ETSI
World Class Standards

Indo-European dialogue on
ICT standards &
Emerging Technologies
(Growth, Profitability & Nation Building)
13-14th March 2014 • New Delhi, INDIA

IN THE FRAMEWORK OF
Project
SESEI
http://eustandards.in/

Network Functions Virtualization

Satish Yadav
Director -IP Routing & Transport

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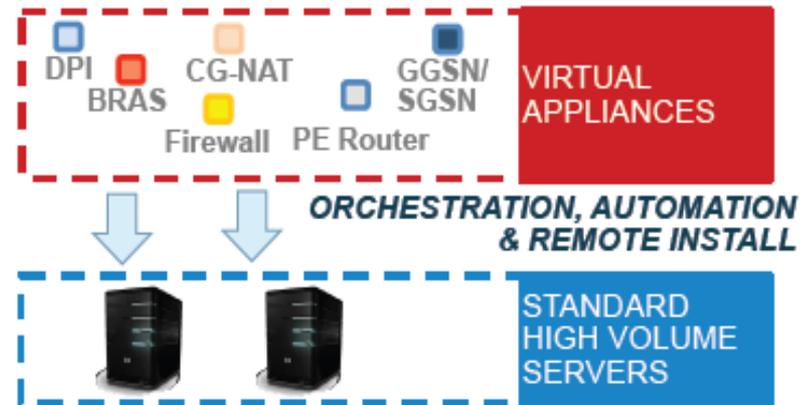
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NFV - Introduction

❖ NFV make the network more flexible and simple by minimizing dependency on specialized hardware

Traditional Network Model:
APPLIANCE APPROACH

DPI
BRAS
GGSN/SGSN
PE Router
Firewall
CG-NAT
Session Border Controller

■ Network Functions are **based on specific HW&SW**

■ **One physical node per role**

Virtualised Network Model:
VIRTUAL APPLIANCE APPROACH

DPI   CG-NAT   GGSN/SGSN
BRAS
Firewall   PE Router
VIRTUAL APPLIANCES

ORCHESTRATION, AUTOMATION & REMOTE INSTALL

STANDARD HIGH VOLUME SERVERS

■ Network Functions are **SW-based over well-known HW**

■ **Multiple roles** over **same HW**

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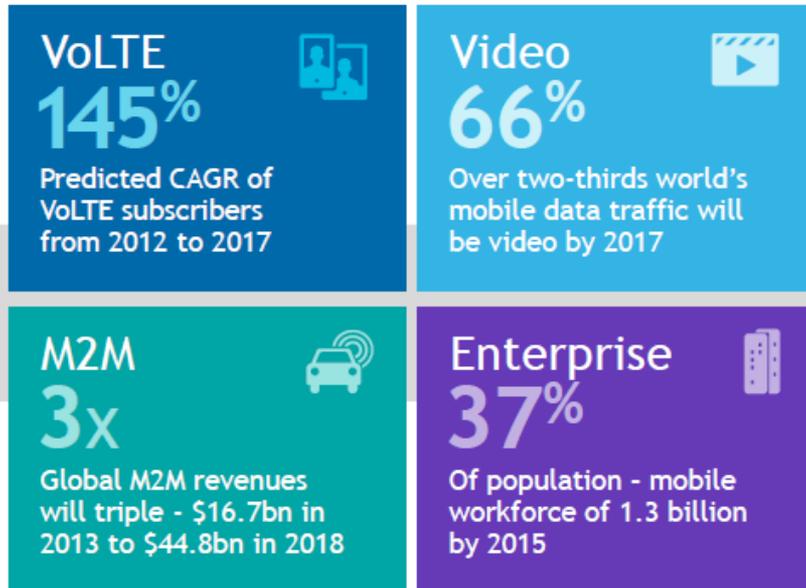13-14th March 2014   New Delhi, INDIA

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NFV Benefits

❖Reduction of CAPEX and OPEX

❖Reduction of system complexity

❖Improved operational efficiency

❖Faster time-to-market

❖New services innovation

❖ Availability of IT centric talent

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What is Driving Network Operators To NFV?

VoLTE
145%
Predicted CAGR of VoLTE subscribers from 2012 to 2017

Video
66%
Over two-thirds world's mobile data traffic will be video by 2017

M2M
3x
Global M2M revenues will triple - $16.7bn in 2013 to $44.8bn in 2018

Enterprise
37%
Of population - mobile workforce of 1.3 billion by 2015

Opportunity for Mobile Network Operators:

1. Support rapid and affordable service innovation & expansion
2. Deliver outstanding customer experience
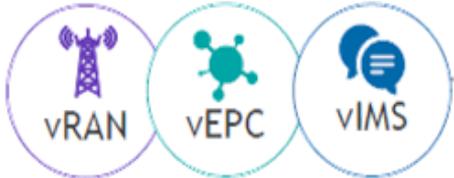3. Scale and utilize network resources more efficiently

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The NFV Journey

The Mobile Network Operator Journey

vRAN vEPC vIMS

The Network Functions Journey

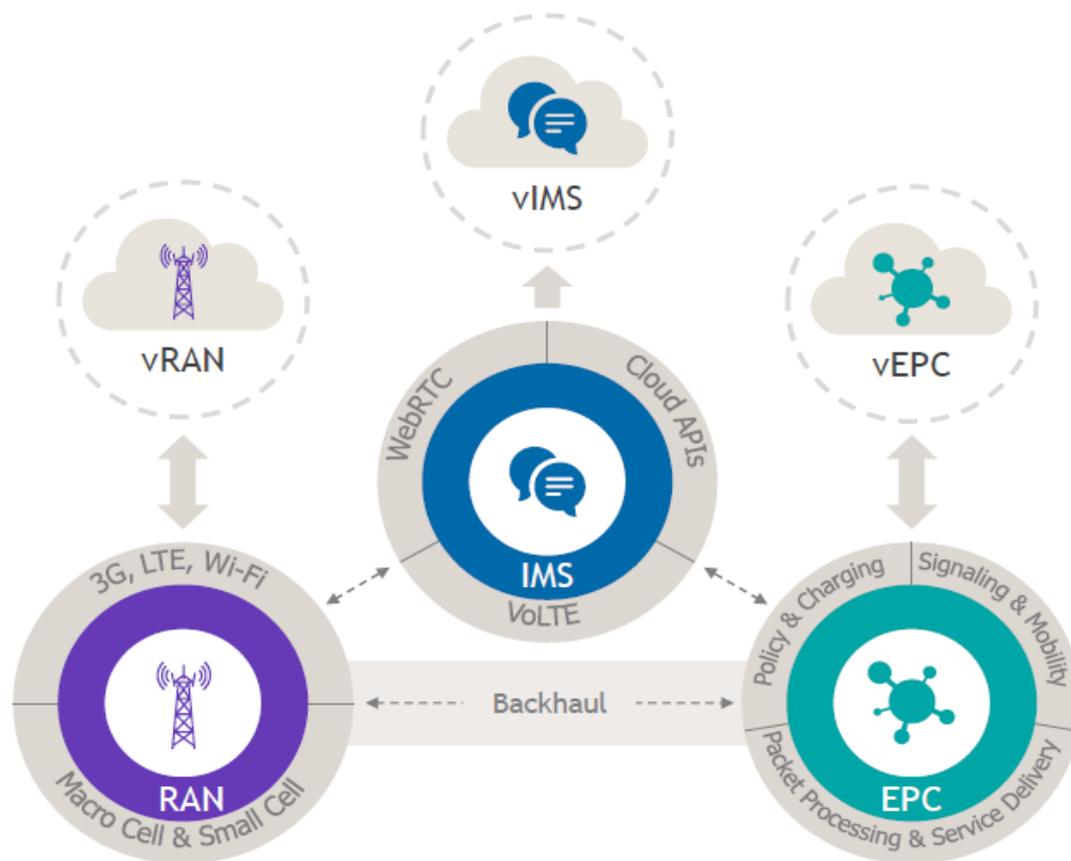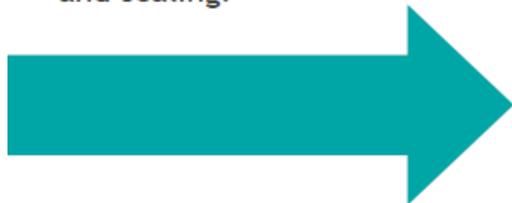The NFV Platform Journey

Mobile Cloud

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Key Challenges in moving to NFV/Cloud

1. Maintain/exceed stringent service availability and real-time performance?

2. Operate transparently across a mix of traditional and cloud-based infrastructure?

3. Operate in an open, multi-vendor environment?

4. Deliver event-driven, flexible service/capacity instantiation and scaling?

vRAN

vIMS

vEPC

WebRTC

Cloud APIs

IMS

VoLTE

3G, LTE, Wi-Fi

RAN

Macro Cell & Small Cell

Backhaul

Policy & Charging

Signaling & Mobility

Packet Processing & Service Delivery

EPC

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Network Virtualization

NETWORK OPERATORS

Assets: Ultra-broadband Access

New Services: Limited and Closed

E/R: Increasing Network spend, flat revenue

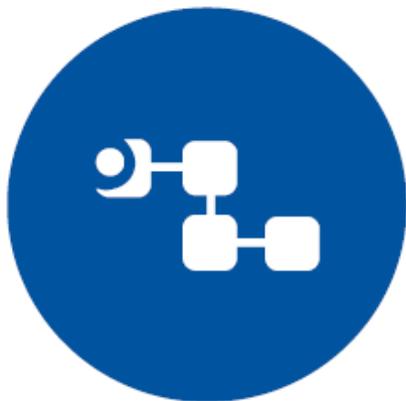**Innovation Speed:** Years

IP TECHNOLOGIES

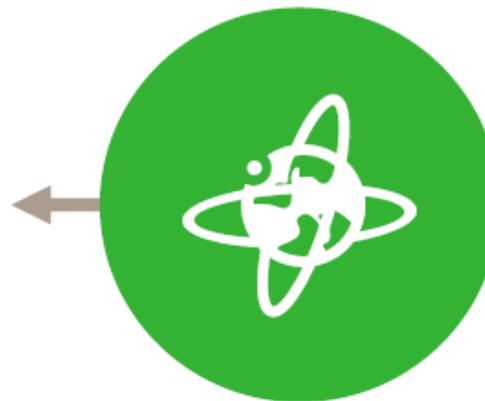## WEB OPERATORS

Assets: Massive global compute and storage

New Services: Limited but Open APIs to Web

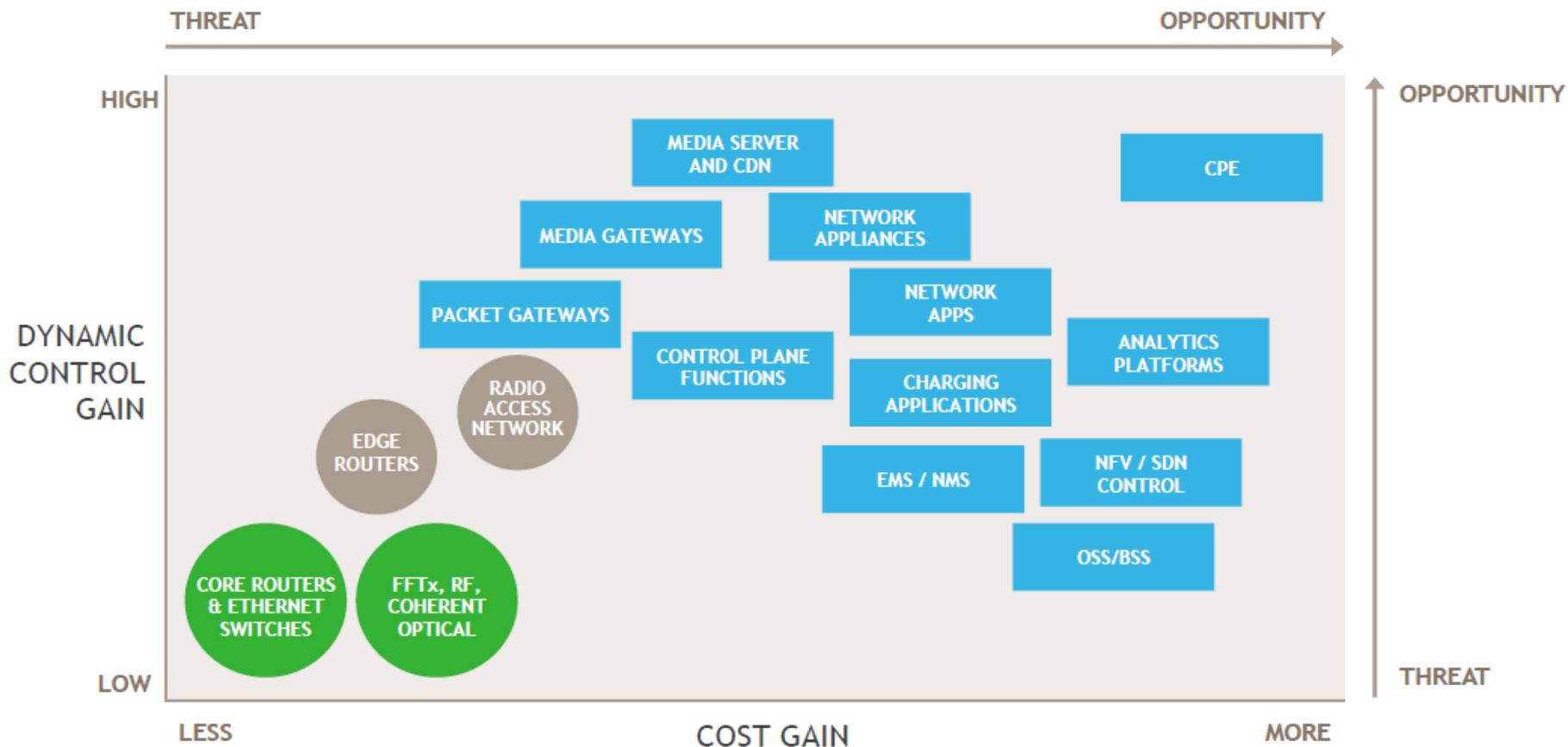**E/R:** Increasing DC spend, growing revenue

Innovation Speed: Days

IT TECHNOLOGIES

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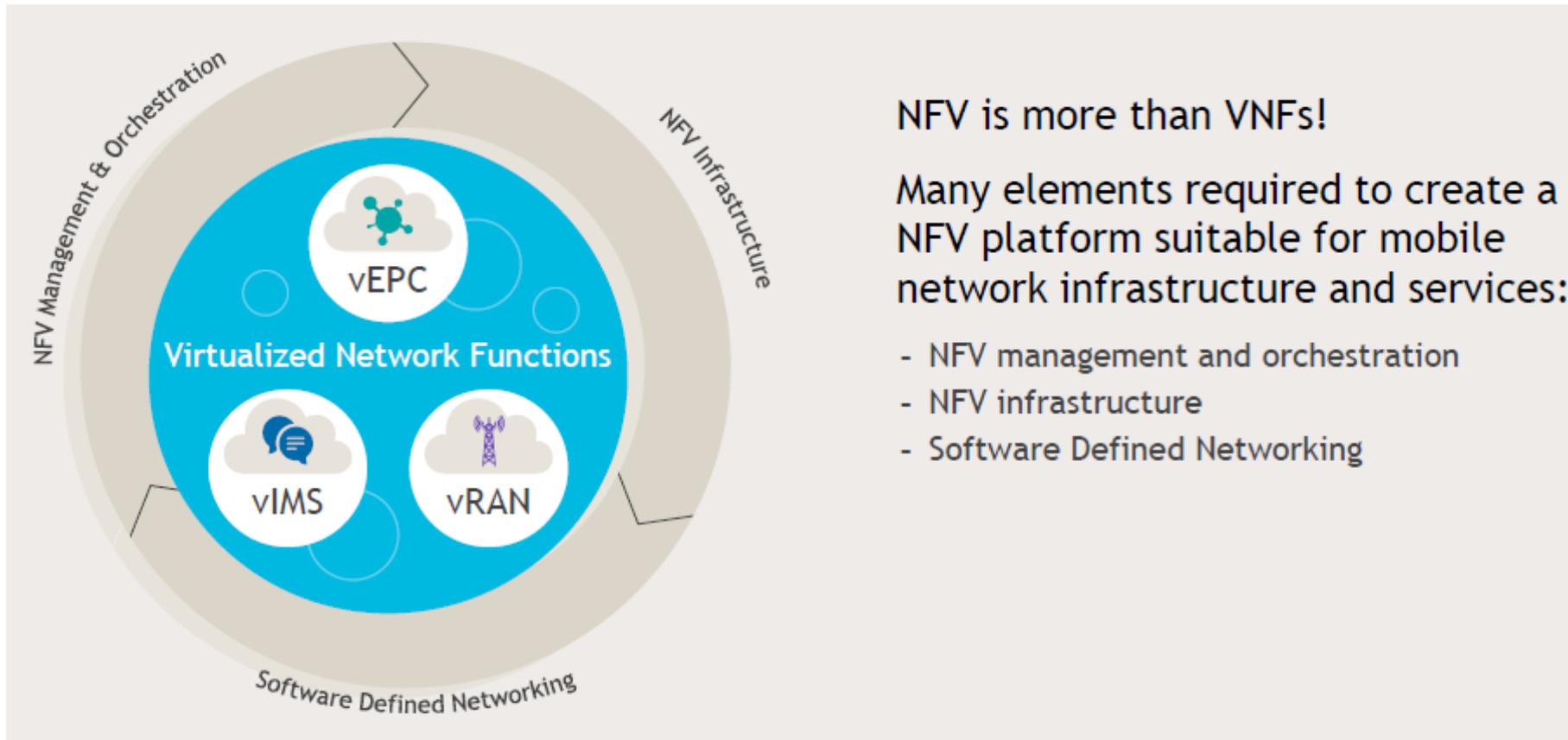Alcatel·Lucent

Network Virtualization

THREAT →

OPPORTUNITY →

OPPORTUNITY ↑

HIGH

DYNAMIC CONTROL GAIN

LOW

- MEDIA SERVER AND CDN
- CPE
- MEDIA GATEWAYS
- NETWORK APPLIANCES
- PACKET GATEWAYS
- NETWORK APPS
- CONTROL PLANE FUNCTIONS
- ANALYTICS PLATFORMS
- RADIO ACCESS NETWORK
- CHARGING APPLICATIONS
- EDGE ROUTERS
- EMS / NMS
- NFV / SDN CONTROL
- OSS/BSS
- CORE ROUTERS & ETHERNET SWITCHES
- FFTx, RF, COHERENT OPTICAL

THREAT

LESS   COST GAIN   MORE

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NFV is more than Virtualization

NFV is more than VNFs!

Many elements required to create a NFV platform suitable for mobile network infrastructure and services:

- NFV management and orchestration
- NFV infrastructure
- Software Defined Networking

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Thank You!

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