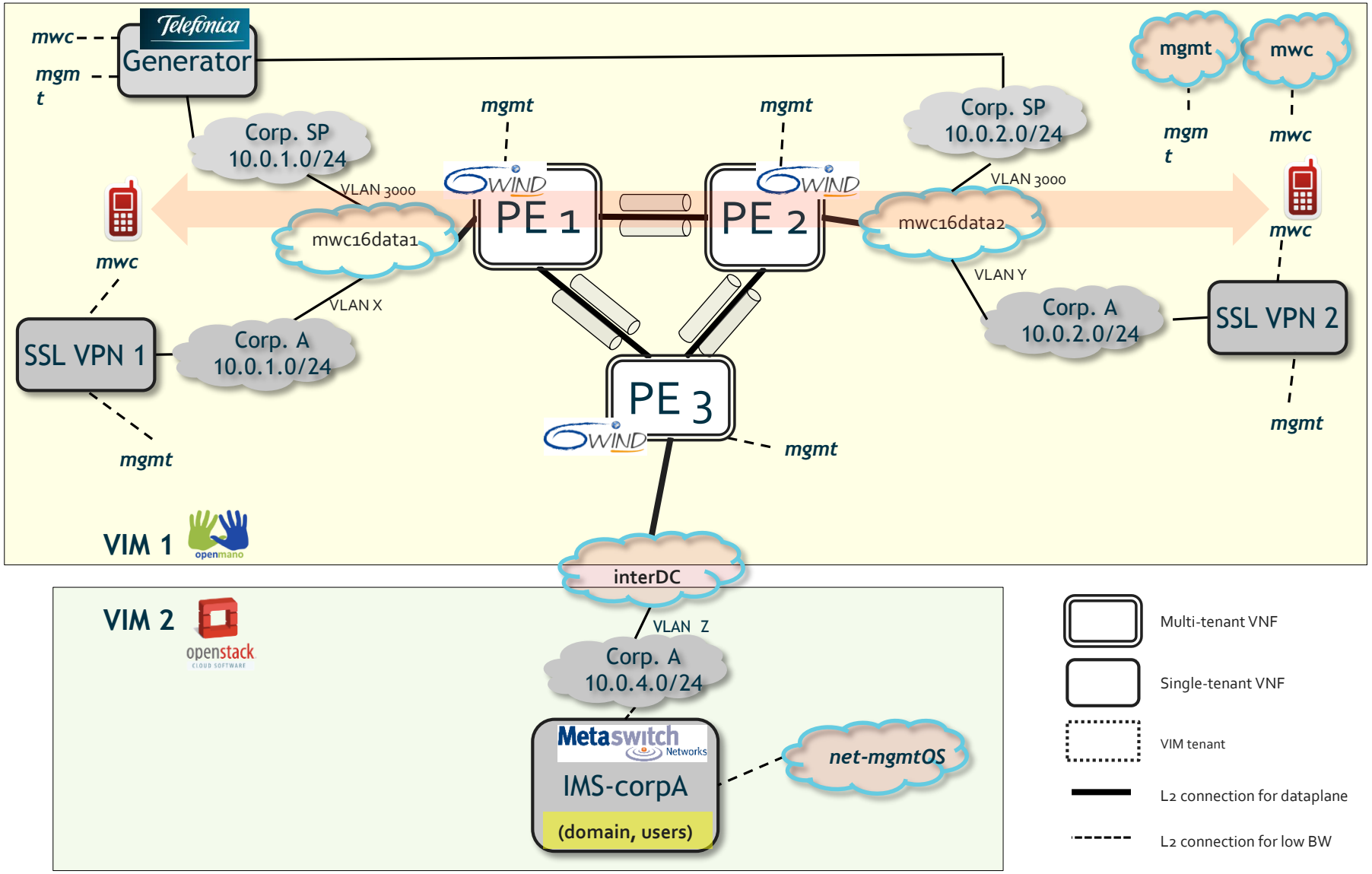


Documentation

- Extensive set

RELEASE ZERO: AUTOMATED END-TO-END SERVICE DELIVERY

Open Source MANO



RELEASE ONE HIGHLIGHTS

Open Source MANO

- On-boarding & VNF Packaging
- Simplified install & upgrade process
- Improved development environment
- Service Modelling
- Enhanced Platform Awareness
- Multiple VIMs & SDN Controllers
- Multiple Sites

- cloud-init
- Create networks at VIM
- Remove NSD Datacenter Network Reference
- Error Messages and Logging
- YAML Format Descriptor Display
- Package Creation

RELEASE ONE HIGHLIGHTS

Open Source MANO

On-boarding & VNF Packaging

Simplified install & upgrade process

Improved development environment

Service Modelling

Enhanced Platform Awareness

Multiple VIMs & SDN Controllers

Multiple Sites

- Single entry point for all Modules for compilation and installation
- One Click Installation

RELEASE ONE HIGHLIGHTS

Open Source MANO

On-boarding & VNF Packaging

Simplified install & upgrade process

Improved development environment

Service Modelling

Enhanced Platform Awareness

Multiple VIMs & SDN Controllers

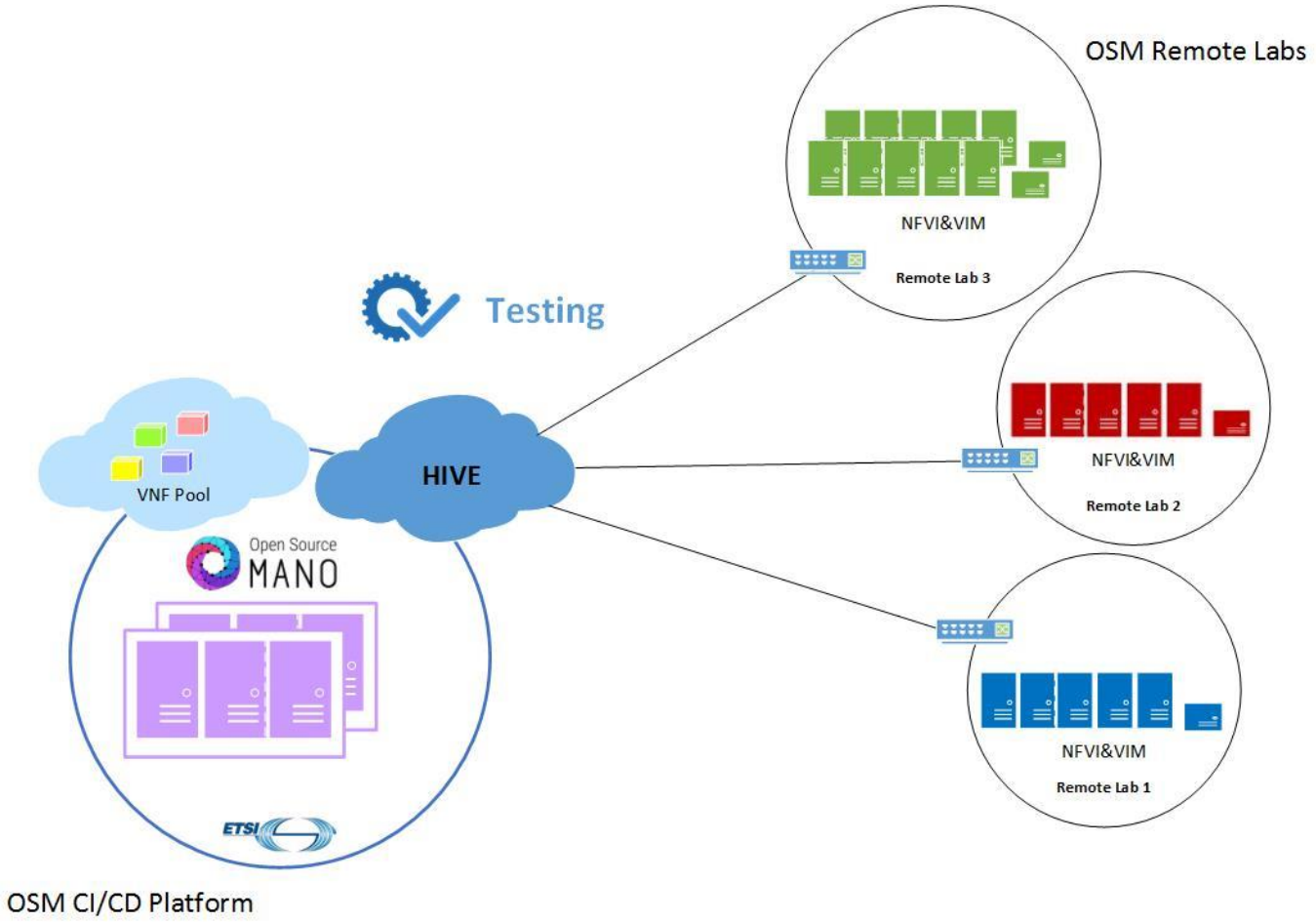
Multiple Sites

- Comprehensive CI/CD environment
- Jenkins based build system
- Git
- Gerrit integration
- Containerised Deployments
- Remote Labs

RELEASE ONE HIGHLIGHTS - OSM REMOTE LABS

Open Source MANO

- Network of Remote Labs offering different combinations of NFV Infrastructure and VIMs.
- Part of the OSM CI/CD pipeline.
- Remote labs securely connected over ETSI's Hub for Inter-operability and Validation (HIVE).
- Ensure that OSM inter-operates successfully with multiple VIMs and NFV Infrastructure.
- Minimise barriers for community engagement.



RELEASE ONE HIGHLIGHTS

Open Source MANO

On-boarding & VNF Packaging

Simplified install & upgrade process

Improved development environment

Service Modelling

Enhanced Platform Awareness

Multiple VIMs & SDN Controllers

Multiple Sites

- Enhance Visual Differentiation between NS Catalog and VNF Catalog
- Restructure Layout of Service Primitive Page
- Juju-2.x
  - Multi-model controller
  - Multi-user controller
- Network Types in RO
- Allow IP Parameters for

RELEASE ONE HIGHLIGHTS

Open Source MANO

On-boarding & VNF Packaging

Simplified install & upgrade process

Improved development environment

Service Modelling

Enhanced Platform Awareness

Multiple VIMs & SDN Controllers

Multiple Sites

- High Performance, High Efficiency Deployments with EPA
  - NUMA
  - CPU Pinning
  - Huge Pages
  - PCI Passthrough
  - SR-IOV

RELEASE ONE HIGHLIGHTS

Open Source MANO

- On-boarding & VNF Packaging
- Simplified install & upgrade process
- Improved development environment
- Service Modelling
- Enhanced Platform Awareness
- **Multiple VIMs & SDN Controllers**
- Multiple Sites

- VMware vCloud Director
  - Initial implementation
- OpenVIM
  - Now under OSM governance
  - Powerful EPA support
- OpenDaylight
- Floodlight

RELEASE ONE HIGHLIGHTS

Open Source MANO

On-boarding & VNF Packaging

Simplified install & upgrade process

Improved development environment

Service Modelling

Enhanced Platform Awareness

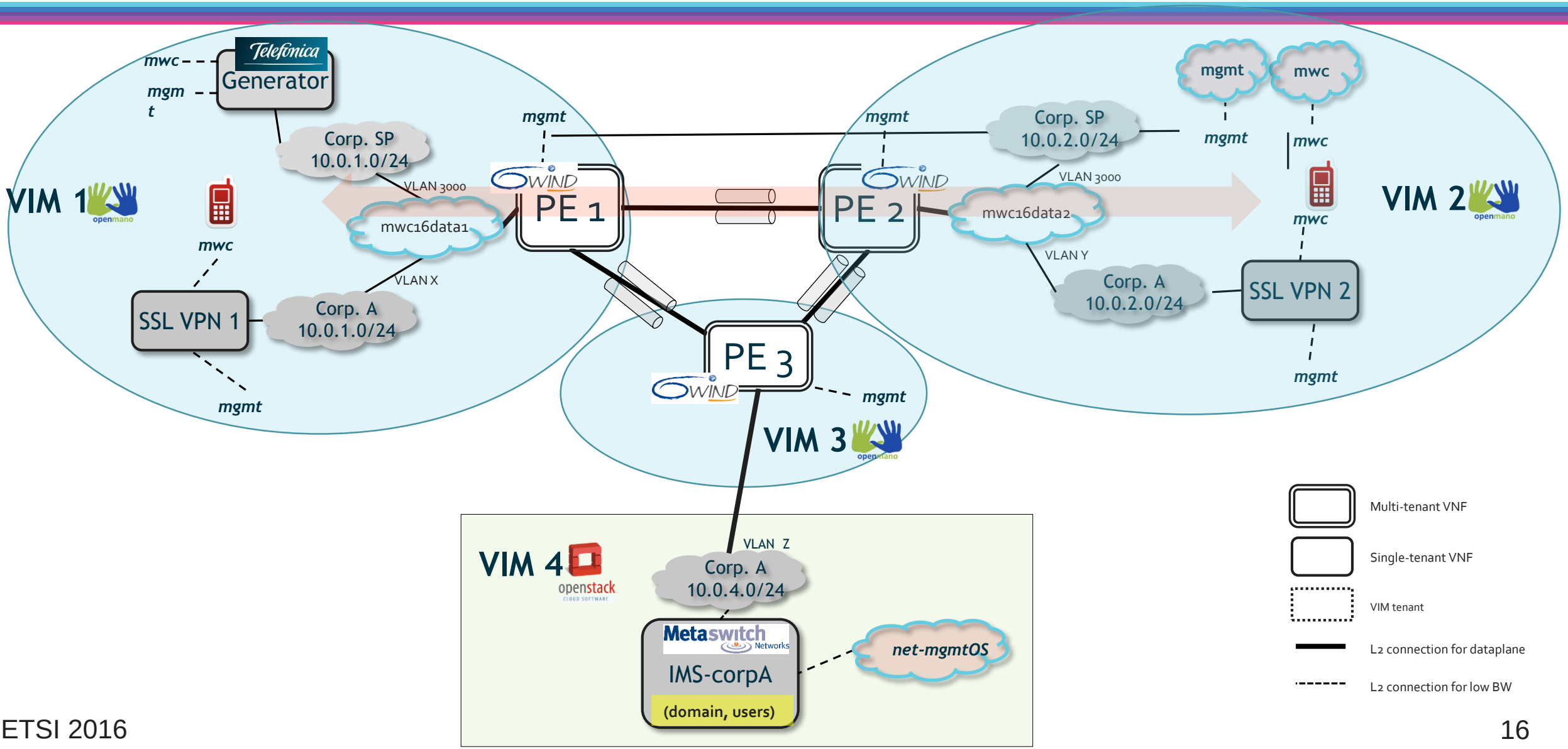
Multiple VIMs & SDN Controllers

Multiple Sites

- Enables even more powerful automated end-to-end service delivery

RELEASE ONE: AUTOMATED E2E SERVICE DELIVERY WITH MULTIPLE VIMS

Open Source MANO



INFORMATION VS DATA MODELS

```
            IM                  --> conceptual/abstract model
             |                      for designers and operators
+----------+----------+
|           |          |
DM         DM          DM      --> concrete/detailed model
                                   for implementors
```

*Extracted from: https://tools.ietf.org/html/rfc3444

OSM DATA MODELS

Open Source MANO

Aligned with ETSI NFV ISG Phase 1 Information Models

Analysis underway on ETSI NFV ISG Phase 2 Information Models

- Will work with the NFV community for clarifications, bug fixes (sightings) and feature advances.
- Possible intersect with OSM Release THREE

OSM INTERNAL DATA MODEL

Open Source MANO

OSM INTERNALS

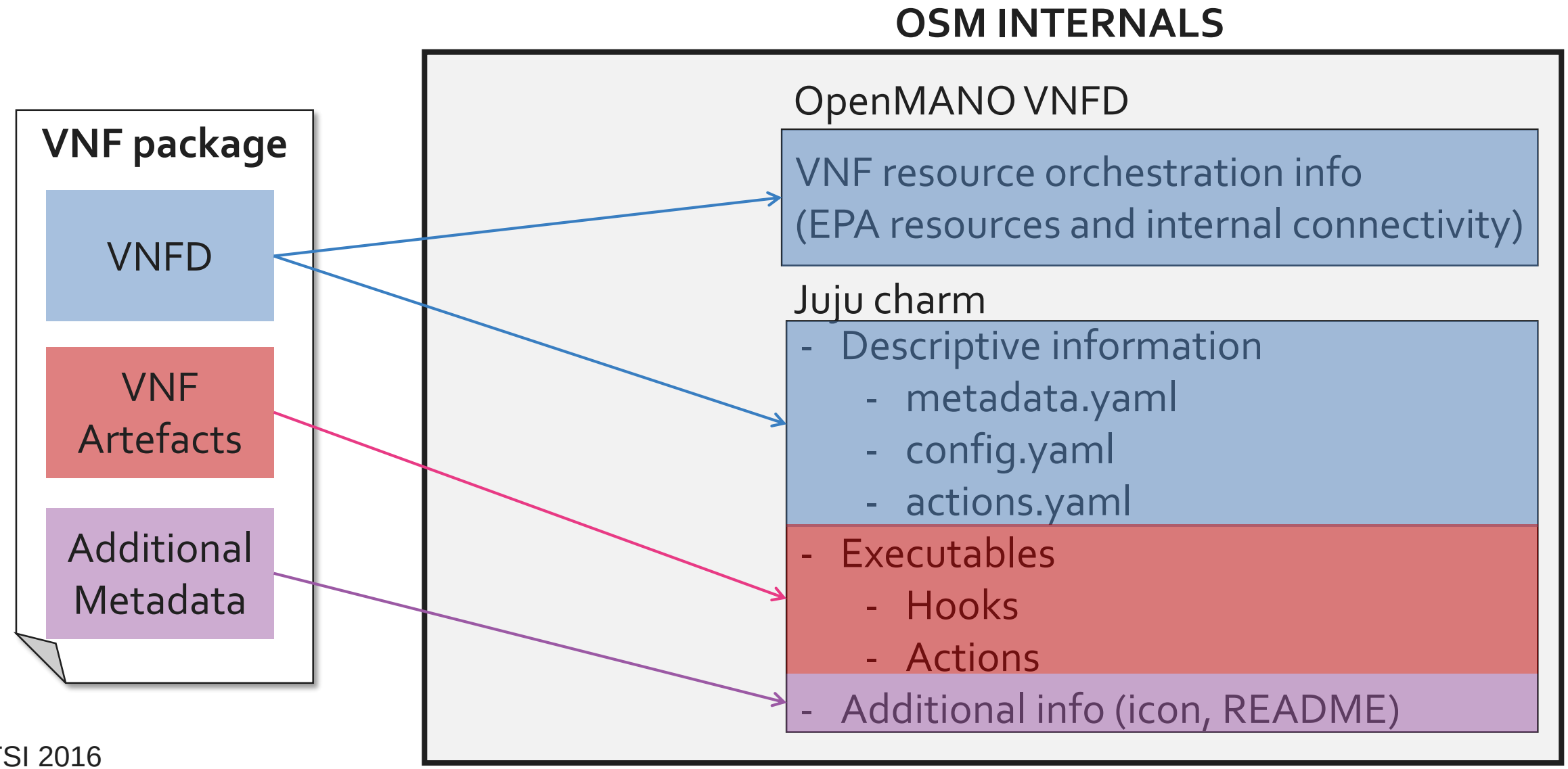
OpenMANO VNFD

VNF resource orchestration info
(EPA resources and internal connectivity)

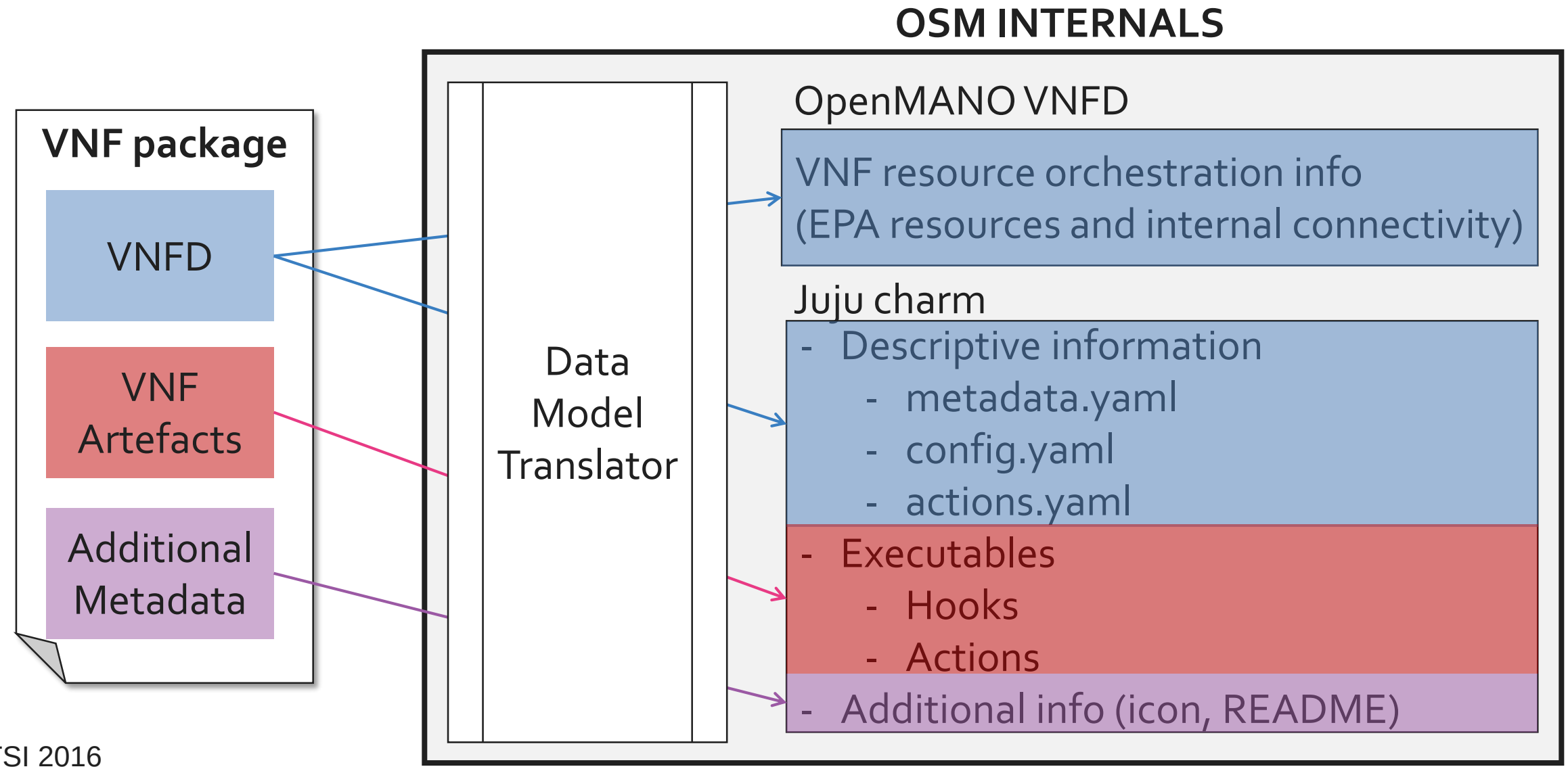
Juju charm

- Descriptive information
  - metadata.yaml
  - config.yaml
  - actions.yaml
- Executables
  - Hooks
  - Actions
- Additional info (icon, README)

DIRECT MAPPING FROM MODELS AT THE UI



ARCHITECTURE SUPPORTS MULTIPLE DATA MODELS



SUMMARY & DIRECTION

Open Source MANO

Release ONE

- Completed Ahead Of Time
- Delivering Functionality Aligned With Chosen Focus Areas

Release TWO Development Themes

- Data Plane Performance
- Service Assurance (KPIs, Scaling)
- Security
- Dynamic Configuration (SFC, Nested Services, etc.)
- Data Model Attribute Coordination with the Industry
- Support for Multiple Input Formats

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MORE INFORMATION AT:

osm.etsi.org

osm.etsi.org/wikipub