



ONAP E2E Modeling

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12/12/17

Agenda

- **ONAP modeling related projects**
- Release 2+ modeling

ONAP Forum in December, Modeling related meetings

- **Monday**

Topic: R2 spec

- **Tuesday**

Topic: ONAP R2+ Modeling Design

Topic: R2 spec (workshop)

SDO: Meeting room: Auditorium

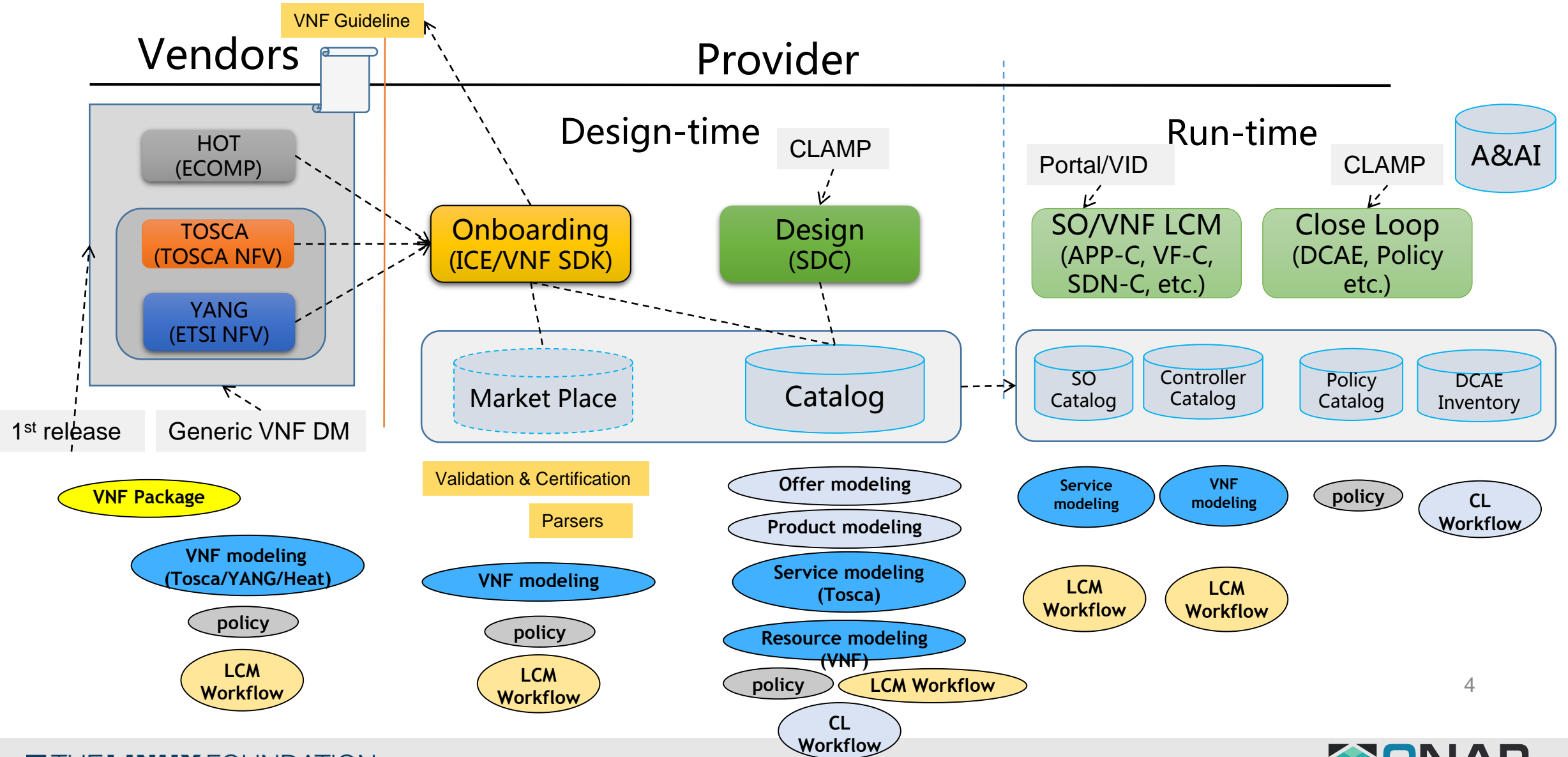
- **Wednesday**

Topic: ONAP R2 spec

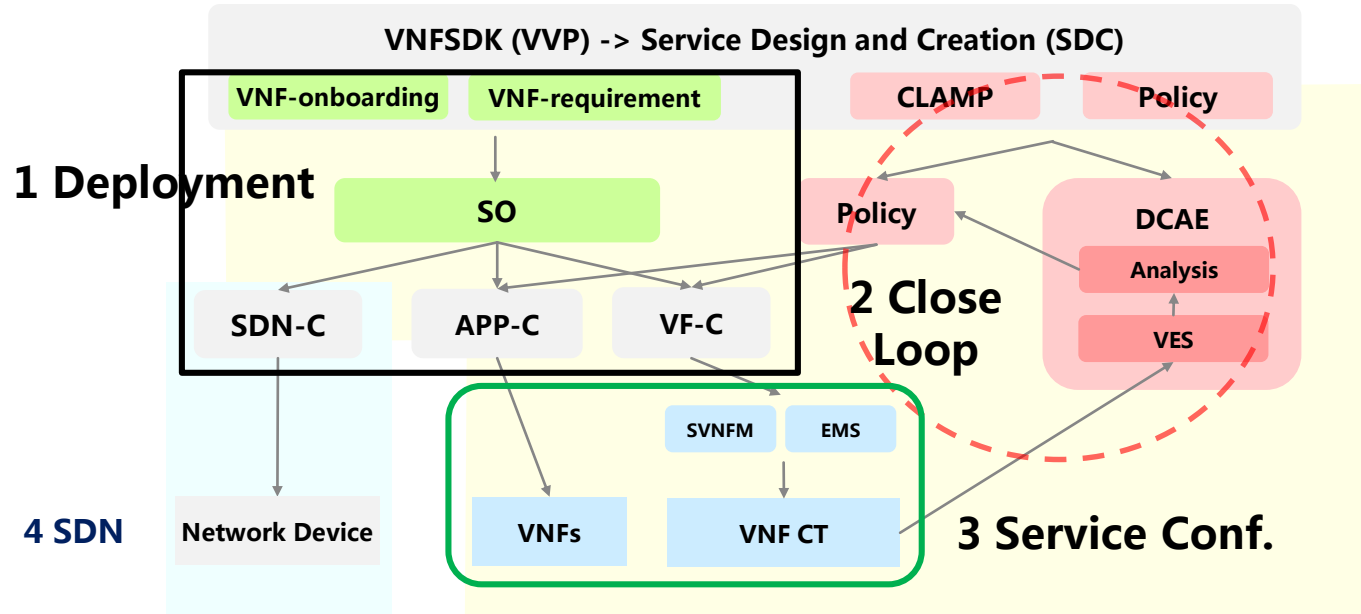
- **Thursday, (Huawei Host)**

ONAP Modeling Workshop

ONAP Modeling Landscape



ONAP modeling distribution



1 Svc. / Rsc. Deployment

- Service:
 - TOSCA YAML based
- Resource:
 - NSD, VNFD, VNF Package
 - TOSCA/Heat Template

2 Close loop Automation

- Close loop:
 - CLAMP: Design
 - VES: collect data
 - Analysis: Microservice models
 - Policy: Operational policy models
 - APP-C/VNF-C: VNF config
- SDC design Close loop

3 Service Config

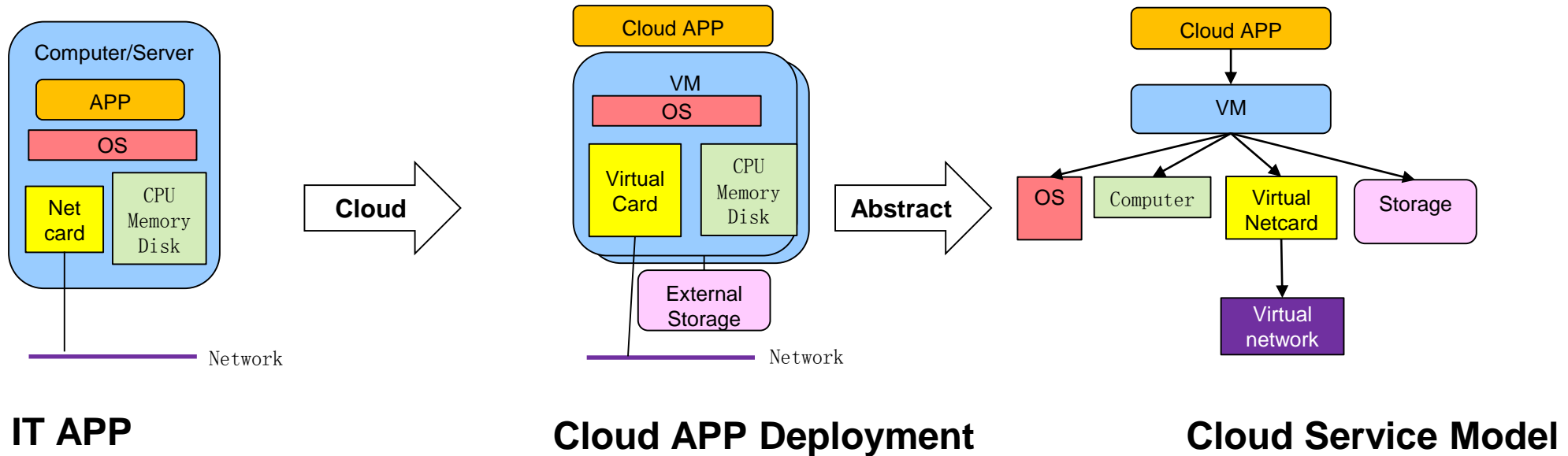
- YANG or proprietary through EMS

4 SDN

- North bound:
 - SO interface: Generic Resource API
- South bound:
 - SDN Controller native

Currently, modeling subcommittee work focuses on 1 mostly; 2 is discussed in closed loop project

What is “Deployment Modeling”



- Modeling is a unified language, format, attribute to describe the object which allows Cloud Orchestrator to parse the modeled data for automatic deployment in cloud like environment (e.g., Openstack, etc.)

ONAP TSC

Standard coordinator

External SDOs
ETSI/OASIS TOSCA...

Modeling subcommittee

Sub committee

Main job of subcommittee

- 1. Coordination among projects
- 2. Publish unified spec for modeling

Projects

Modeling Project

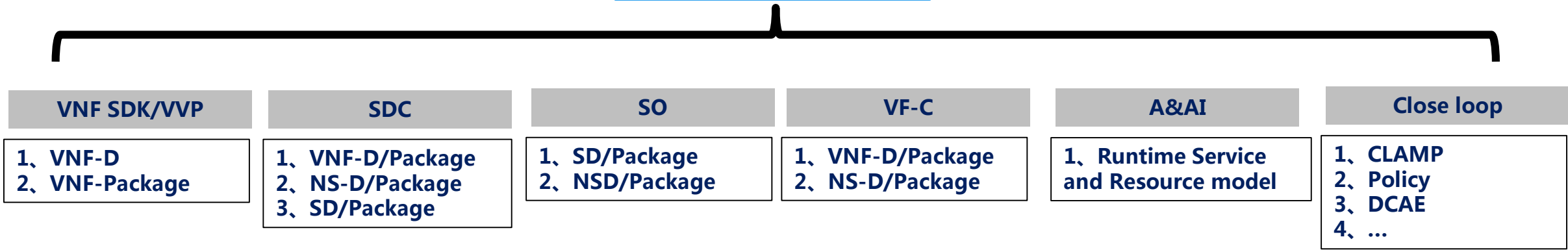
Job of Modeling Project

- 1. Parsers : TOSCA
- 2. Tools : Translators

ONAP Modeling project and sub-committee

Modeling Subcommittee

- 1. Coordinate projects about modeling
- 2. Publish the unified spec.



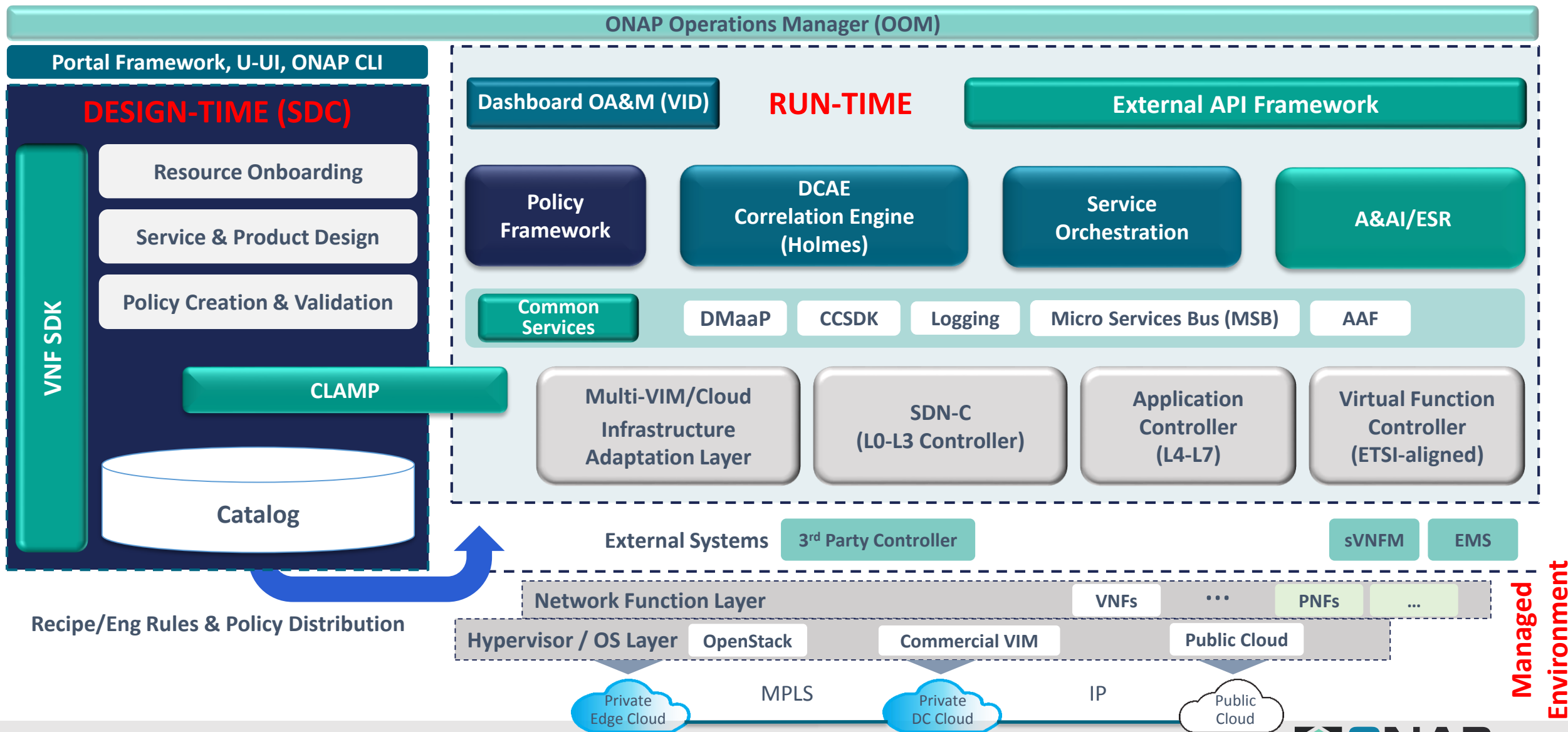
Modeling Project

- 1. TOSCA parsers(r1)
- 2. Converters (r2)



- 1 Python based parser for VF-C only
- 2 Java based TOSCA parser/checker, used by others (e.g., SO/UUI)
- 3 Gigaspaces ARIA (Includes a TOSCA parser and workflow) for SO

ONAP Amsterdam Architecture



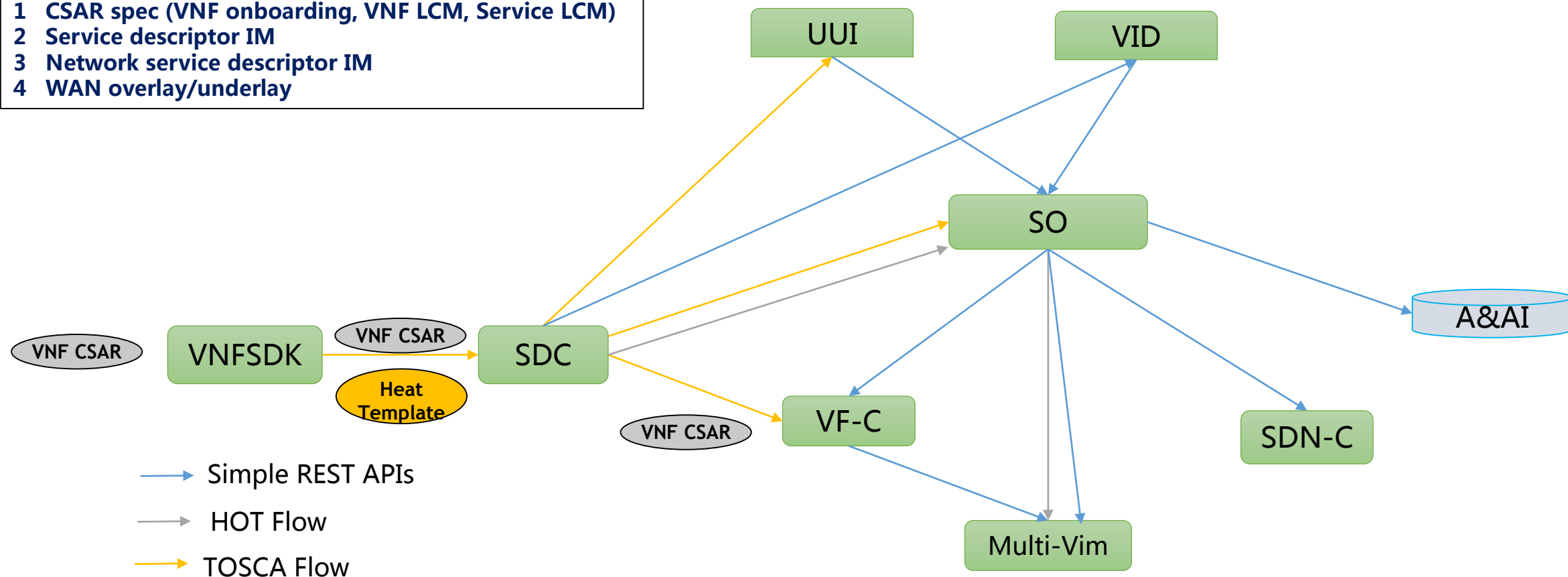
Modeling specifications for ONAP Release 1

Release 1 specifications are based on implementation of ECOMP SDC and OPENO GSO/NFVO

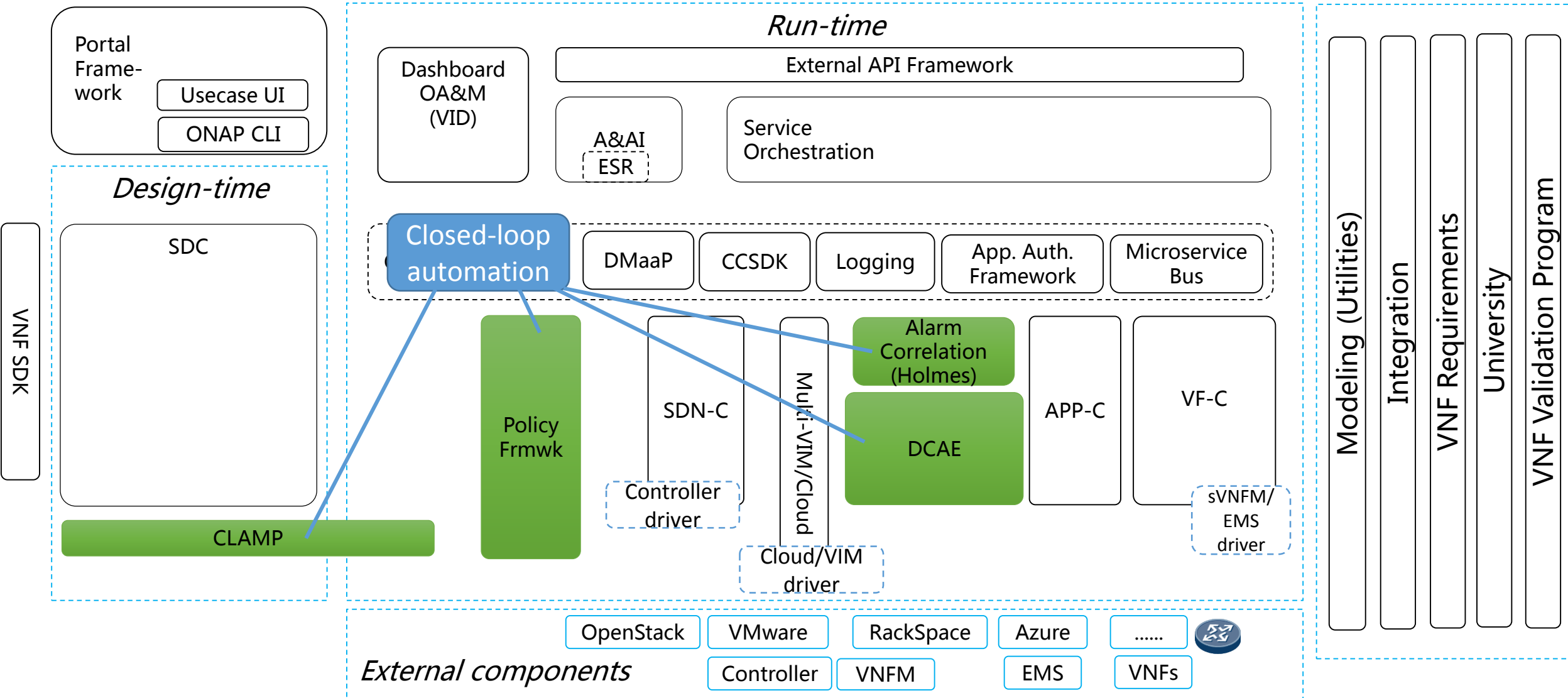
This specification is now documented after implementation

Specifications list

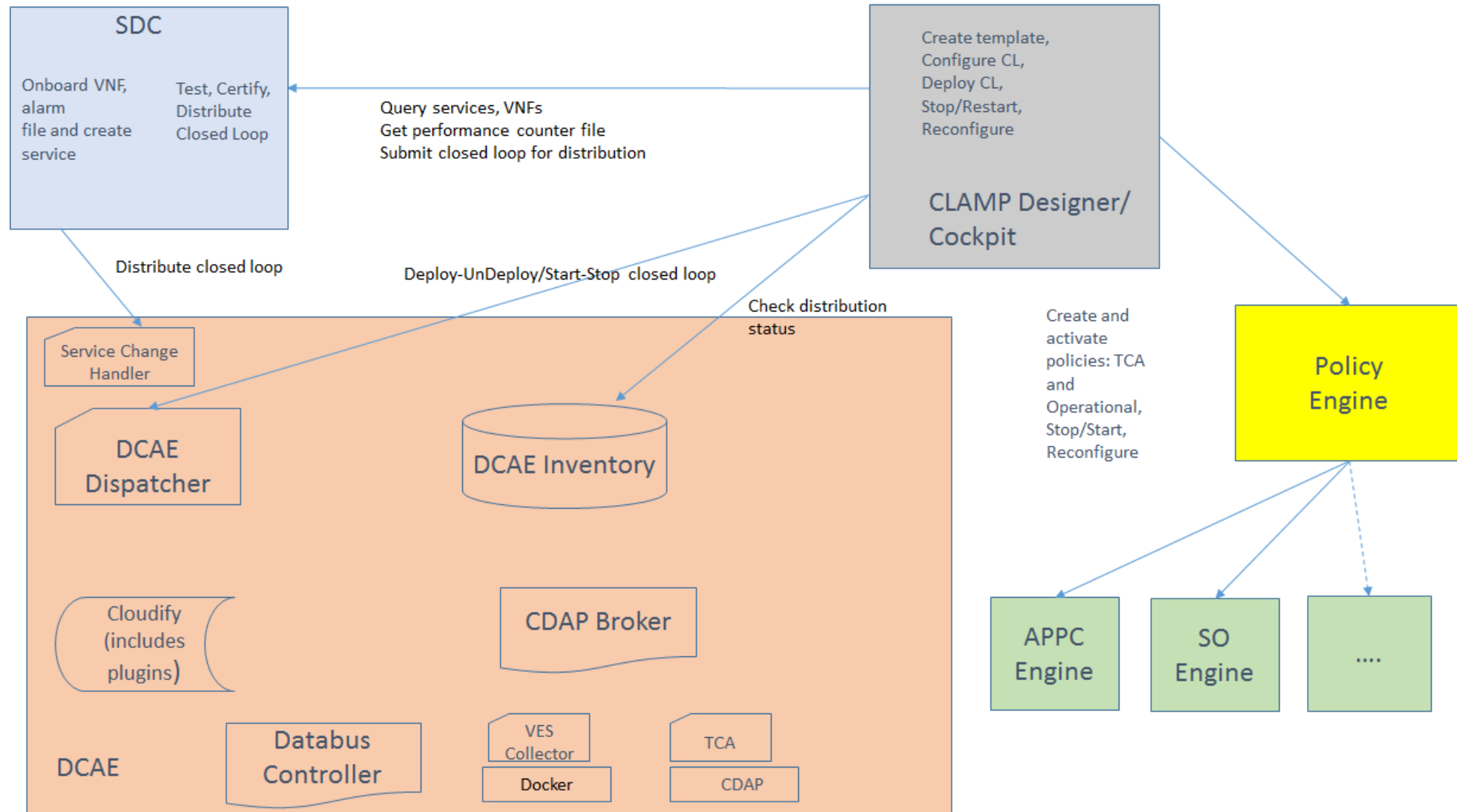
- 1 CSAR spec (VNF onboarding, VNF LCM, Service LCM)
- 2 Service descriptor IM
- 3 Network service descriptor IM
- 4 WAN overlay/underlay



Closed Loop Automation related Projects



CLAMP (Close Loop Automation Management Platform)



Agenda

- ONAP modeling related projects
- **Release 2+ modeling**

ONAP Modeling Design Principles

1. Requirements driven and prioritization per release
2. Based on existing implementation and attempts to maintain backward compatibility
3. Keeps the distinction and consistency between Information Model (IM) and its Data Model (DM) representation(s).
 - a) DM can represent the semantics of the IM. DM does not need to match exactly the IM.
 - b) DM is pruned and refactored from IM.
4. IM and DM from this effort should be applied across ONAP projects.
5. The modeling subcommittee should not define the feature requirements, but take feature requirements derived from use cases or architecture or implementation projects as input.
6. Actively pursuing participation from stakeholder projects in the modeling effort.

ONAP Modeling Guidelines

- 1 Initially focus on a Unified Information Model in UML and its TOSCA construct representation for Service and Resource
- 2 Use Eclipse Papyrus as the UML modeling tool for this activity
- 3 Recommend new item on the M3 API Freeze Checklist to identify and describe mapping of API information elements to the ONAP Unified Information Model and related Data Models.
- 4 Best effort to align terminology with ETSI (IFA011 and IFA014) where appropriate.
 - a) Establish a mapping between equivalent terms between ONAP and ETSI NFV ISG and identify the differences.
 - b) Based on the use cases, select or define the appropriate model terms if the one-to-one mapping is not possible.
- 5 Identify the gaps in either information modeling (in terms of information elements) or data model (in terms of types/constructs) we need to fulfill the functional/non-functional requirements derived from the use cases and prioritize per release.
 - a) Initial round should be based on SDC Data Model and ECOMP (ONAP) Information Model
 - b) Identify existing constructs defined in other SDO specification (e.g. TOSCA NFV Profile and SOL001)
 - c) Encourage efforts in other SDOs to align with ONAP IM/DM implementation with their specifications (e.g. TOSCA NFV Profile and SOL001) development.
- 6 When defining new constructs in ONAP Data model
 - a) Start with OASIS TOSCA Simple YAML Profile
 - b) Make use of OASIS TOSCA Simple YAML Profile normative node types
 - c) If direct use of OASIS Simple YAML Profile normative node types is not possible, extend/derive from existing node types or create new ones as appropriate
- 7 When defining new Namespace, in order to avoid namespaces and types name types definitions collision, ONAP follows the rule and guidelines as described in the OASIS TOSCA Simple YAML Profile.
- 8 Create a (class) diagram which outlines ONAP DM relationship to TOSCA Simple Profile

ONAP R2+ Modeling workspace

- **Information Model**

1. ONAP R2+ Service IM workspace
2. ONAP R2+ Resource IM workspace

- **Design-Time Data Model**

1. ONAP R2+ Design-Time DM Basics workspace
2. ONAP R2+ Design-Time Resource DM workspace
3. ONAP R2+ Design-Time Service DM workspace

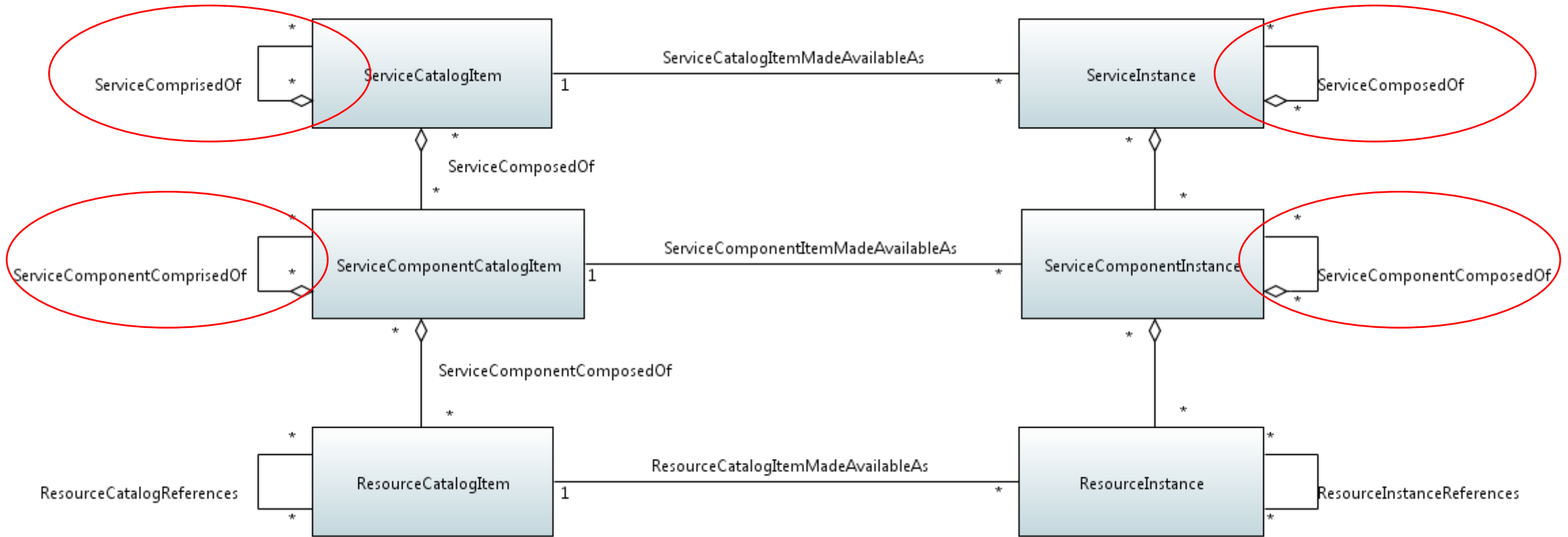
- **Run-Time Data Model**

1. ONAP R2+ Run-Time Resource DM workspace
2. ONAP R2+ Run-Time Service DM workspace

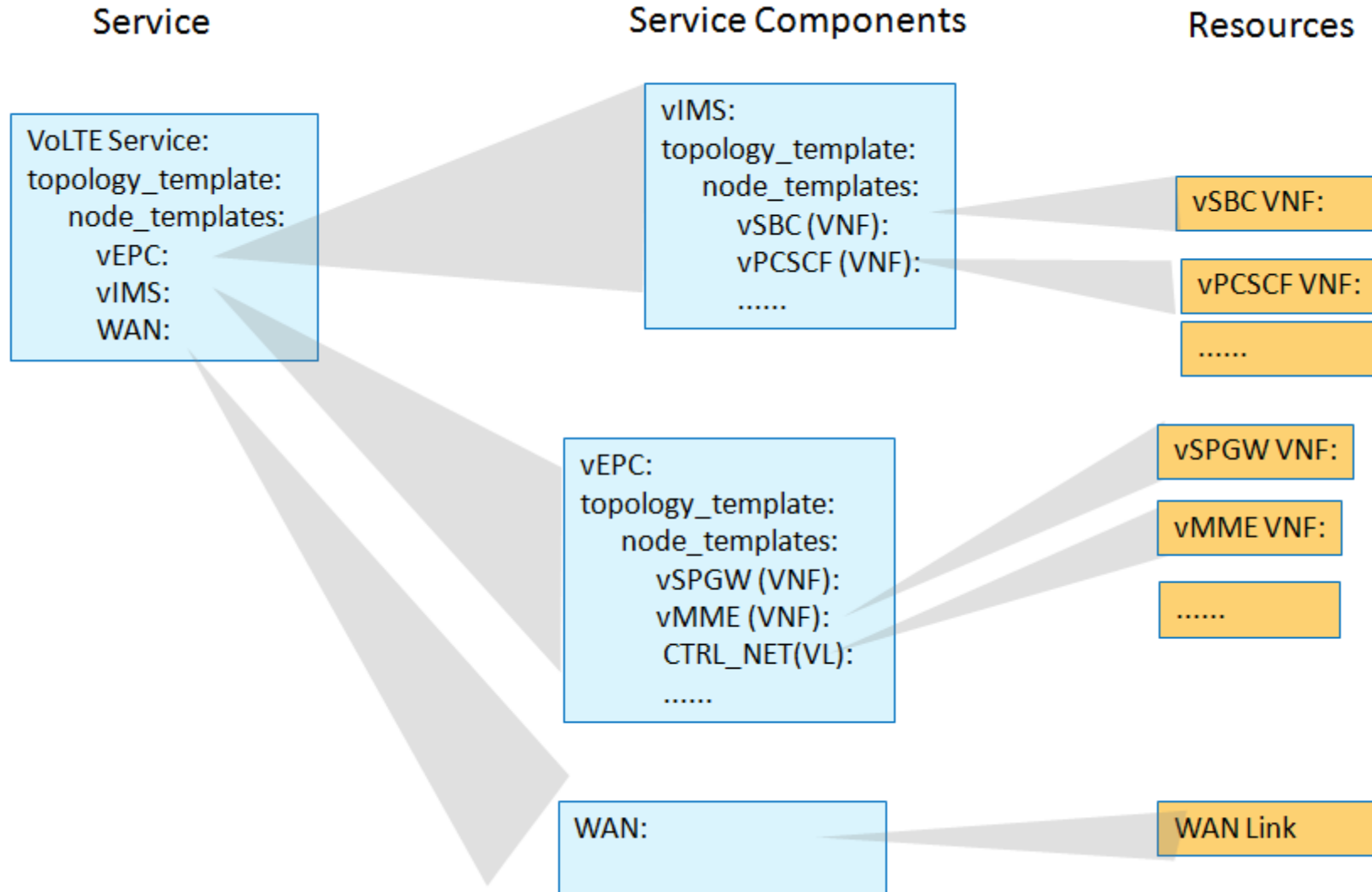
- **Others**

ONAP R2+ Naming convention discussion

ONAP R2+ Service IM Class Diagram (Clean Version)



ONAP R2+ Service IM Use case VoLTE example (Clean version)



ONAP R2+ Service IM Attributes (Clean Version)

ServiceDescriptor

InvariantUUID
UUID
name
description
category
version
serviceType
serviceRole
icon
serviceComponent
UUID

ServiceInstance

service-Instance-Id
service-instance-
name
service-instance-
descprtion
model-invariant-
uuid
model-uuid
model-version
service-type
service-role
selfLink
orchestration-status
service-component-
Instance-Id

ServiceComponent Descriptor

invariantUUID
UUID
name
description
version
designer

ServiceComponent Instance

instanceId
name
model-invariant-
uuid
model-uuid
model-version
selfLink
orchestration-
status
description

NetworkServiceDesc

vnfdId
pnfdId
virtualLinkDesc

NetworkServiceInstance

vnfnInfo
pnfnInfo
virtualLinkInfo

ONAP R2+ Resource IM Attributes (Clean Version)

VnfDesc

vnfdInvariantId
vnfdId
vnfdVersion
vnfName
vnfNamingCode
vnfProductInfoName
description
vnfProvider
Logo
vnfSoftwareVersion
...

VnfInstance

vnfInstanceId
vnfInstanceName
vnfInstanceAlterName
vnfInstanceNamingCode

vnfProductName
description
vnfProvider

vnfdId
vnfdVersion
vnfSoftwareVersion

...

VnfcDesc

vduInvariantId
vduId
vduName
vduNamingCode
description
vmFlavorName
virtualComputeDesc
virtualStorageDesc
swImageDesc
intCpd

...

VnfcInstance

nfcInstanceId
nfcNamingCode
description
vduId
vnfcState
provStatus
InMaint

...

ONAP DM (Work in progress)

- Basic Discussions (on the Wiki)
 - Conventions
 - Modelling Principles & Patterns
 - Design-Time Data Model vs Run-Time Data Model
 - Network Service Model and TOSCA Types
 - Reference
- More Contributions for F2F discussion this week

ONAP modeling distribution

- Modeling subcommittee
 - <https://wiki.onap.org/display/DW/Modeling+sub-committee>
 - <https://wiki.onap.org/display/DW/Modeling+sub-committee+meetings>
- Modeling Project
 - <https://wiki.onap.org/display/DW/Modeling+Project>
 - <https://wiki.onap.org/display/DW/Modeling+Project+Meetings>
- Modeling design principles and guideline
 - <https://wiki.onap.org/display/DW/ONAP+Modeling+Design+Principles+and+Guidelines>
- ONAP R2 Modeling workspace
 - <https://wiki.onap.org/pages/viewpage.action?pageId=16004181>
- Modeling September F2F event slides
 - <https://wiki.onap.org/display/DW/ONAP+Modeling+session+in+September+2017+during+F2F+developer+event>
- Modeling December F2F event Link
 - <https://wiki.onap.org/display/DW/ONAP+Modeling+workshop+20171212+and+20171214>

Thank you