7TH ANNUAL I3FORUM CONFERENCE

CHICACO, IL

MAY 12TH, 2016

i3 forum

NFV Working Group

- Established September 2015

- Members: AT&T, BICS, CenturyLink, CHT, Etisalat, Genband, iBasis, KDDI, Metaswitch, Orange, PCCW, TI Sparkle, Syniverse, Tata, Telenor, TNZI, Verizon

- Co-Chair: Alessandro Forcina (TI Sparkle) and Micaela Giuhat (Metaswitch)

- Deliverables:

  - **NFV Primer – Feb 2016** √
  - Virtualization impact on peering
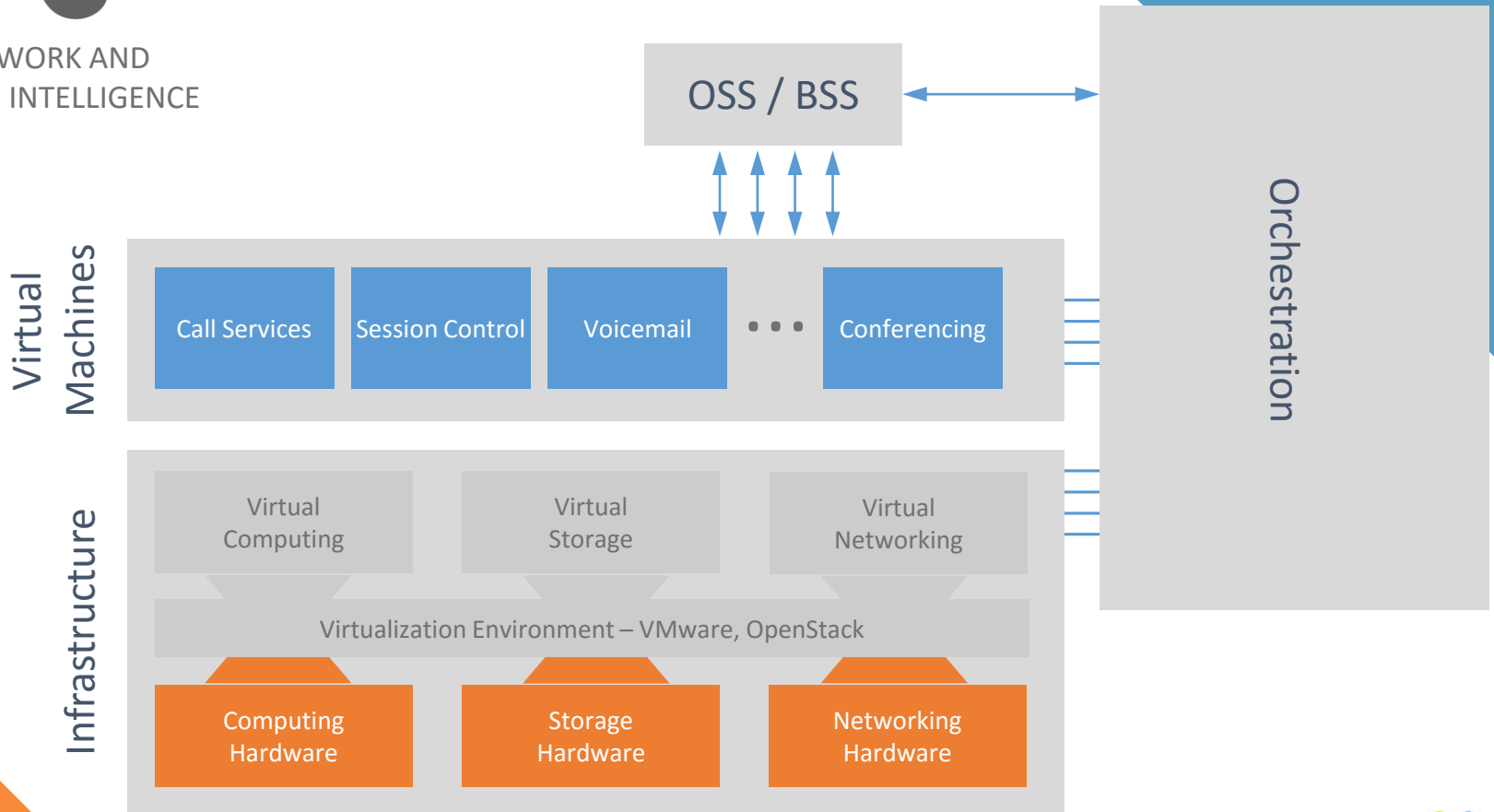 - Architectural Recommendations

i³ forum i

NFV Primer

- What Is NFV?
- What Has Enabled NFV?
- NFV Drivers
- NFV Market Data
- Benefits of NFV
- Challenges to Implementing NFV
- NFV Standards
- NFV In Practice
- Network Functions Ripe for Virtualization
- NFV Environment
- NFV Use Cases & Deployments
- Conclusions

i³ forum i

What is NFV

NETWORK AND
SERVICE INTELLIGENCE

OSS / BSS

Orchestration

Virtual Machines

Call Services | Session Control | Voicemail | • • • | Conferencing

Infrastructure

Virtual Computing | Virtual Storage | Virtual Networking

Virtualization Environment – VMware, OpenStack

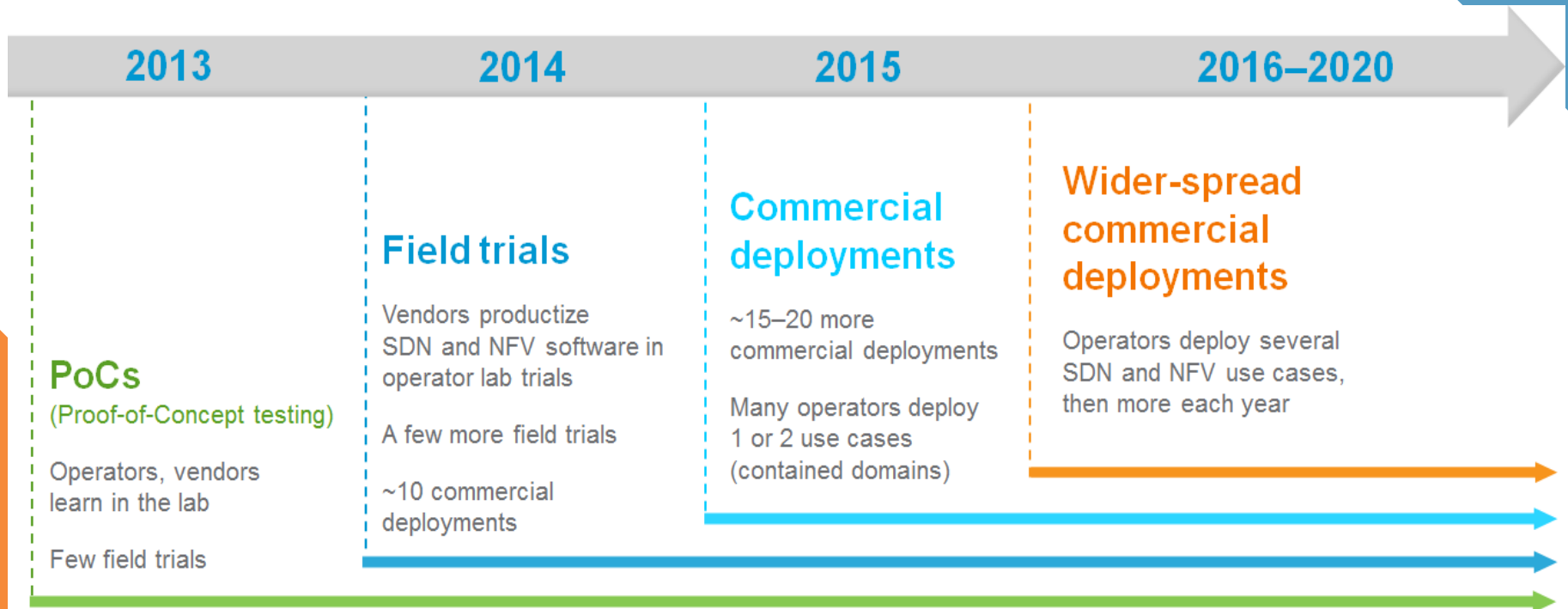Computing Hardware | Storage Hardware | Networking Hardware

i³ forum

NFV Drivers

- NFV is necessary to the survival of telecom service providers who are required to compete against the threats of OTTs, traffic/video, mobility, and cloud, and meet the ever increasing "on-demand" expectations of users.

- Telecom service providers are investing resources in NFV. Therefore vendors must follow their lead/demand/requirements or be left behind to wither or die in irrelevance.

- Telecom service providers can start small as some NFV use cases, have higher priority and/or are easier to bite off as a starting project.

- Some smaller or aggressive telecom service providers are out early with commercial deployments, which will compel the larger telecom service providers to follow.

IHS NFV Report 2015

i³ forum i

NFV Market

IHS/Infonetics predicts that:

- Software will be a much larger investment than the server, storage and switch hardware, representing about $1 spent for every $5 spent on software (NFV MANO, plus the VNFs).

- The carrier spend on professional services outsourced to vendors for NFV projects will grow to 14 times its small start of $27 million in 2014, to $387 million in 2019.

2013	2014	2015	2016–2020

Field trials

Vendors productize SDN and NFV software in operator lab trials

A few more field trials

~10 commercial deployments

Commercial deployments

~15–20 more commercial deployments

Many operators deploy 1 or 2 use cases (contained domains)

Wider-spread commercial deployments

Operators deploy several SDN and NFV use cases, then more each year

PoCs
(Proof-of-Concept testing)

Operators, vendors learn in the lab

Few field trials

NFV Benefits

- CapEx Cost Reduction
- OpEx Cost Reduction
- Faster Time to Market
- Scalability
- Customization
- Reduce Vendor Dependency
- Ease of Management
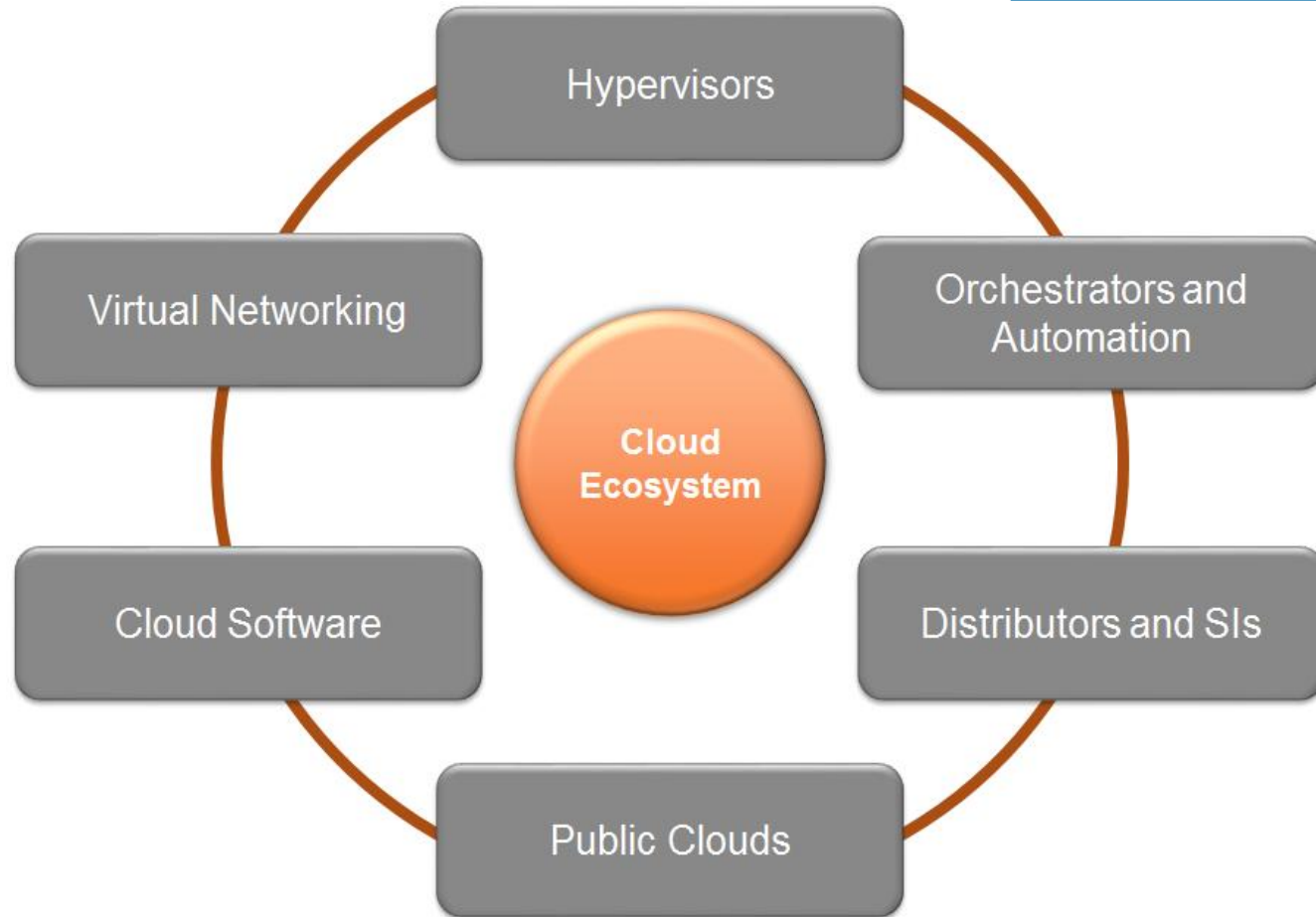- Ease of Software Lifecycle Management

i³ forum

NFV Challenges

- Organization
  - Cultural constraints to be overcome
  - New processes to be defined and implemented

- Cloud Environment
  - Data plane throughput
  - Orchestration
  - Transcoding

Limited experience in these issues

- OSS/BSS
  - New architectures are required
  - New interfaces (e.g. API)

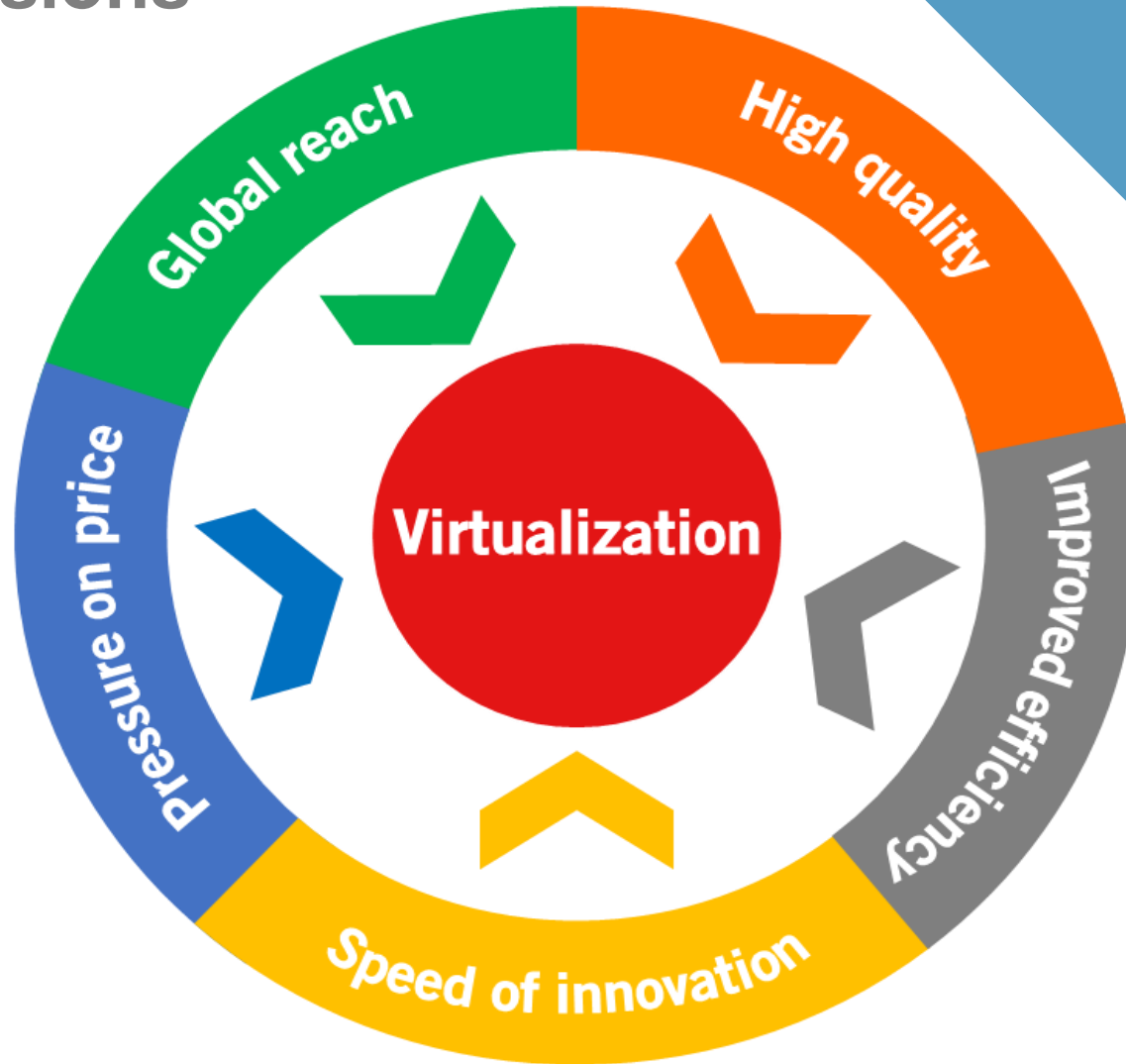i³ forum

NFV Environment

- Different technologies involving (partially) different vendors
- Different architectures
- Different business models

i³ forum

NFV Use Cases

- Use Case #1: NFV IaaS
- Use Case #2: Virtual Network Function as a Service (VNFaaS)
- Use Case #3: Virtual Network Platform as a Service (VNPaaS)
- Use Case #4: VNF Forwarding Graphs
- Use Case #5: Virtualization of Mobile Core Network and IMS
- Use Case #6: Virtualization of Mobile base station
- Use Case #7: Virtualization of the Home Environment
- Use Case #8: Virtualization of CDNs (vCDN)

i³ forum i

Conclusions

Hot Telecom White Paper

i³ forum

THANK YOU!

i³ forum