

THE SOFTWARE DEFINED OPERATOR

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LIFE IS FOR SHARING.

OPERATOR CHALLENGES

COMPLEXITY

INVEST

TIME TO REVENUE

COMPETITION

INTERNET TRAFFIC GROWTH

COST

TIME TO MARKET

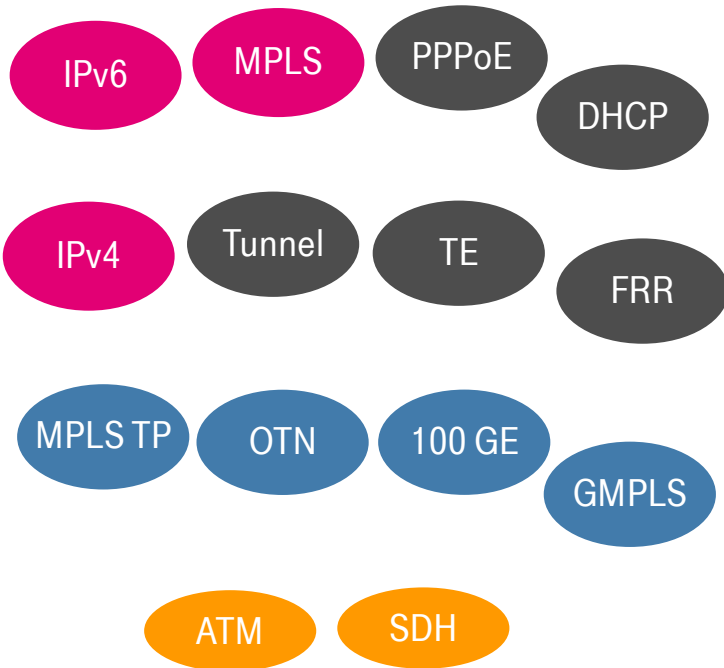
A MOONSHOT PROJECT FOR THE INDUSTRY ?



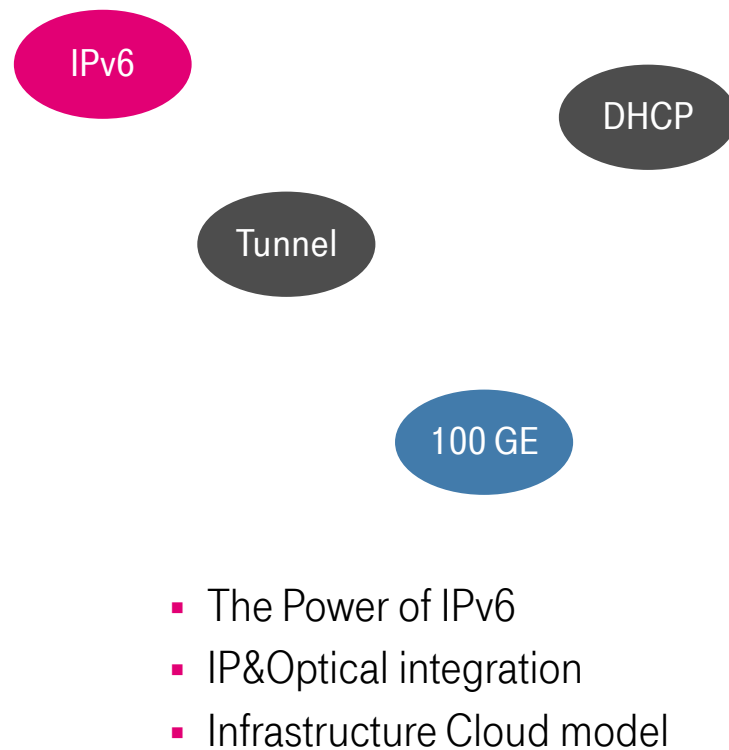
STAGE 1: SIMPLIFICATION



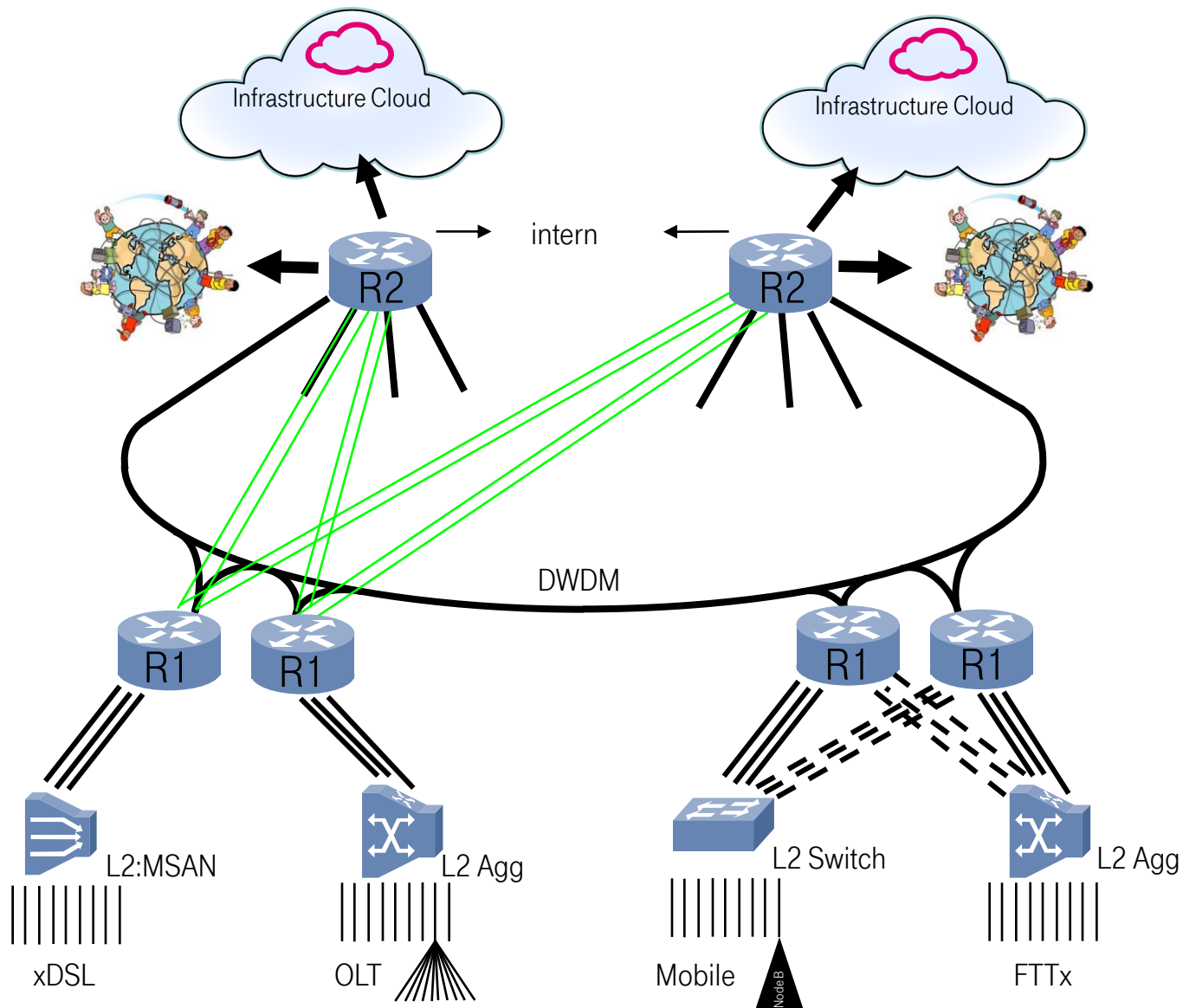
From



To

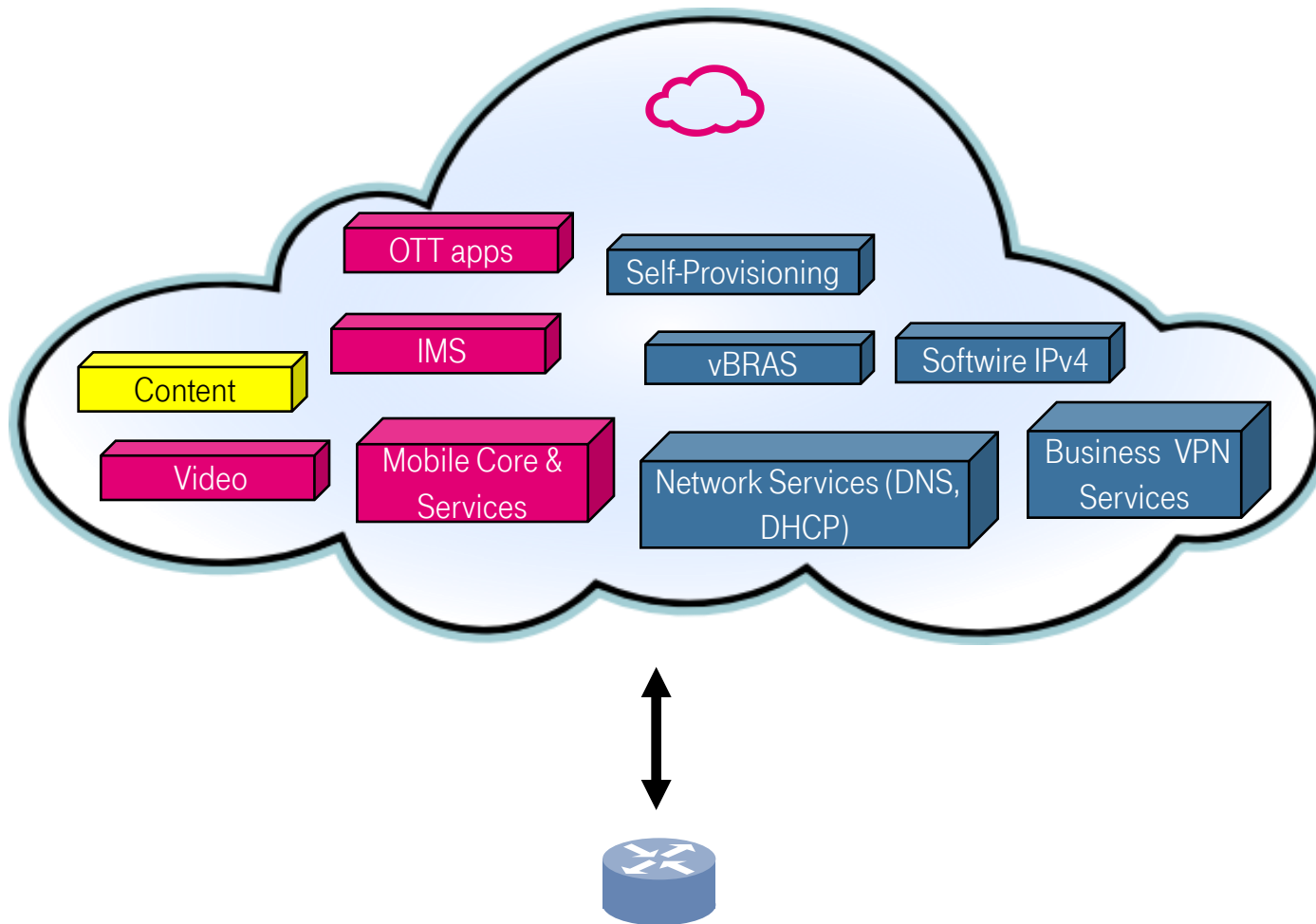


THE TERASTREAM ARCHITECTURE



STAGE 2: THE INFRASTRUCTURE CLOUD

NETWORK FUNCTION VIRTUALIZATION



BRINGING THE INFRASTRUCTURE CLOUD TO LIFE

A PART OF THE NETWORK

CENTRAL MANAGEMENT FOR DECENTRAL SERVICES

OPEN TOPICS

**What does the new standard for virtual appliances look like ? How to operate ?
App Software Architecture ? How to make use of Cloud features ?**

**We triggered the formation of operator and vendor driven
Network Function Virtualization ISG in ETSI**



INFRASTRUCTURE CLOUD

CORE BELIEFS

- **Openness**

No dependency on proprietary technology or specific vendors



- **IP**

Focus on scalable Layer 3 networking based on IPv6, IPv4 is an exception

No complex or proprietary Layer 2 VLAN technologies

Tunneling limited to keyed IPv6 tunnel (L2TPv3 over IPv6)



- **Full Automation**

- **Security**

Carrier-grade security, mapped to a modern virtualized environment

- **Energy Efficiency**

State-of-the-art energy efficiency, cooling, power management

APPLICATION ARCHITECTURE



Virtualized Chaos is still Chaos.



FLEXIBILITY: SHORTEN TIME TO MARKET



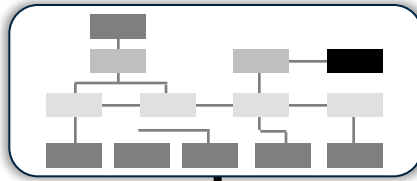
Program services instead of re-architecting the network and the management system for every new service.

Peter Lothberg, Internet Legend

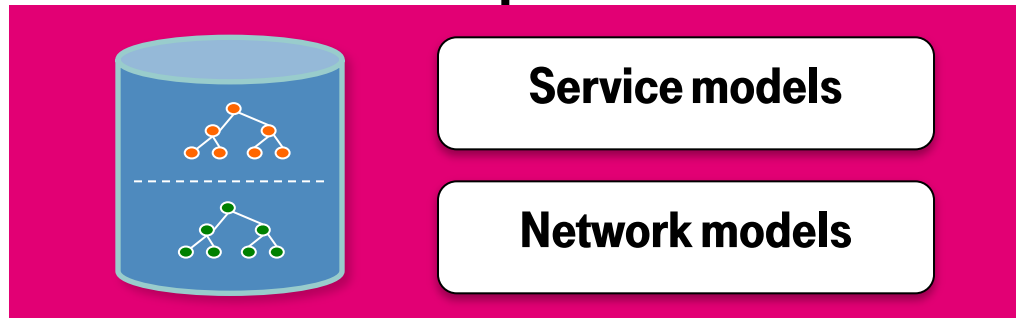


STAGE 3: SOFTWARE DEFINED NETWORKING

A NEW OSS APPROACH



Management Applications



Realtime OSS

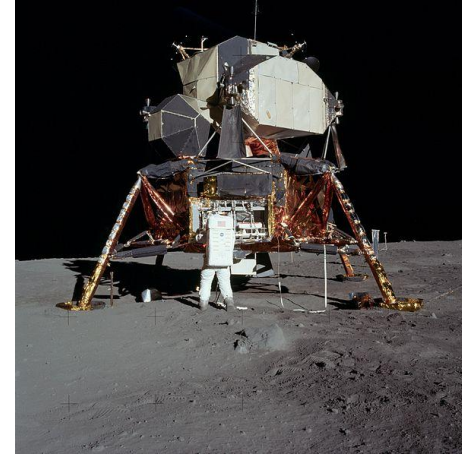
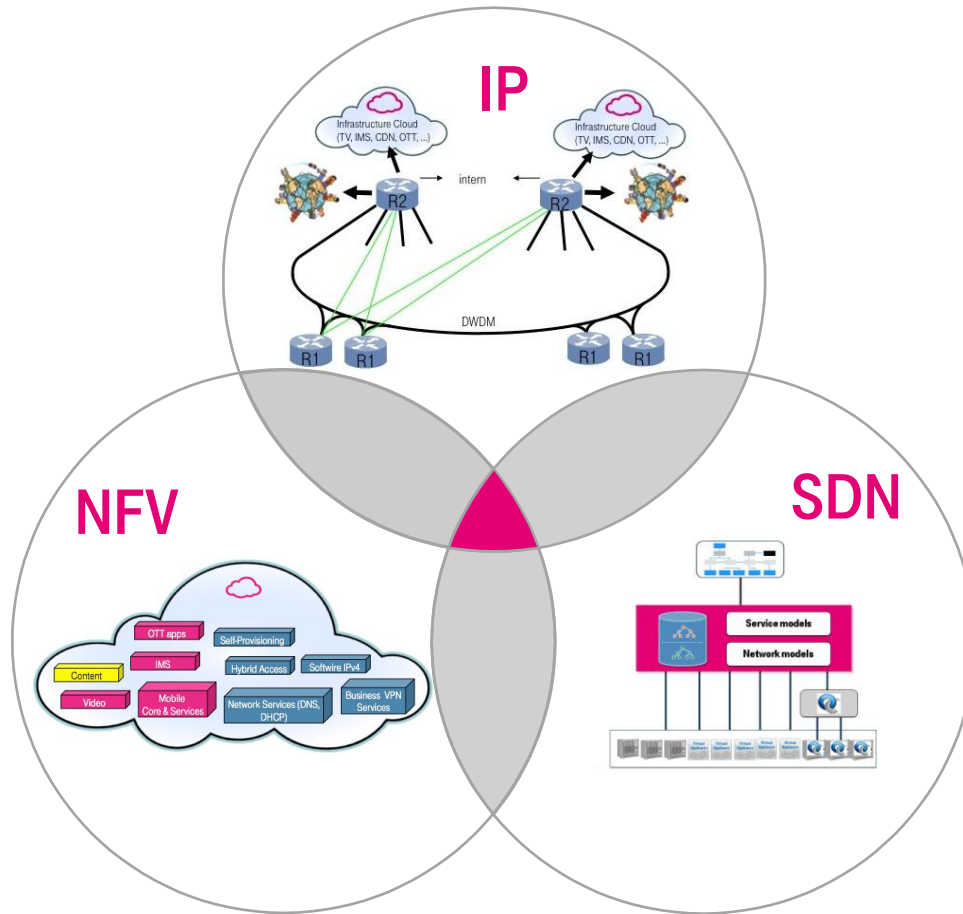
YANG (RFC 6020)

NETCONF
(RFC 6241)



**Multi-Vendor
Multi-Technology**

THE SOFTWARE DEFINED OPERATOR



TERASTREAM PILOT SUCCESSFULLY LAUNCHED

@ HRVATSKI TELEKOM ON DEC 10, 2012

World's first full 100 Gb/s network using IP and Optical integration

Integration of Network and Cloud technologies for service production

Native IPv6 network delivering consumer service

- ▶ Built in a record time - decision in September, launch on Dec 10th
- ▶ 500 customers with up to Gigabit access speeds
- ▶ Agile execution – small cross-functional teams (DT, HT, Phase 1: Cisco, Phase 2: Alcatel-Lucent)

High symmetrical bandwidth, lowest possible latency & jitter. Ideal for Realtime & Cloud Applications

Flexibility & Self-Service

Security

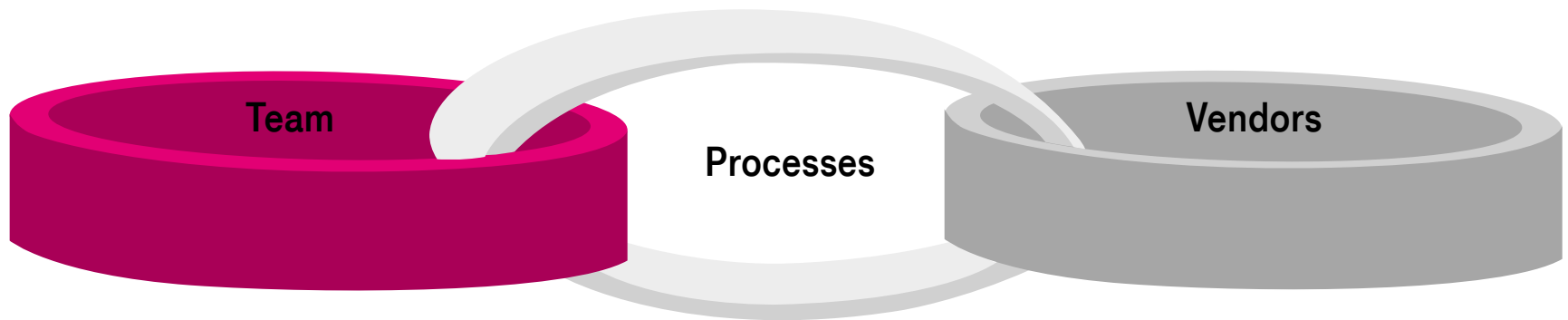
THE SOFTWARE DEFINED OPERATOR – IMPACT

Team

New Skillset Mix: IP, Datacenter,
Programming & Operations

Vendors

From Hardware to Software Business Model
Keep Hardware Leadership



Processes

From Waterfall to Agile
Small Empowered Teams

THANK YOU!



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