ONAP
Open Source Community for Orchestrator

Yachen Wang
Deputy Director of Network Technology Dept. China Mobile
President of ONAP
Vice-chairman of ITU-T SG13 WP1(IMT2020)
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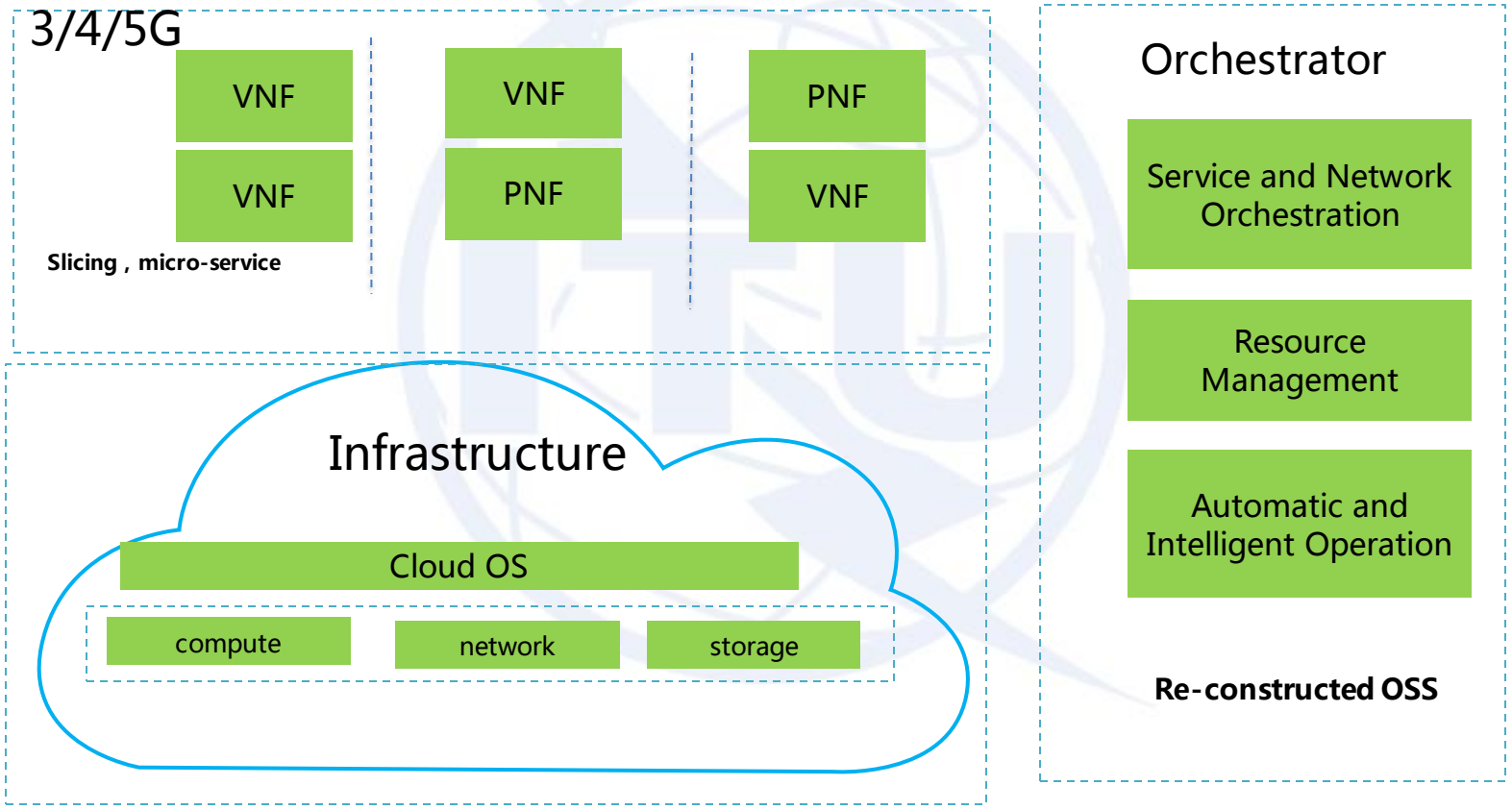
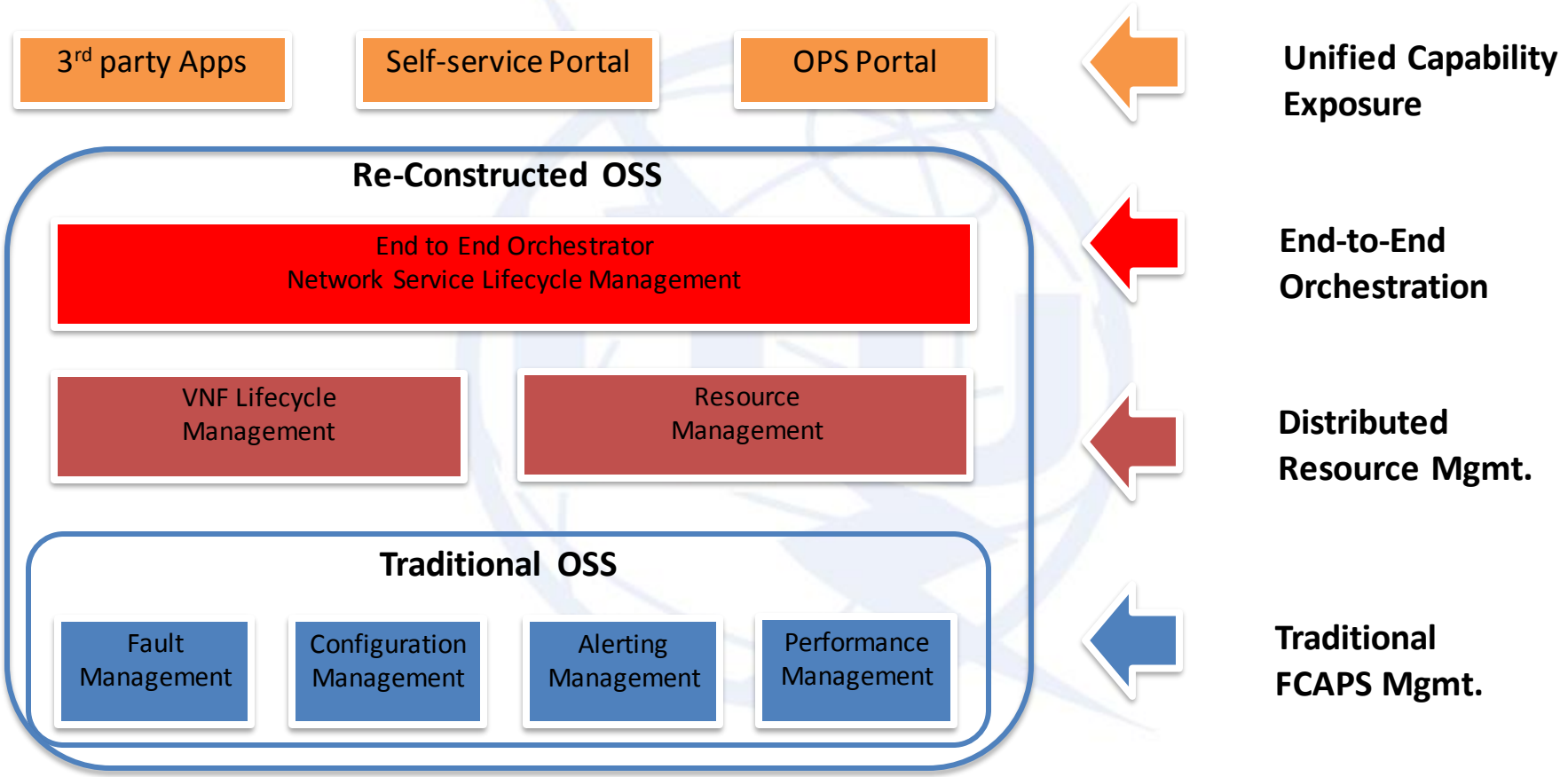
- **Orchestrator with Open Source**
- **ONAP Introduction**
- **ONAP in China Mobile**
- **Summary**

Orchestrator is the Re-Constructed OSS for NFV/SDN networks (1/2)



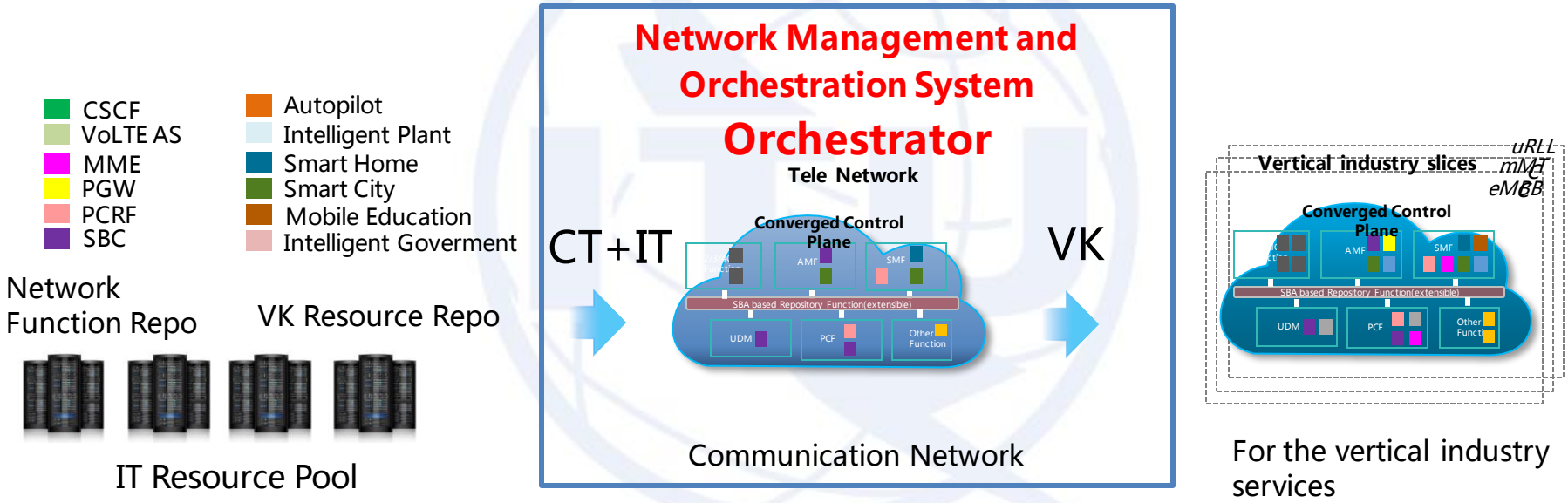
Orchestrator is the Re-Constructed OSS for NFV/SDN networks (2/2)



Orchestrator could be the core of next generation OSS.

Orchestrator is the “Brain” for the future network

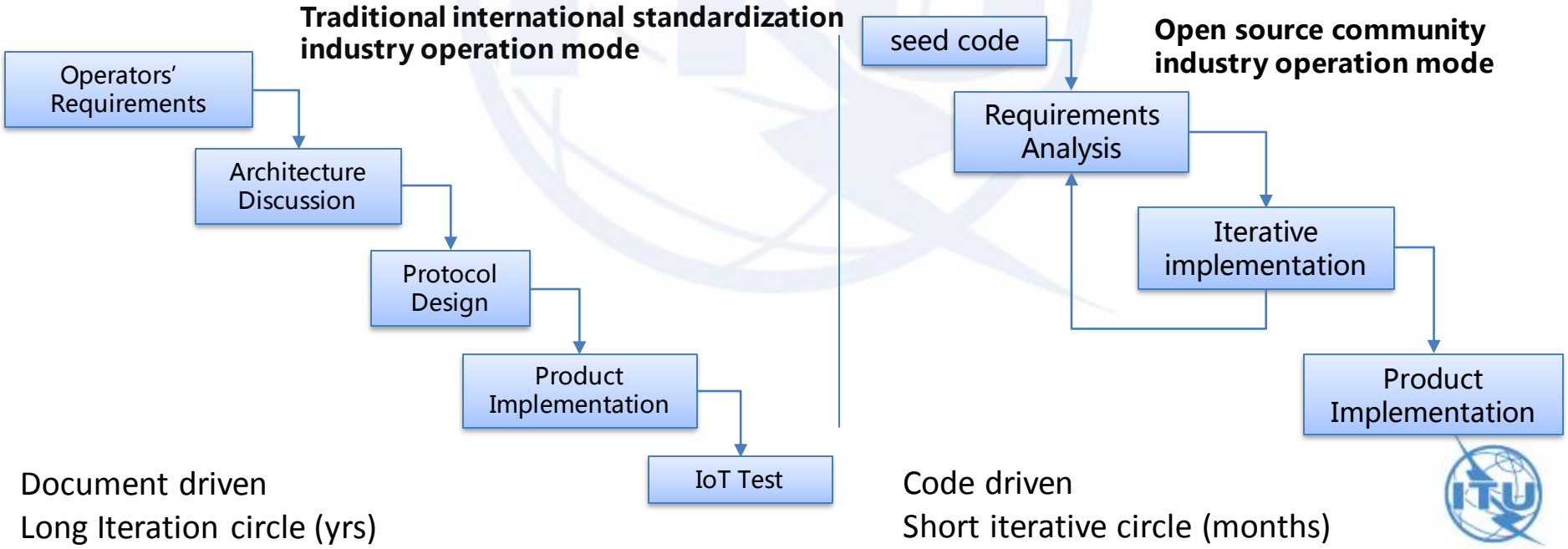
Network Management and Orchestration System (O) is a Operating and Supporting System, used by a new type of network which brings in SDN/NFV



Network Management and Orchestration System functions as the architect who builds telecommunication “Lego”, orchestrates telecommunication functions and capabilities into services for the needs of different industries. And manage the whole life-cycle of resources, networks and services to achieve agile onboarding and effective network operation.

"Open source" is a new R & D model achieving Self-development for Carriers

- **It is necessary to develop a NFV/SDN fusion network management and orchestration system open source software:**
  - With traditional international standardization industry operation mode: the innovation progress is slow (in years), with potential compatibility issues between vendor solutions, and potential risks from lack of control of the software system.
  - Open source software is key to enable operators quickly introduce technology to achieve business innovations.
  - At the same time, being de facto standards, open source community helps multi-manufacturers communicates with each other and promote industrial maturity.



- Orchestrator with Open Source
- **ONAP Introduction**
  - ONAP Scope
  - ONAP release plan
  - ONAP architecture
- ONAP in China Mobile
- Summary

ONAP is Orchestrator and more+

ONAP Vision: ***The Top, Global Automation platform for Network, Infrastructure & Services across Service Providers, Cloud Providers and Enterprises in a Software-Defined, Virtualized Era***

- **ONAP (Open Network Automation Platform) is an open source software platform that delivers capabilities for the design, creation, orchestration, monitoring, and life cycle management of VNFs/SDNs and high-level services that combine the above.**
- **ONAP provides for automatic, policy-driven interaction of these functions and services in a dynamic, real-time cloud environment.**
- **ONAP uses cloud technologies and network virtualization to offer services, achieving both faster development and greater operational automation. It lets service providers quickly add features and reduces operations costs. It gives service providers and businesses with their own network clouds more control of their network services, and enables developers to create new services**

ONAP: the marriage between OPEN-O and openECOMP

Linux Foundation Framework, Governance, Control

Bringing the best of both worlds together

+

- 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)

ONAP TOP 10 Requirements

+

The Technology

1. **Merge**, **Re-architect & Optimize** ECOMP & OPEN-O code bases into a single, flexible platform
2. **Modularity** enhancements for maximum flexibility
3. **Enhance** Model driven design eg HEAT, YANG, TOSCA
4. **Add NEW features**/functionality making ONAP a de-facto platform for automation
5. **Global Requirements** inclusion for maximum end users value creation

The Ecosystem

1. **Participation** Global (end users at at least 50% subscribers, top vendors/integrators)
2. **Open** Code, collaborative processes, sustainable ecosystem
3. **Collaboration** with Upstream projects, users
4. **CI/CD** Best practice - Deliver in incremental chunks
5. **Harmonize** ONAP with standards frameworks eg ETSI, MEF….

ONAP Members

Platinum Members（18）

AT&T
中国移动 China Mobile
orange
Tech Mahindra
vmware
vodafone
ZTE
NOKIA
intel
IBM
HUAWEI
ERICSSON
CLOUDIFY
CISCO
中国电信 CHINA TELECOM
Bell
amdocs
Jio

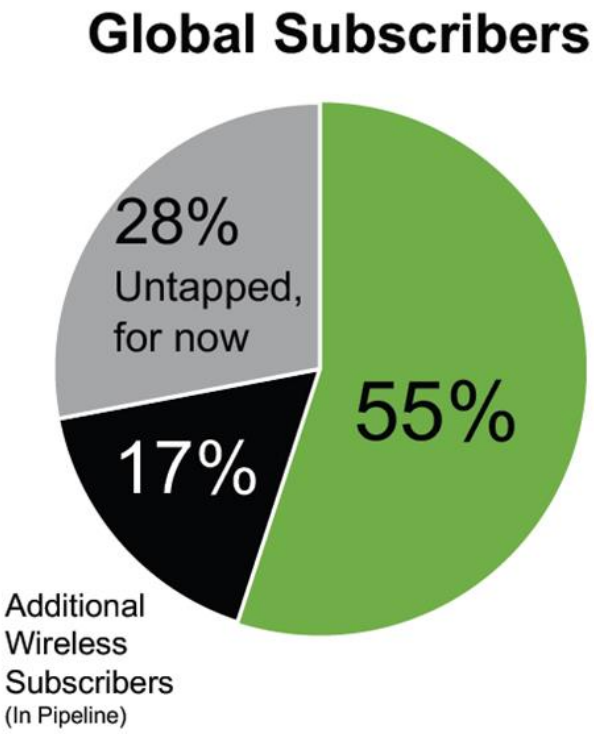
Silver Members（32+）

accenture High performance. Delivered.
ARM
亿阳信通 BOCO Inter-Telecom
CANONICAL
赛特斯 CertusNet
China unicom中国联通
ciena
cloudbase solutions
COMCAST
Coriant
EQUINIX
FiberHome
FUJITSU
H3C
Infosys
JUNIPER NETWORKS
kaloom
MAVENIR
metaswitch
Microsoft
MIRANTIS
NEC/Netcracker SDN/NFV Solutions
NETSIA
OPENET
PCCW Global
RAISECOM
redhat
SAMSUNG
VEON
WIND AN INTEL COMPANY
windstream
ZTEsoft

Associate Members

ONF Open Networking Foundation

ONAP Members covers 55% Global Subscribers



Service Providers

AT&T
Bell Canada
China Mobile
Comcast
China Telecom
Orange
Reliance Jio
Vodafone

China Unicom
PCCW
Veon (VimpelCom)
Windstream

Ecosystem Vendors, Integrators

Amdocs
Cisco
Ericsson
Gigaspaces
Huawei
IBM
Intel
Nokia
Tech Mahindra
VMWare
ZTE

Accenture
ARM
BOCO Inter-Telecom
Canonical
CertusNet
Ciena
Cloudbase Solutions
Coriant
Fujitsu
H3C
Infosys
Juniper
Mavenir
Metaswitch
Microsoft
Mirantis
NetSIA
Netcracker
ONF
Raisecom
Redhat
Samsung
Wind

ONAP Governance & Organization

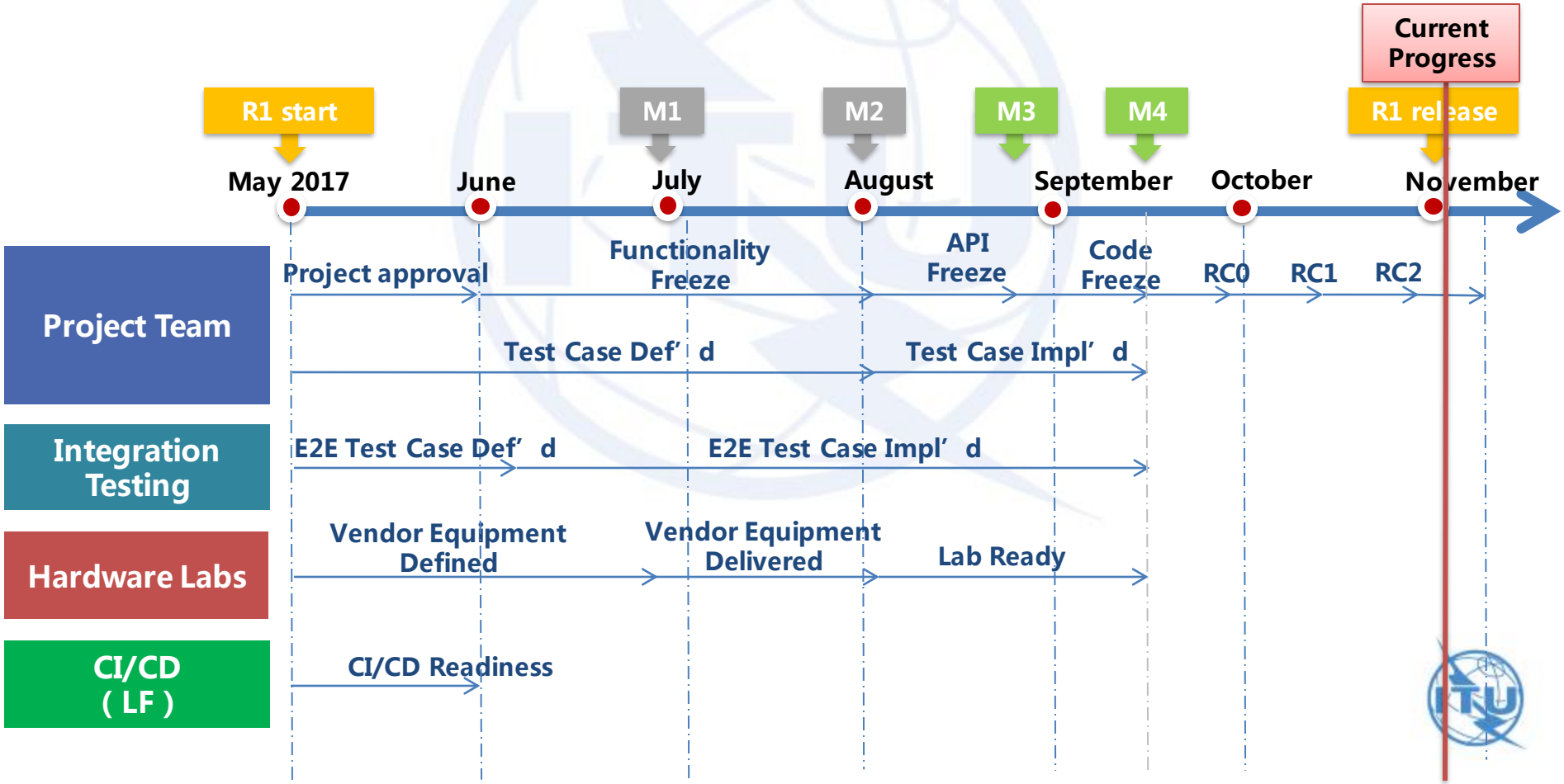
- **Governing Board**
  - Responsible for budget, trademark/legal, marketing, compliance & overall direction
- **Technical Steering Committee**
  - Fair Technical Board starting with commitment to project success and transitioning to merit based over time
- **Marketing Committee**
  - PR, event, blog, tutorial and summit

- **Officer Position in ONAP Governing Board**
  - Chair: Chris Rice (AT&T)
  - President: Yachen Wang (China Mobile)
  - Treasurer: Vincent Danno (Orange)

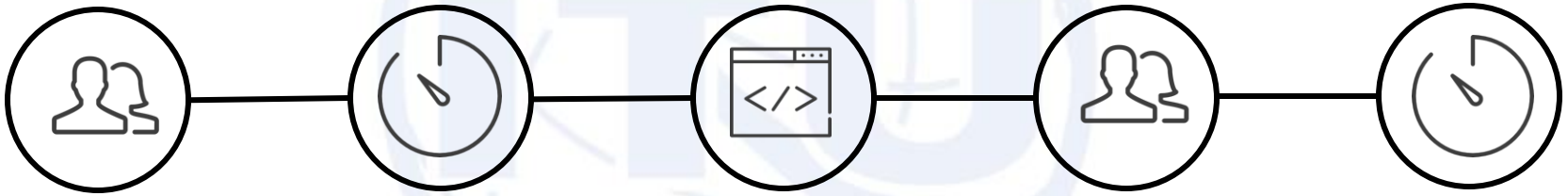


ONAP "Amsterdam" Release Planning—Nov ,2017

1. May 2017, ONAP Amsterdam Release officially launched.
2. August 2017 (M3) , API Freeze for R1 , 50% of Functional Test Case are completed.
3. September 2017 (M4) , Code Freeze for R1 , 100% of Functional Test Case and E2E Test Cased are completed.
4. November 2017 Complete VoLTE and CPE integration test.



ONAP R1 "Amsterdam" by the Numbers



57 members

10/10 top NW vendors

55% of world's subscribers

8 months

Inception to release

1380

Wiki Community

538

Contributors

46 member orgs

15 mins

Avg time to new service delivery

ONAP Architectural Principles

Model Driven

Automated without hard-coding

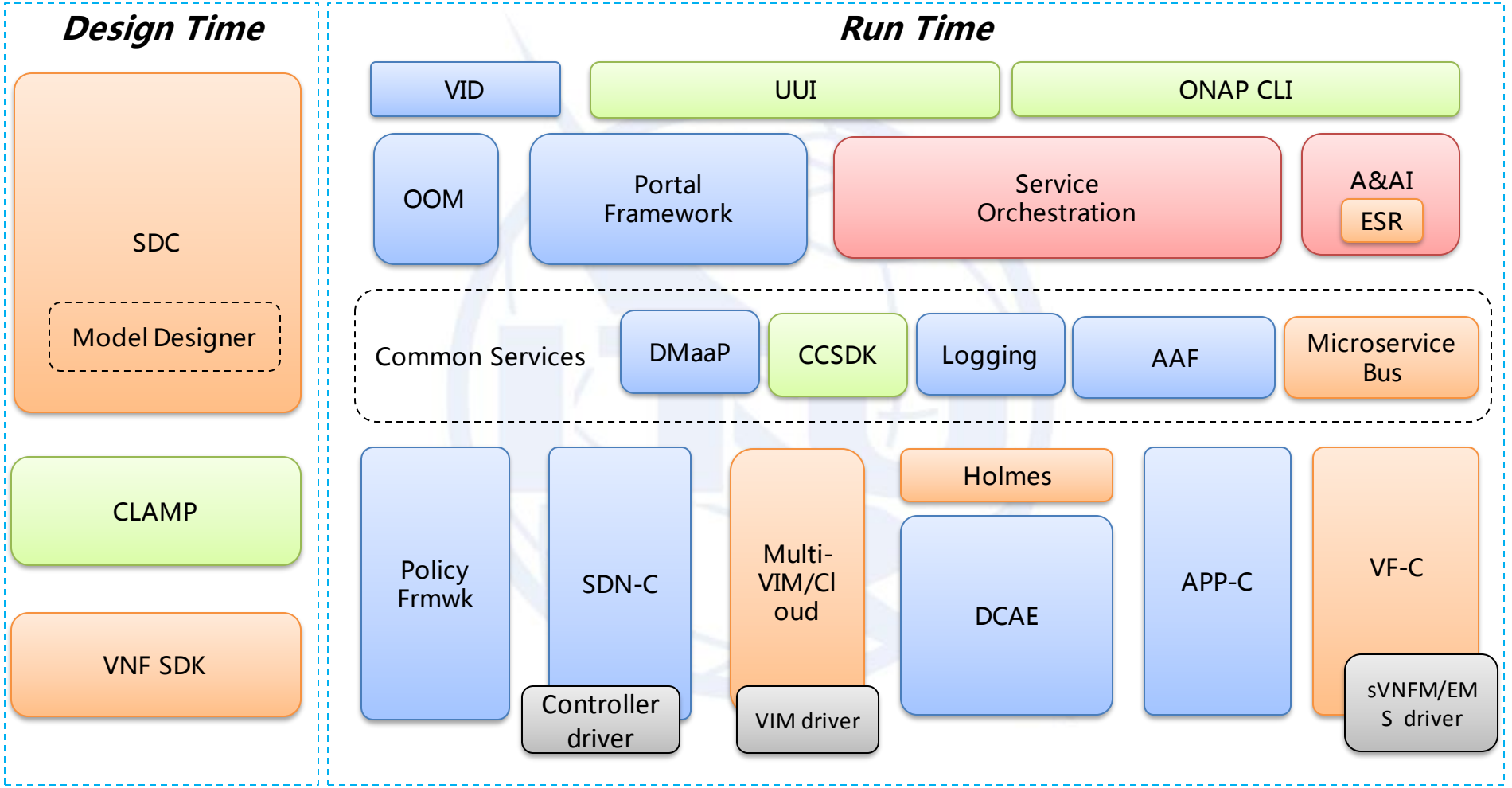
Cloud Native

Built for the cloud and to manage cloud native VNF

DevOps CI/CD

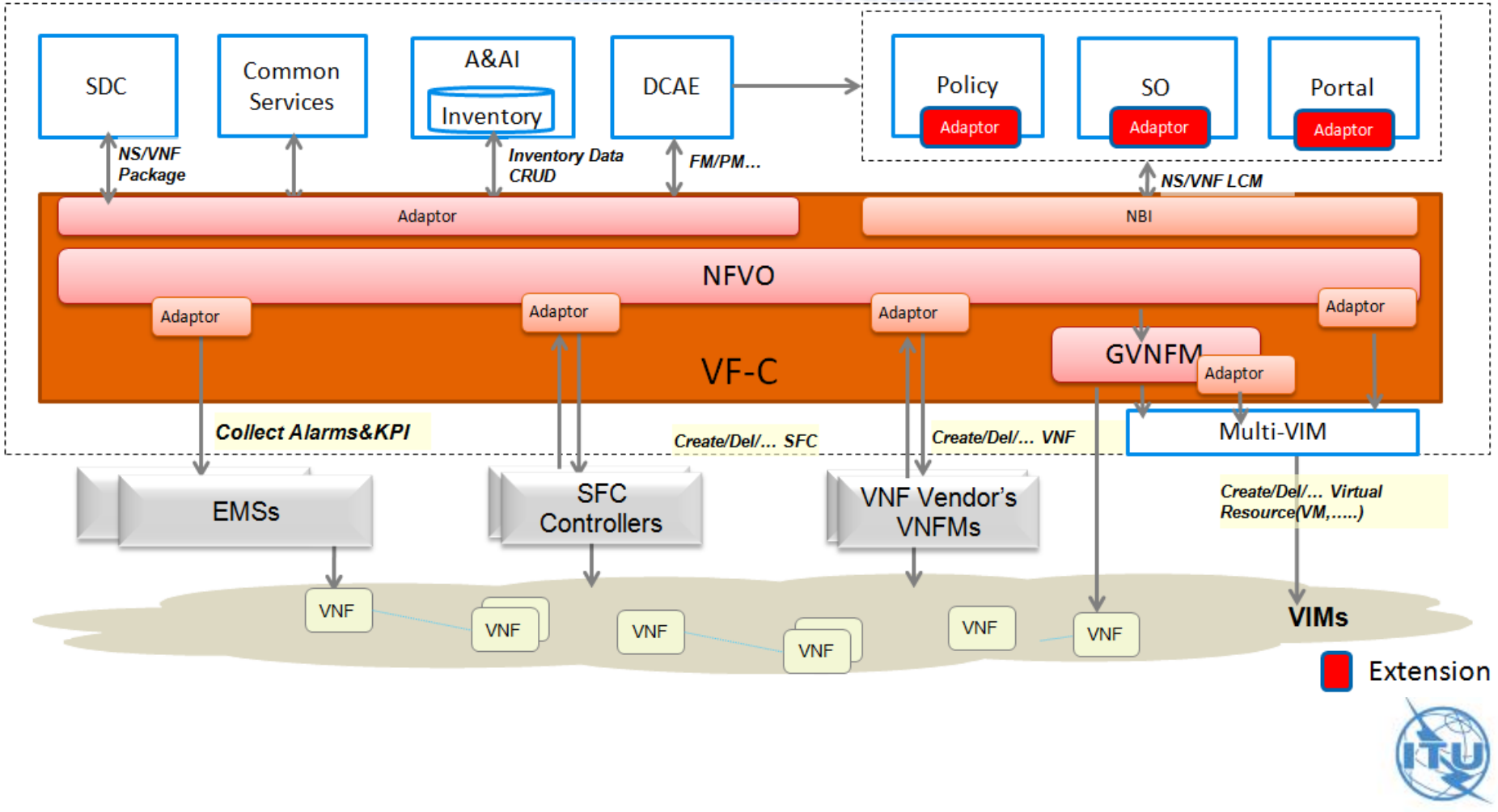
Built using CI/CD Manage VNFs using CI/CD Break/Fix → Plan/Build

ONAP R1 "Amsterdam" Architecture



From openECOMP | From OPEN-O | Convergence from both sides | New | 3rd party

VF-C: Virtual Function Controller (ETSI-aligned) Incorporates commercial VNFMs to create and manage underlying VNFs



A Day in the Life of an ONAP Service

VNF

① Vendor provided VNF (cloud-hosted, optimized or native)

② Vendor packages VNF as per ONAP requirements; can use VNF SDK

Design

③ Design/test teams onboard VNFs

④ Designers create products, services, recipes

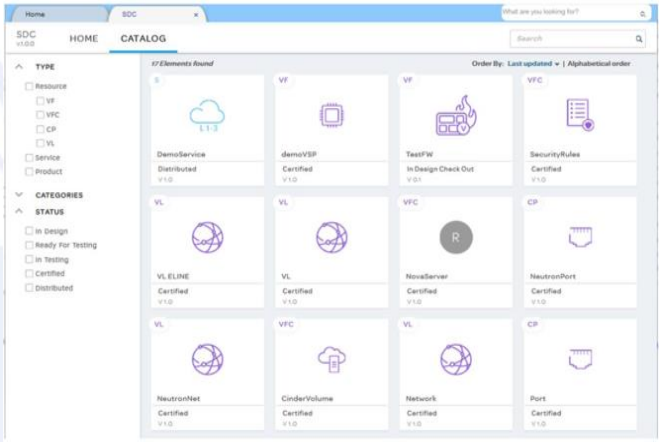
Run-Time

⑤ OSS/BSS system triggers service deployment

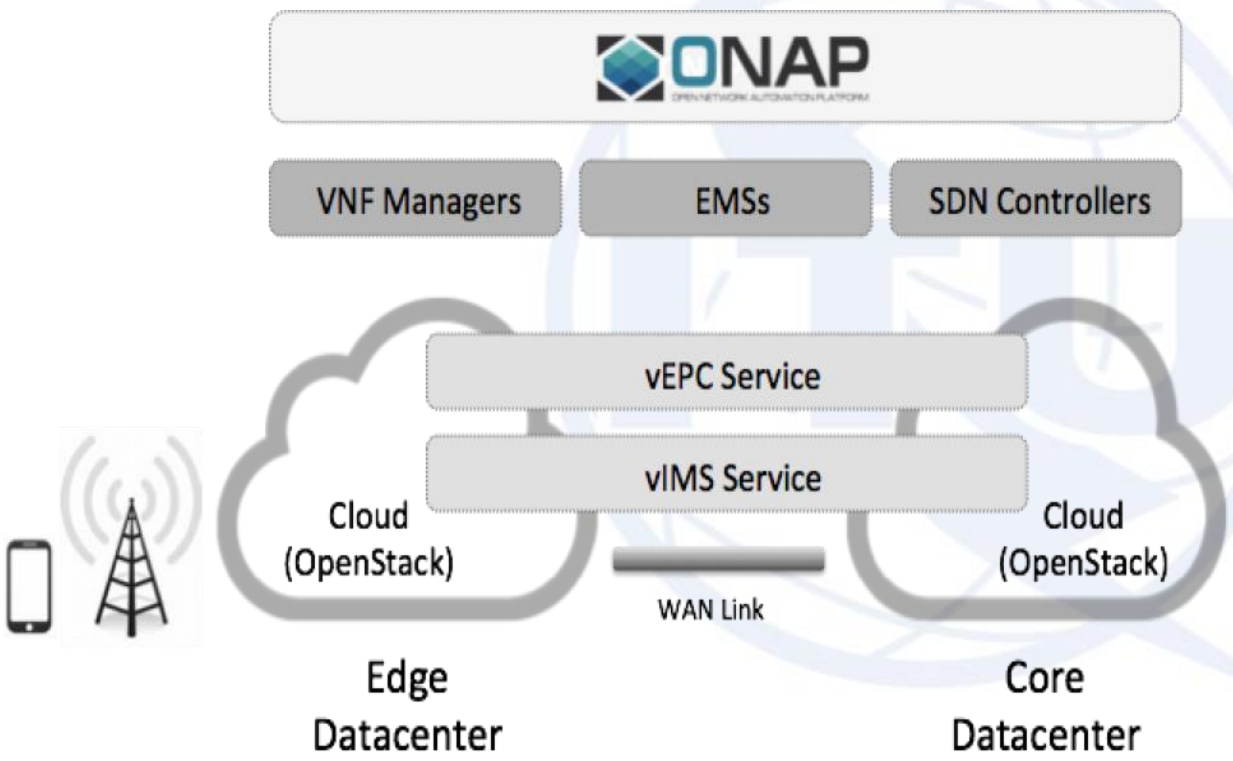
⑥ Service lifecycle management

Closed Loop

⑦ Constant data collection, analytics, event monitoring; S3P



VoLTE: Model-driven, Real-time, Closed-loop Automation Blueprint



Lowers CapEx by extending infra investments

- Incorporates commercial VNFs & VNFMs to create and manage underlying vEPC and vIMS
- Improves HW utilization, (multitenancy)

Improves speed to revenue

- New voice services: months reduced to minutes

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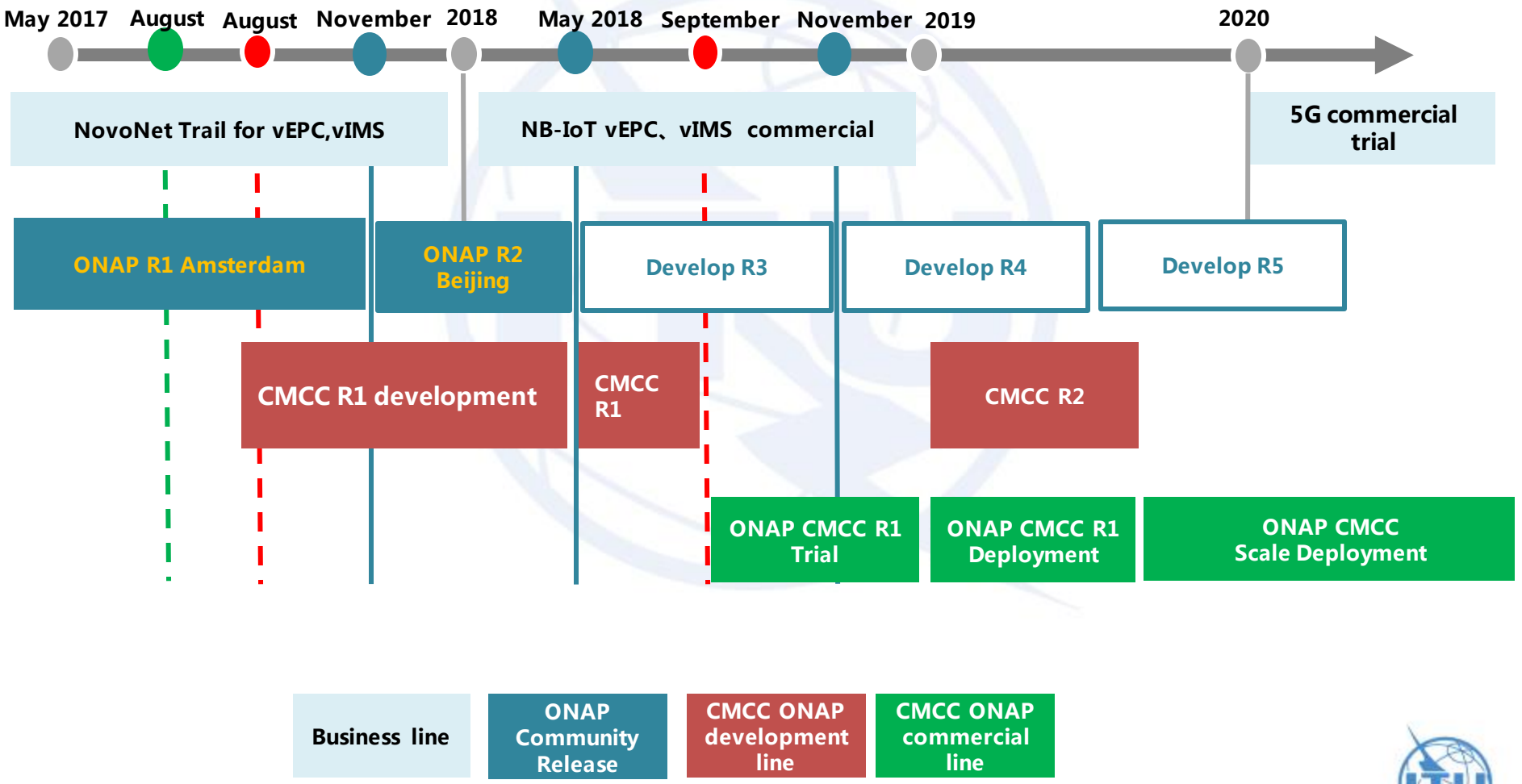
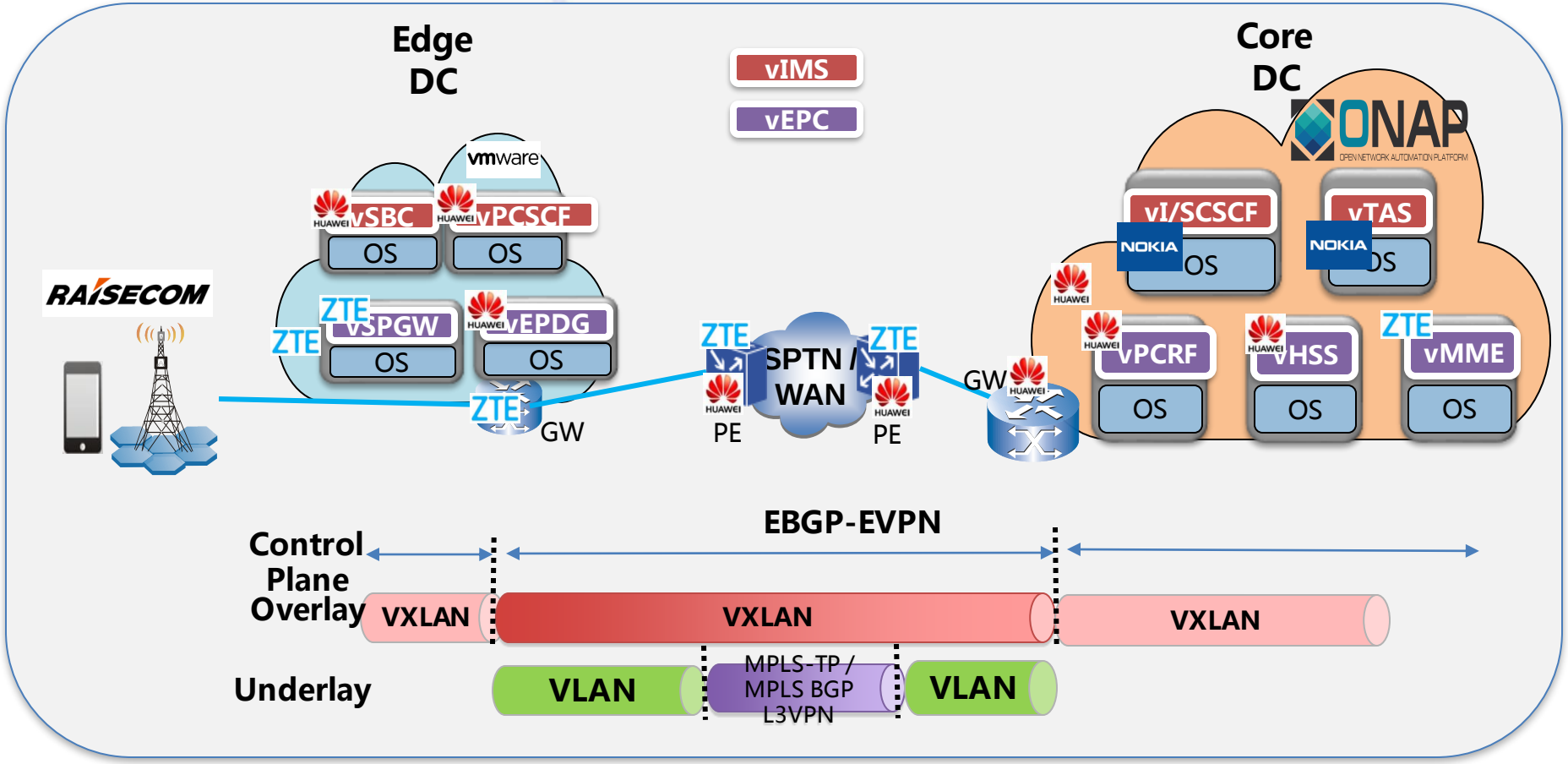
CMCC ONAP draft Roadmap

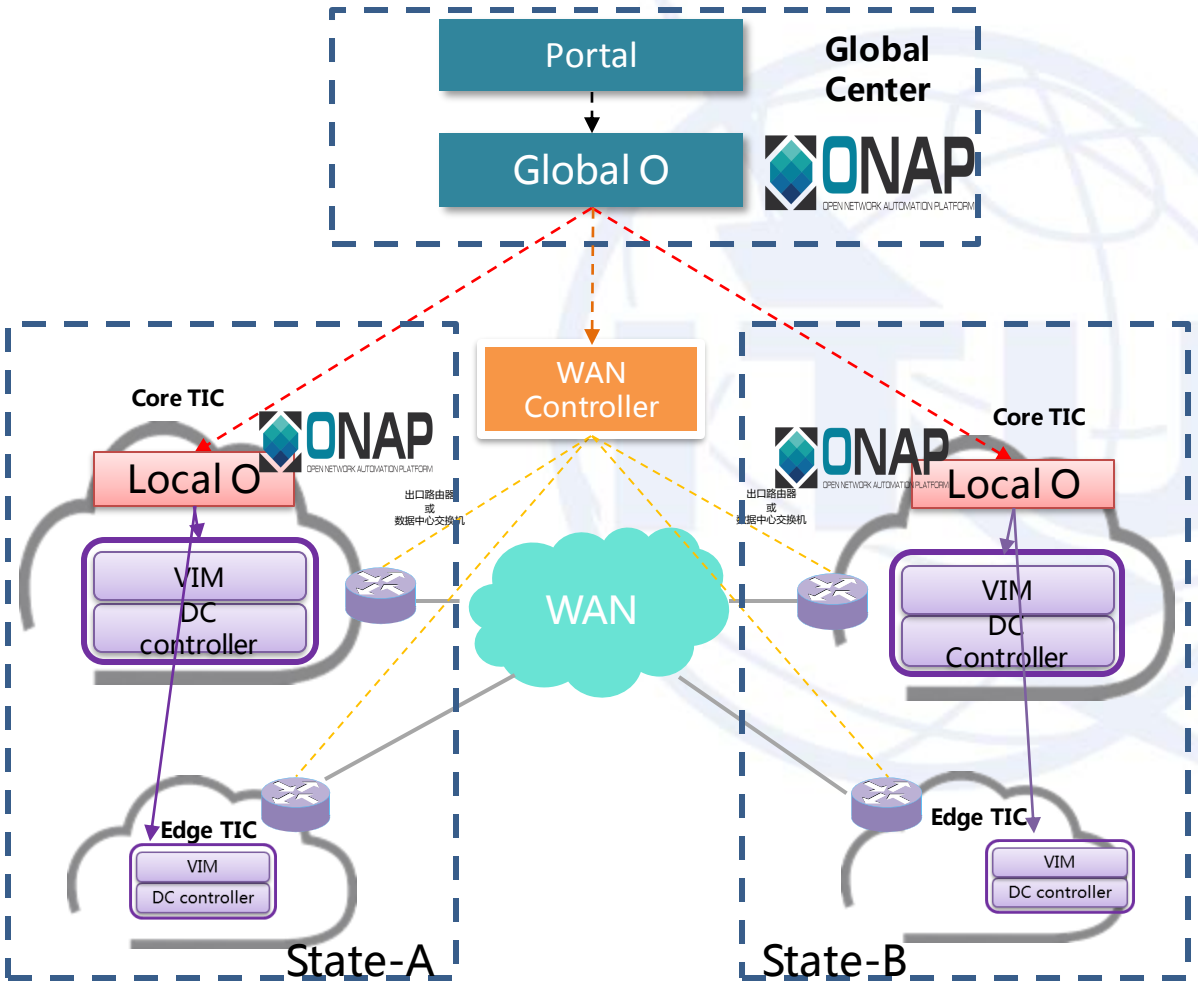
Be ready for deployment by 2018



ONAP Integration Lab for VoLTE scenario



ONAP Verification in China Mobile NovoNet trail Network



1 Establish 2 layers of new type of DCs with TIC

Deploying control plane vNF on Core Tic nodes

Deploying Media plane and access layer vNF on Edge Tic nodes

2 Achieve a unified orchestration and scheduling via ONAP

Achieving a unified orchestration system by establishing 2 lays systems: domain and cross-domain network management and orchestration systems .

3 Unified Resource Pool supports multi-service environment

TIC new DC to form a unified resource pool, support multi-service environment, to achieve multi-service resource sharing.

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ONAP 2018 Guidance

- ONAP R2 Beijing Release – Summer 2018
  - Expand platform maturity to enable support for 5G, cloud, Enterprise and IoT services.
    - Inter Cloud connectivity
    - Enterprise Packaging

- Continuing Global Adoption & Harmonization with SDO/other open source projects
  - Aligning API/Information Models and OSS/BSS integration

Collaborate and Join in ONAP

Collaborate between ONAP and ITU-T

IMT 2020 network slicing, network capability exposure use cases , architecture and APIs

Input to ONAP:

functional requirements, architectural considerations & deployment use cases

5G end-to-end slicing management UC

ONAP output:

code evaluation, integration testing, application demonstration

centralized orchestration. distributed control

federation

Etc.


ITU