Open Network Automation Platform (ONAP) Architecture Overview

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Outline

✦ Motivation and Background

✦ Meta Data Driven Strategy

✦ ONAP Architecture Overview

✦ Illustrative Flow: Design, Deploy and Operate

Key Imperatives and Drivers for ONAP:

- As We Move Towards Software Defined Networks and Virtualized Network Functions, We Need a New Approach for Operational Management Framework to Realize the Following Objectives:
  - Increase Value of the Network:
    - *Rapidly on-board new services*
    - *Facilitate new business & revenue models*
    - *Make Network Programmable in real-time*
  - Reduce Capex:
    - *Reduce / Eliminate dependency on development cycles*
    - *Dynamically adjust capacity & Allocate Resource When / Where Needed*
    - *Lower aggregated spare capacity*
  - Reduce OpEx:
    - *Automated service delivery and activation with Zero Touch Flow Through*
    - *Policy & Analytics-driven closed loop optimization*

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- ✦ 2+ years of Deployment Maturity at AT&T
- ✦ Comprehensive: Design +Orchestration + Control + Policy + Analytics
- ✦ Model-based design enabling self-serve capabilities for instantiation and closed loop automation

- ✦ Open TOSCA model
- ✦ Most Advanced Open Source Process & tool chain
- ✦ Architected for ease of VNF insertion (SDK)

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Meta Data Driven ONAP Platform Strategy

ONAP Design Time Framework

❖Catalog-driven Graphical design studio to:
  –Define Recipes for instantiating & Configuring VNFs & Services
  – Design Monitoring & Managing VNFs & Services

❖Test & Validate artifacts

❖Distribute meta-data to Execution Environment

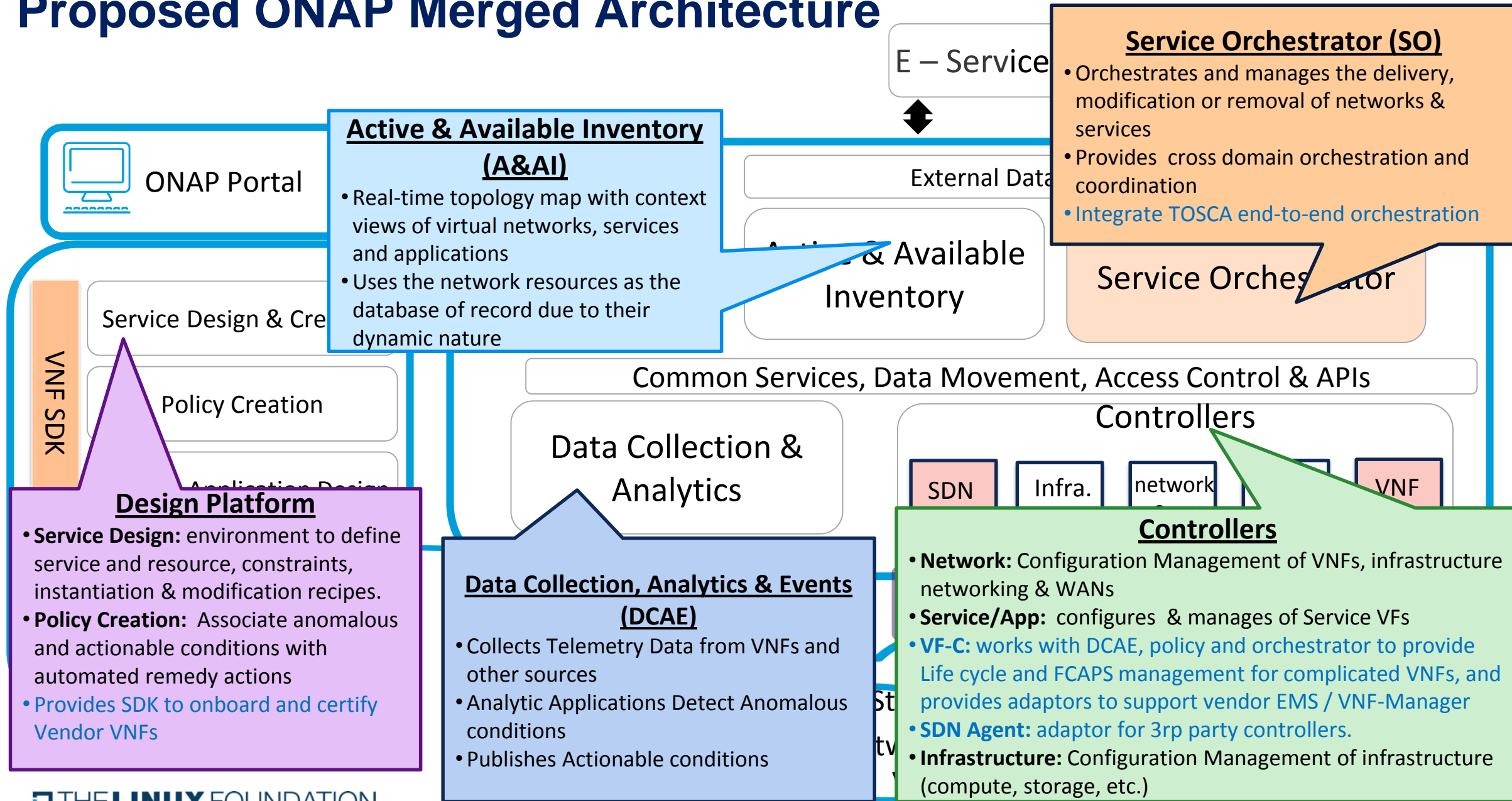## ONAP Execution Time Framework

❖Meta-data driven execution modules to:
  – Instantiate VNFs, Configure VNFs & E2E Services
  – Track Active & Available Inventory
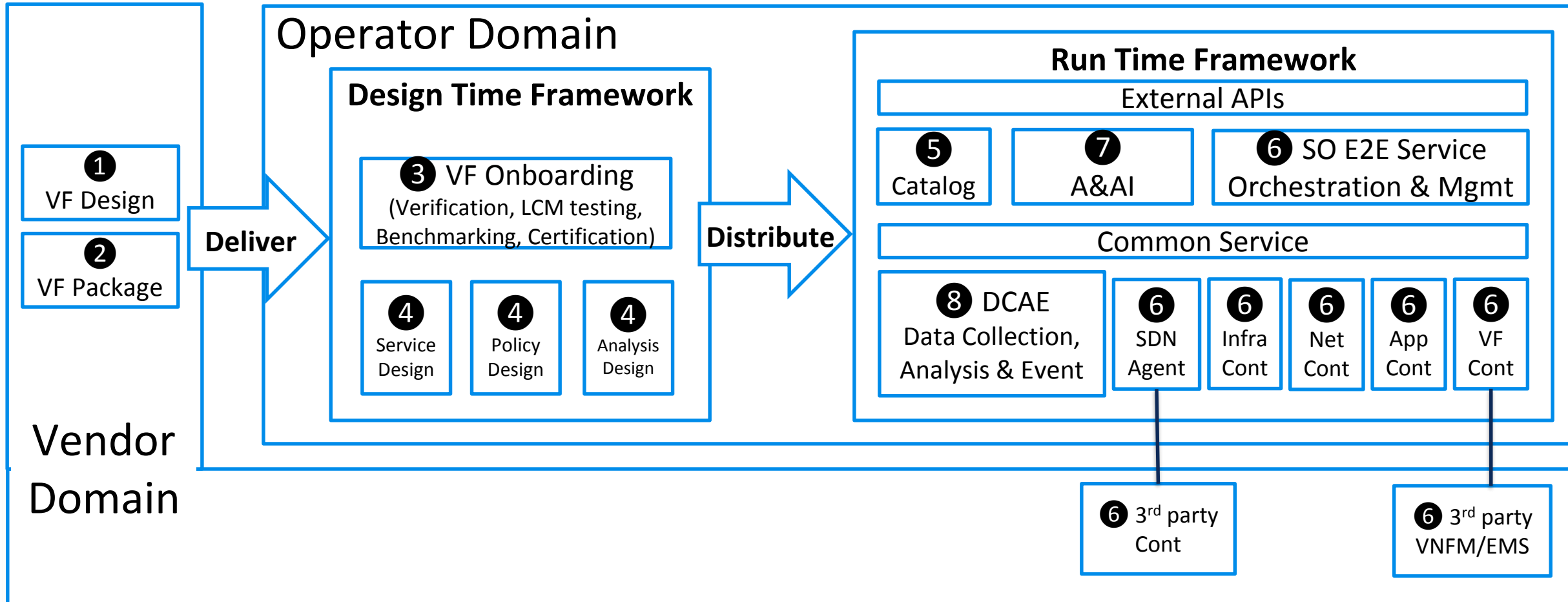 – Monitor and Take Automatic Corrective Action

❖Operational Dashboard

Deploy

Learn

ONAP Platform

Proposed ONAP Merged Architecture

E – Service

ONAP Portal

External Data

Active & Available Inventory (A&AI)
- Real-time topology map with context views of virtual networks, services and applications
- Uses the network resources as the database of record due to their dynamic nature

Active & Available Inventory

Service Orchestrator (SO)
- Orchestrates and manages the delivery, modification or removal of networks & services
- Provides cross domain orchestration and coordination
- Integrate TOSCA end-to-end orchestration

Service Orchestrator

VNF SDK

Service Design & Cre

Policy Creation

Application Design

Common Services, Data Movement, Access Control & APIs

Controllers

Data Collection & Analytics

SDN | Infra. | network | VNF

Design Platform
- **Service Design:** environment to define service and resource, constraints, instantiation & modification recipes.
- **Policy Creation:** Associate anomalous and actionable conditions with automated remedy actions
- Provides SDK to onboard and certify Vendor VNFs

Data Collection, Analytics & Events (DCAE)
- Collects Telemetry Data from VNFs and other sources
- Analytic Applications Detect Anomalous conditions
- Publishes Actionable conditions

Controllers
- **Network:** Configuration Management of VNFs, infrastructure networking & WANs
- **Service/App:** configures & manages of Service VFs
- **VF-C:** works with DCAE, policy and orchestrator to provide Life cycle and FCAPS management for complicated VNFs, and provides adaptors to support vendor EMS / VNF-Manager
- **SDN Agent:** adaptor for 3rp party controllers.
- **Infrastructure:** Configuration Management of infrastructure (compute, storage, etc.)

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Thank you

Questions?