Open Networking Foundation

Welcome!

Transforming Operator Networks

with

Curated Open Source

Aseem Parikh

VP Solutions & Partnerships

ONF's Operator Led Mission

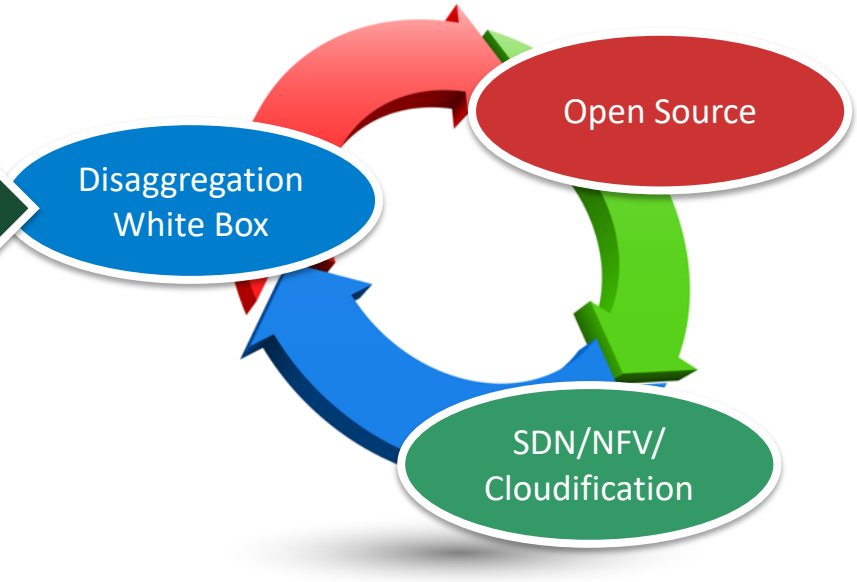
Transform Operator Networks

Why?

… to bring capex & opex efficiencies & innovative services

How?

…and do so by leveraging



ONF – Operator Led Consortium

With 13+ additional operators at ‘Innovator’ level

Collaborating to Address a Common Problem

Operators need cloud-like economics and agility

Incumbent vendors have not been providing open tools & cloud-like building blocks

Supported by a Committed Group of Supply Chain Partners

ADTRAN

ciena

DELL

Edge-corE NETWORKS

intel

Infosys
Navigate your next

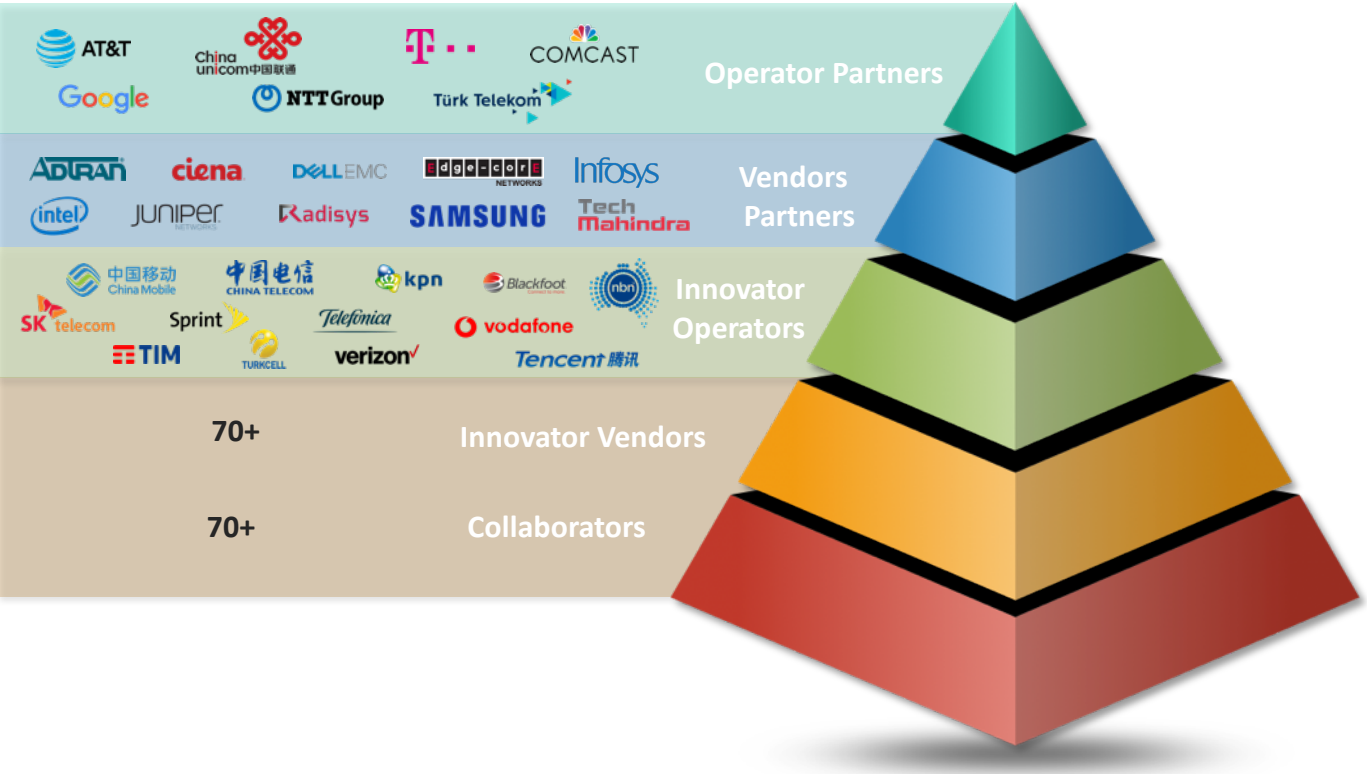
Radisys
A Reliance Industries Limited Company

SAMSUNG

Tech Mahindra

Operator Led - Curated Open Source Community

Partners committed to disaggregation, open source and SDN/NFV/Cloudification



ONF BOARD

AT&T	Andre Feutsch – CTO & ONF Chair
T-Mobile	Jochen Appel - VP
Google	Amin Vahdat - Fellow
NTT Group	Dai Kashiwa - Director
COMCAST	Rob Howald - VP
China unicom	Shao Guanglu - SVP
Edgecore Networks	George Tchaparian - CEO
Türk Telekom	Yusuf Kirac - CTO
Stanford	Nick McKeown - Prof
ONF / Stanford	Guru Parulkar, Exec Dir

ONF's Yin-Yang Model for Disaggregation & Integration

To enable innovation need:

Disaggregation and
Open Source Components

To be able to deploy:

Operators Require Integrated Solutions Leveraging Open Source Disaggregated Components

ONF is unique in delivering Integrated Solutions leveraging open source Disaggregated Components

ONF Open Source Components

XOS — A Service OS for service management, composition, orchestration

Services — A Portfolio of Mobile, Residential, & Enterprise Services

OMEC — A Disaggregated Virtualized EPC

ONOS: An SDN OS for control and config designed for scale, performance, HA

Stratum

Packet Switches

VOLTHA

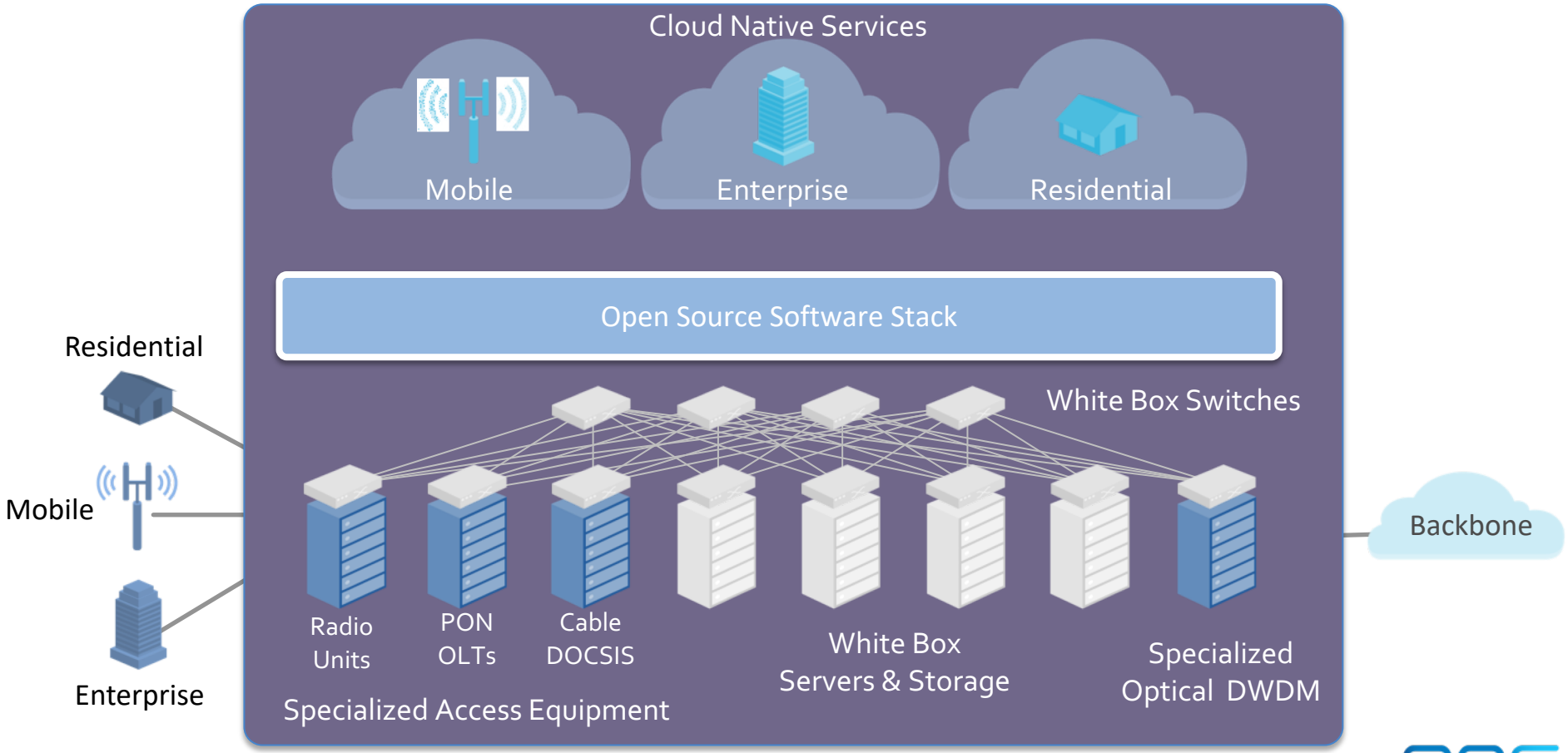
OLT: Optical Line Terminator

xRAN Controller

RAN RU/DU

OLS/ROADM

CORD – Next Generation Edge Cloud Platform



ONF's Interconnected Set of Curated Open Source Projects

Access

Edge

Core

ONF's Interconnected Set of Curated Open Source Projects

MOBILE

BROADBAND

CORD

Access

Edge

Core

Trellis
NFV Fabric

ONOS
SDN Controller

OpenFlow

COMMON SDN
INFRASTRUCTURE

ONF's Interconnected Set of Curated Open Source Projects

O-RAN Controller

M-CORD

OMEC
Open Mobile Evolved Core

MOBILE

ODTN
Disaggregated Optical Transport

SEBA & VOLTHA

R-CORD

R-CORD
Subscriber Mgmt

BROADBAND

Access

Edge

Core

Trellis
NFV Fabric & SDN Backhaul

ONOS
SDN Controller

OpenFlow

COMMON SDN INFRASTRUCTURE

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Disaggregated Optical Transport

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BROADBAND

Access

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Edge

Core

ONOS
SDN Controller

OpenFlow

Migrating to

Migrating to

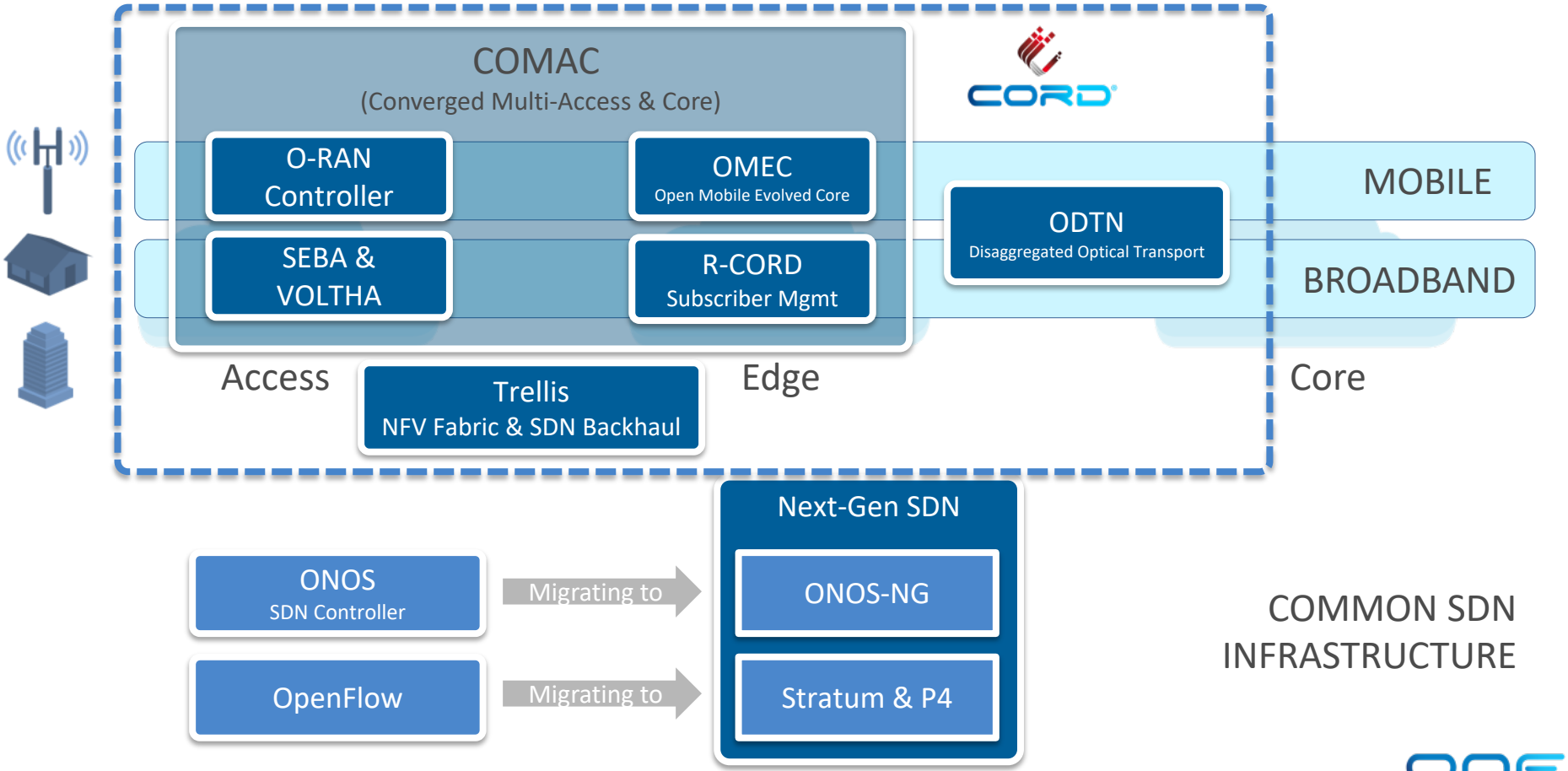
Next-Gen SDN

ONOS-NG

Stratum & P4

COMMON SDN INFRASTRUCTURE

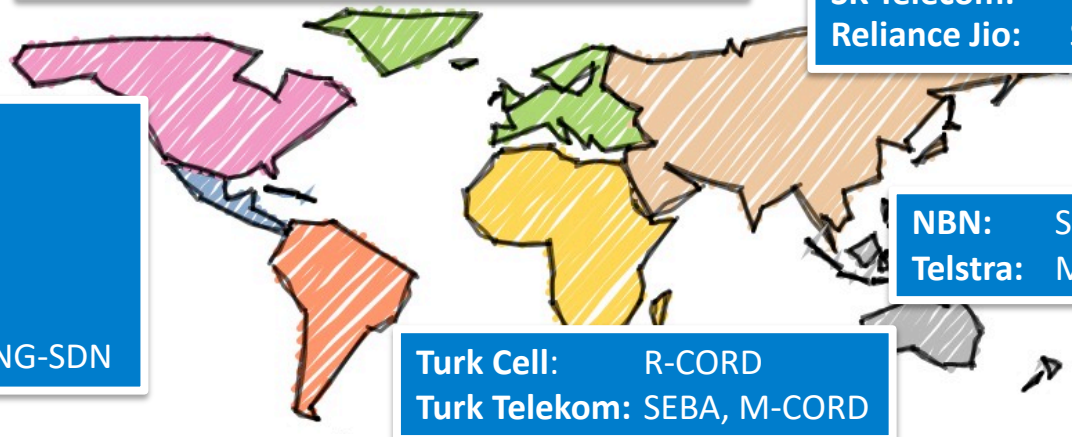
ONF's Interconnected Set of Curated Open Source Projects



Operator Traction Worldwide

British Telecom:	R-CORD
Deutsche Telekom:	SEBA, M-CORD, NG-SDN
Swisscom (Fastweb):	R-CORD
KPN:	NG-SDN, Stratum
Telefonica:	R-CORD, M-CORD
Telecom Italia:	M-CORD
Colt:	R-CORD

China Unicom:	M-CORD, E-CORD
China Mobile:	M-CORD, E-CORD
NTT, NTT East:	ODTN, R-CORD
SK Telecom:	M-CORD
Reliance Jio:	SEBA, M-CORD



AT&T:	SEBA, VOLTHA
Blackfoot:	SEBA
Verizon:	M-CORD
Sprint:	M-CORD
Comcast:	Trellis, ODTN
Google:	Stratum, SEBA, NG-SDN

NBN:	SEBA, VOLTHA
Telstra:	M-CORD

Turk Cell:	R-CORD
Turk Telekom:	SEBA, M-CORD

Operator Traction Worldwide

British Telecom: R-CORD
Deutsche Telekom: SEBA, M-C
Swisscom (Fastweb): R-CORD
KPN: NG-SDN, St
ORD, M
CORD
ORD

, E-CORD
, E-CORD
-CORD
-CORD

AT&T:
Blackfo
Verizon
Sprint:
Comcas
Google:

LTHA
Telstra: M-CORD

Turk Cell: R-CORD
Turk Telekom: SEBA, M-CORD

"70% of operators worldwide are planning to deploy CORD"

Michael Howard
IHS Markit

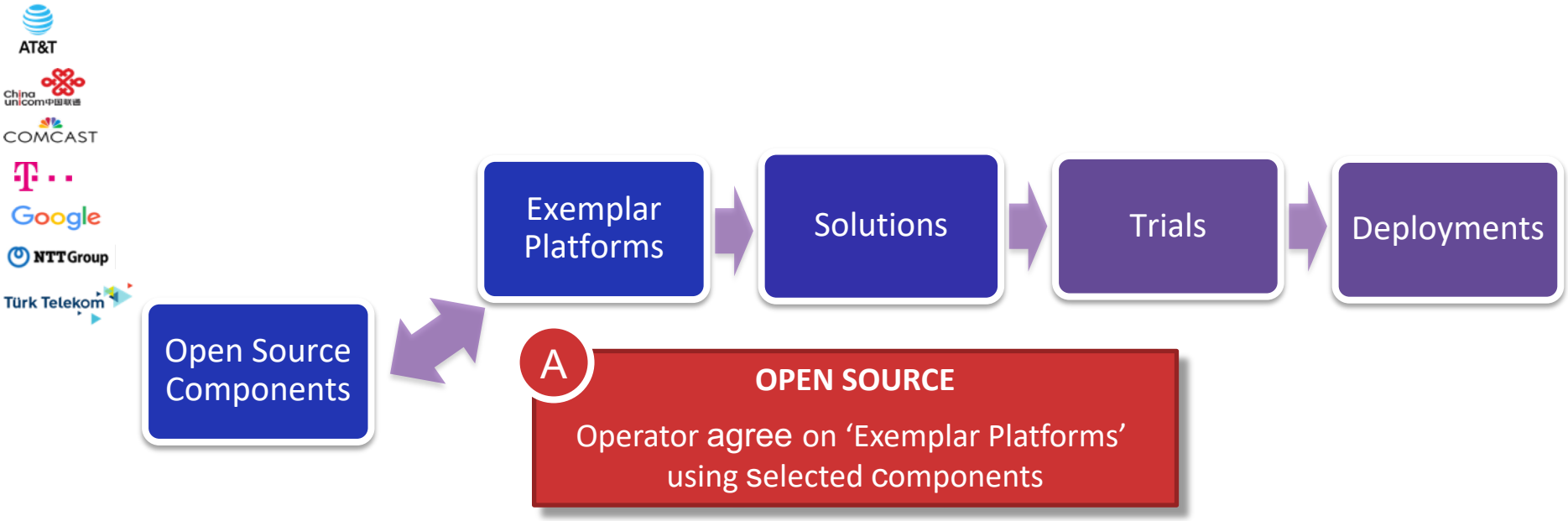
"Nearly 40% of all end-customers will have service provided by … CORD by mid-2021"

Roz Roseboro
Heavy Reading

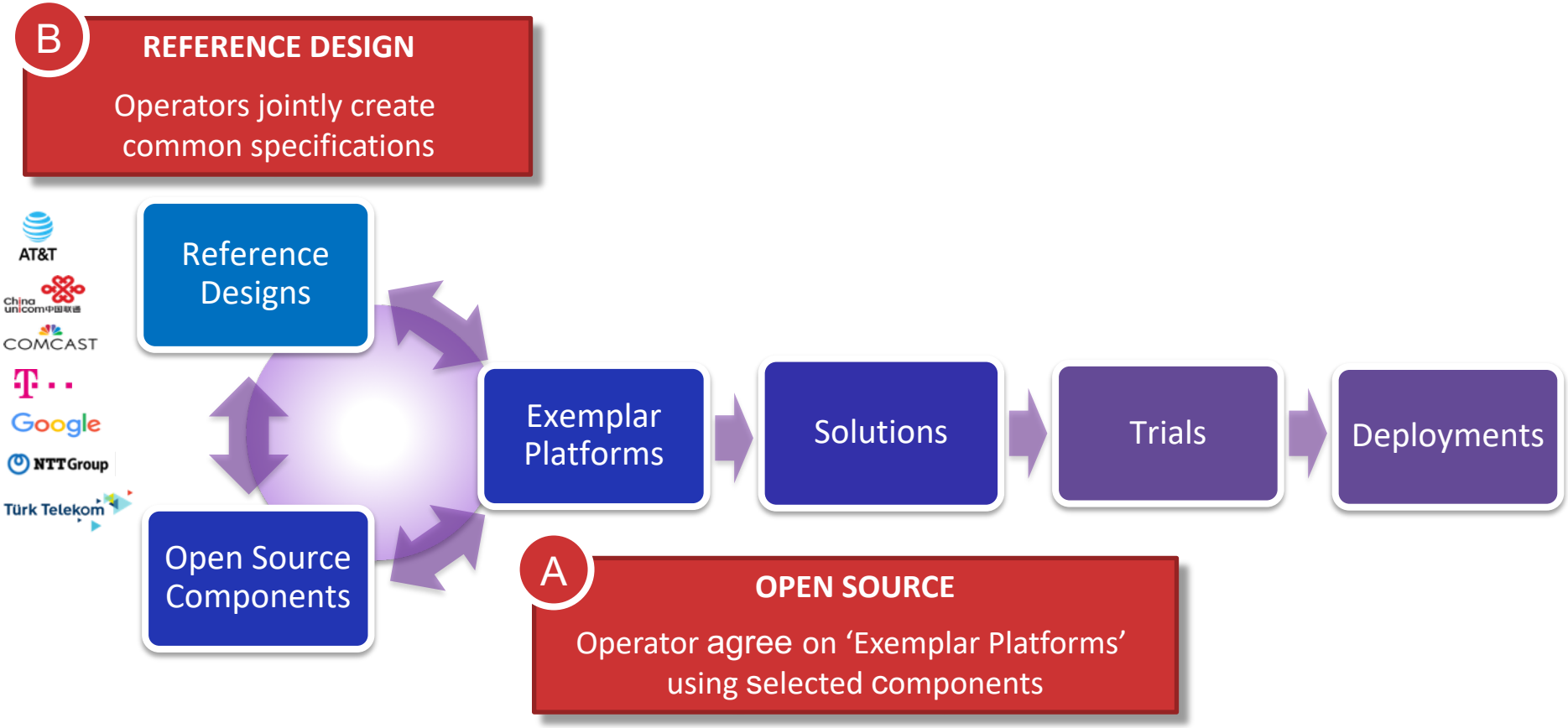
Reference Designs

Complementing Open Source with Operator Led Specifications

Reference Design Strategy



Reference Design Strategy



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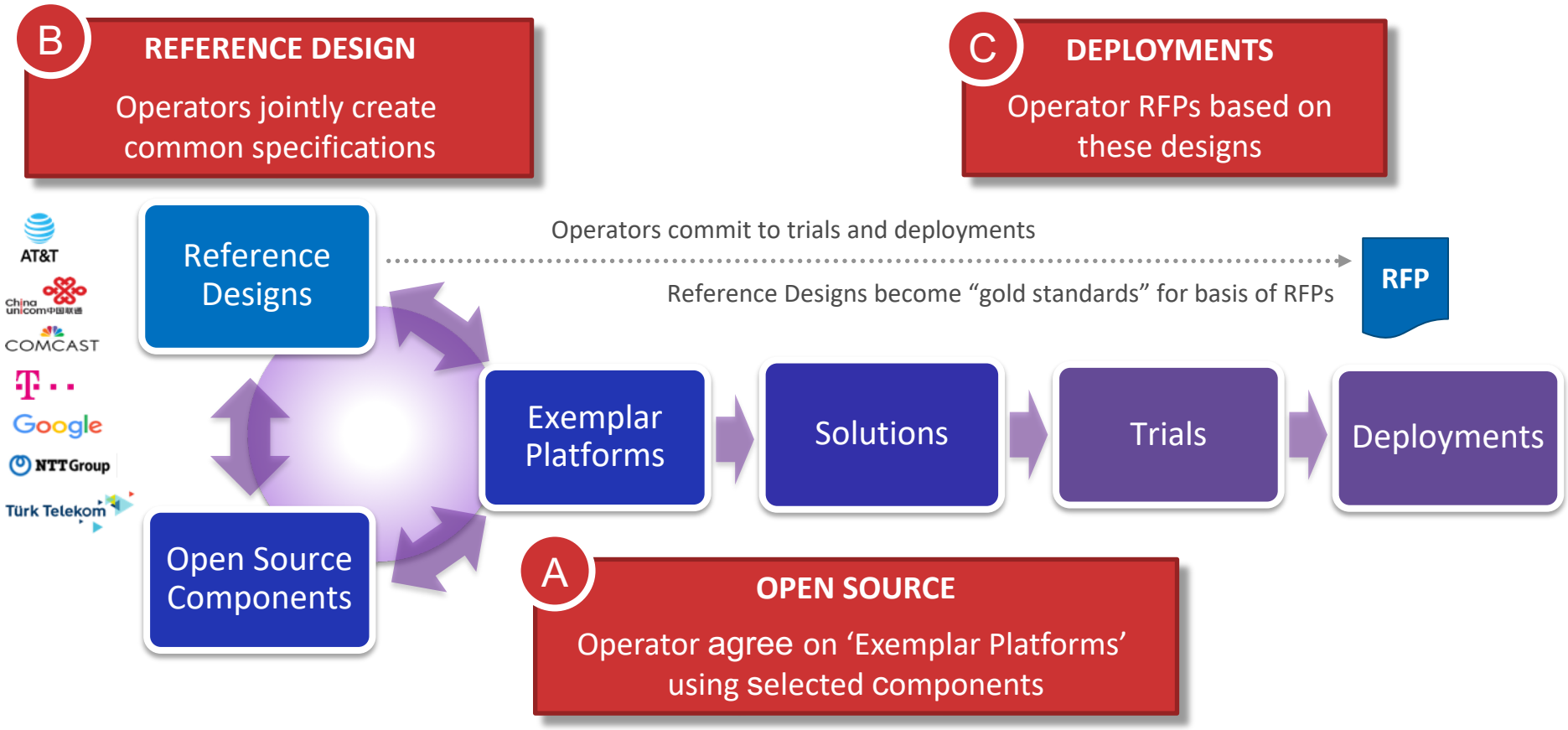

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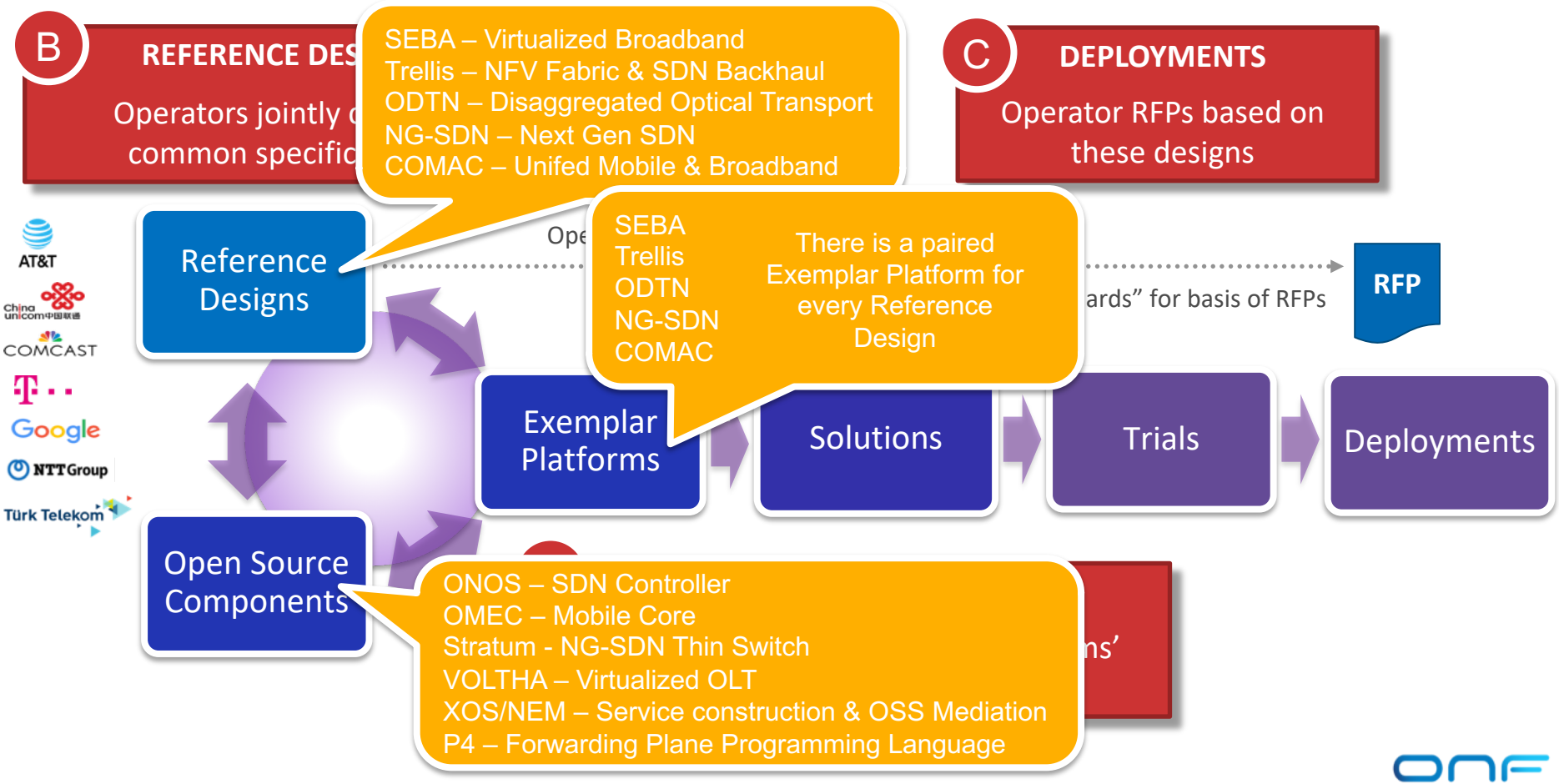
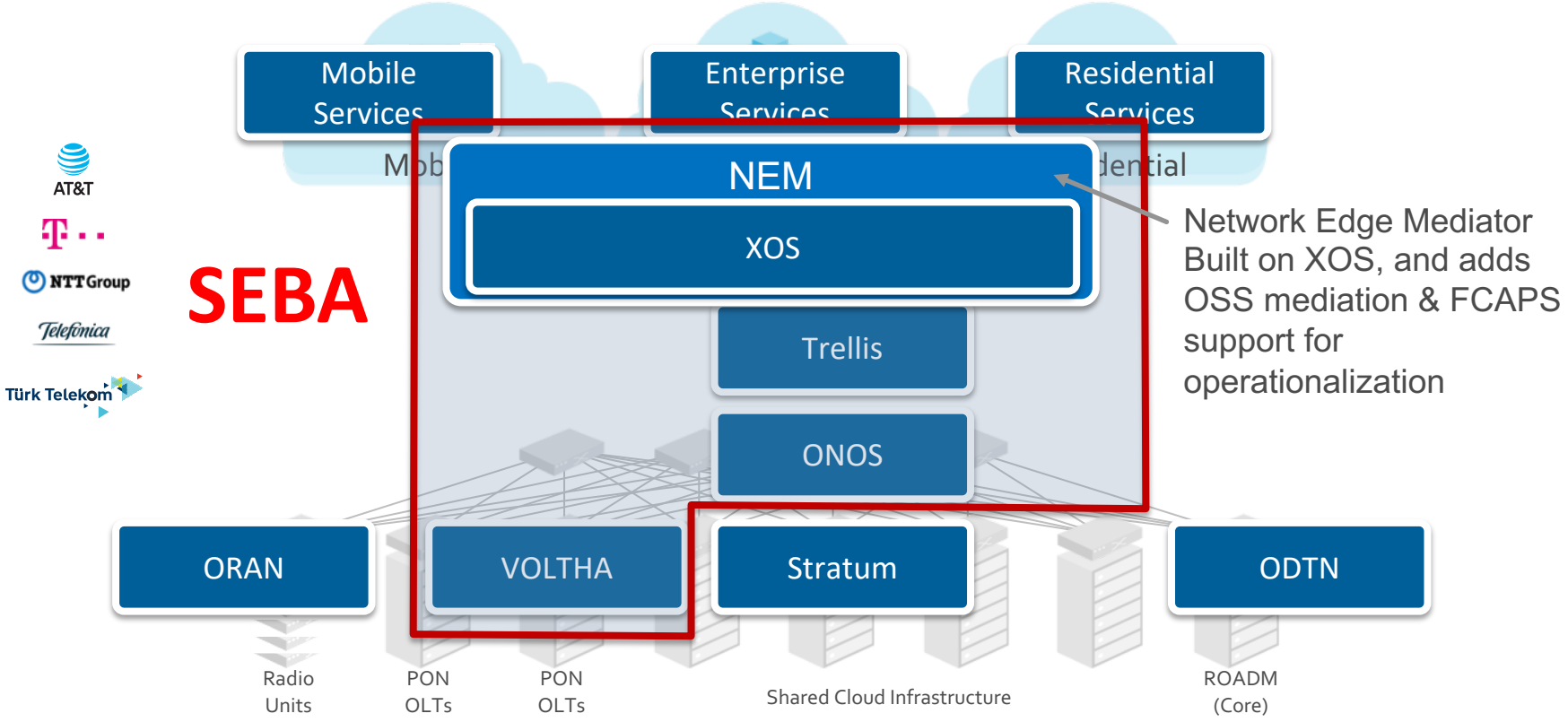
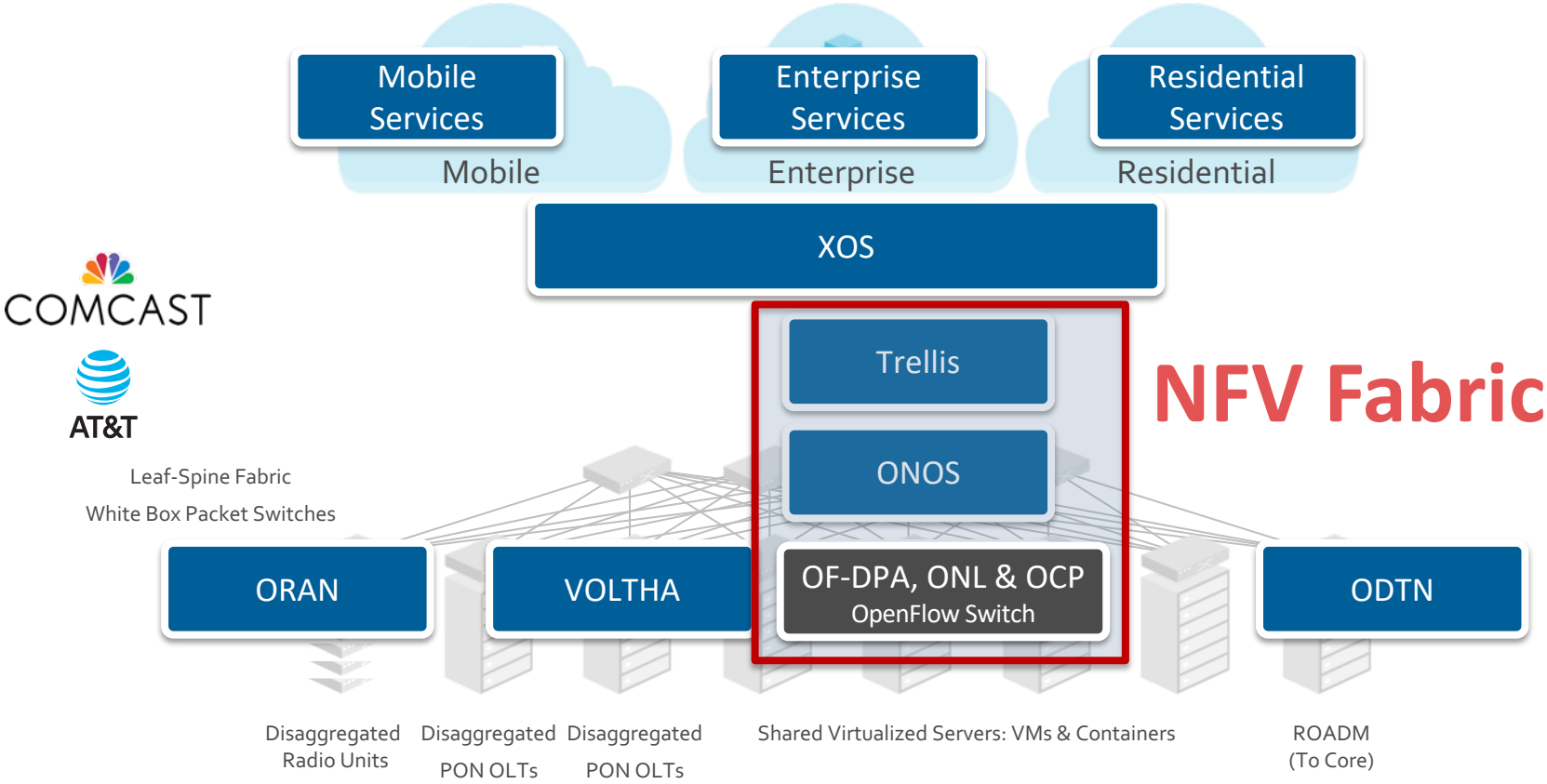


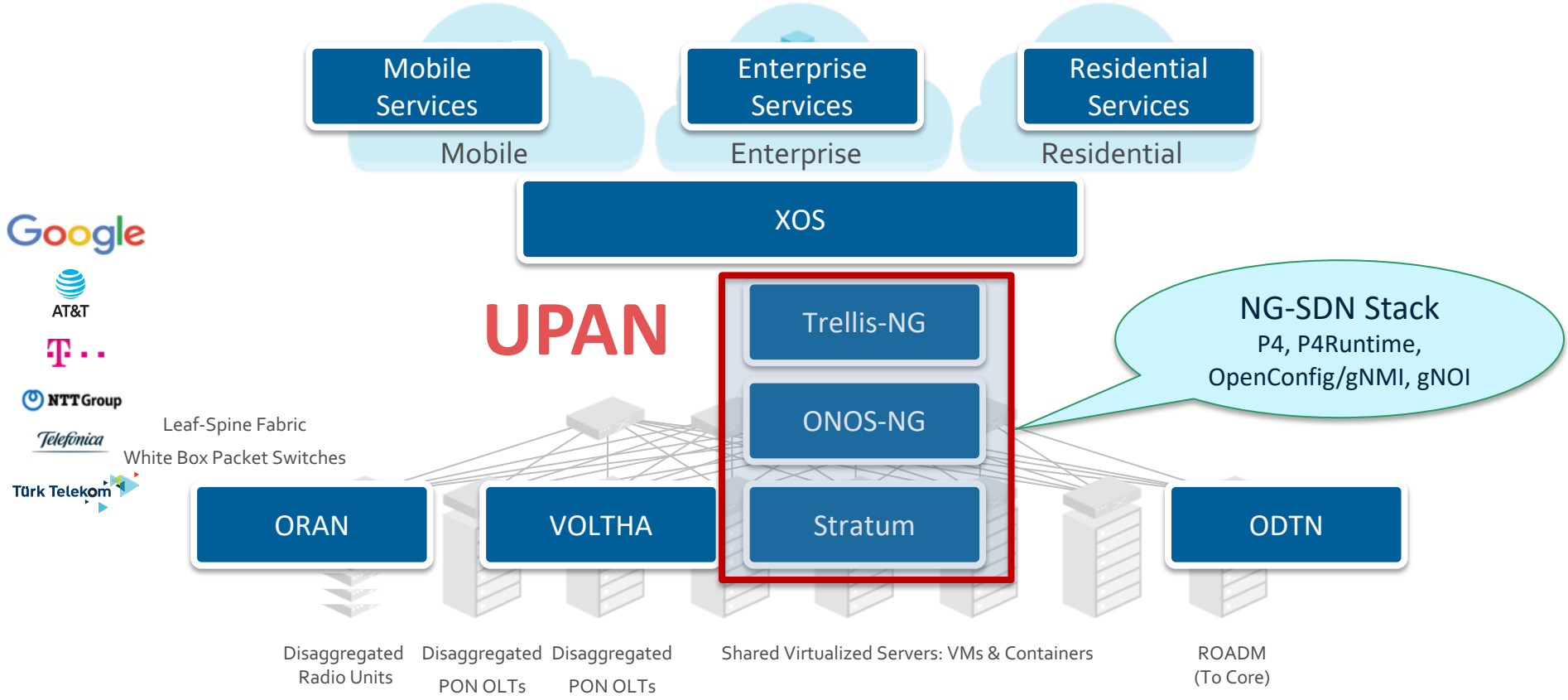
Virtualized Broadband Access - SEBA



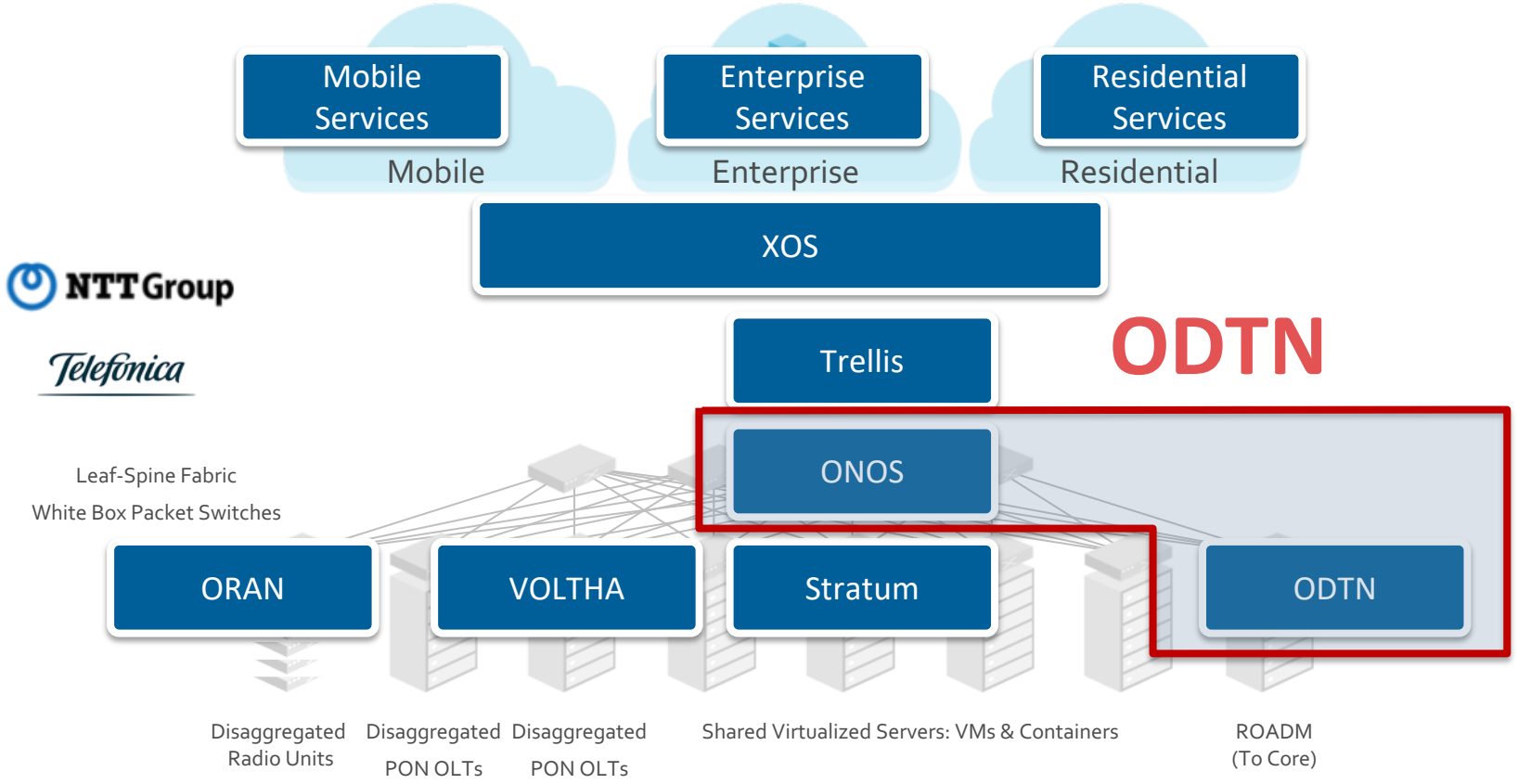
Trellis: A Leaf-Spine Fabric for NFV



Next-Gen SDN: Unified Programmable Autonomous Network (UPAN)



ODTN: Open Disaggregated Transport Network



ONF Having a Real Impact

Platform	Status
SEBA SDN Enabled Broadband Access	Significant trials AT&T, DT, Turk Telekom, Telefonica, …
Trellis + ONOS SDN Leaf-Spine Fabric/Backhaul	In Production
Stratum + NG-SDN Thin Switch OS with Next Gen SDN Interfaces	Google's Production Network at Scale
ODTN Disaggregated Optical Transport	NTT and Telefonica Lab Trials
COMAC & OMEC Unified Access and Unified Core	Sprint and DT Field Trials Platform for 5G

Project Synergies Build Toward a Common Goal

CORD

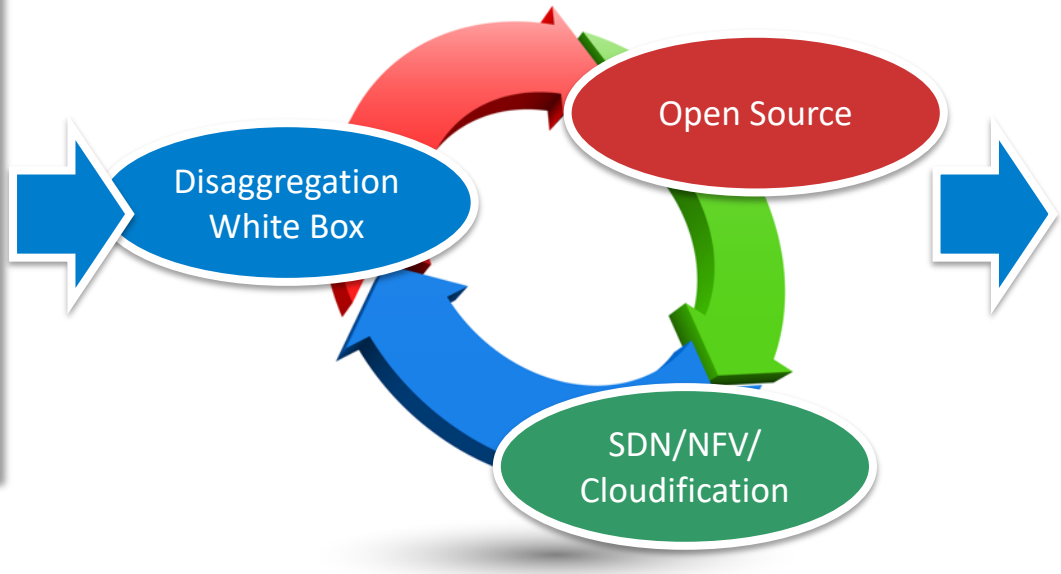
A Platform for Edge Cloud

In Summary

ONF Enables

Transform-ation of Operators' Access & Edge

…by leveraging



- Trellis: NFV Fabric
- SEBA: SDN Enabled Broadband Access
- Next Gen SDN Stack
- COMAC: Converged Multi Access & Core

With Curated Open Source

Call Out

- ONF Pioneers have ‘bled’ the way driving transformation
  - Making Open Source, White Box and Disaggregation Possible
- You can now benefit and build on all this work
- Tremendous opportunity to create new business models and help drive the agenda for this new open source era

Reach out if you’d like to explore collaboration opportunities

Aseem Parikh

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Thank You