

IEEE Conference on Network Softwarization, 24-28 June 2019 // Paris, France

Distinguished Expert Panel

Theme : **Barriers and Frontiers of Softwarization for the Network of 2030**



Towards Deep Programmable Slicing

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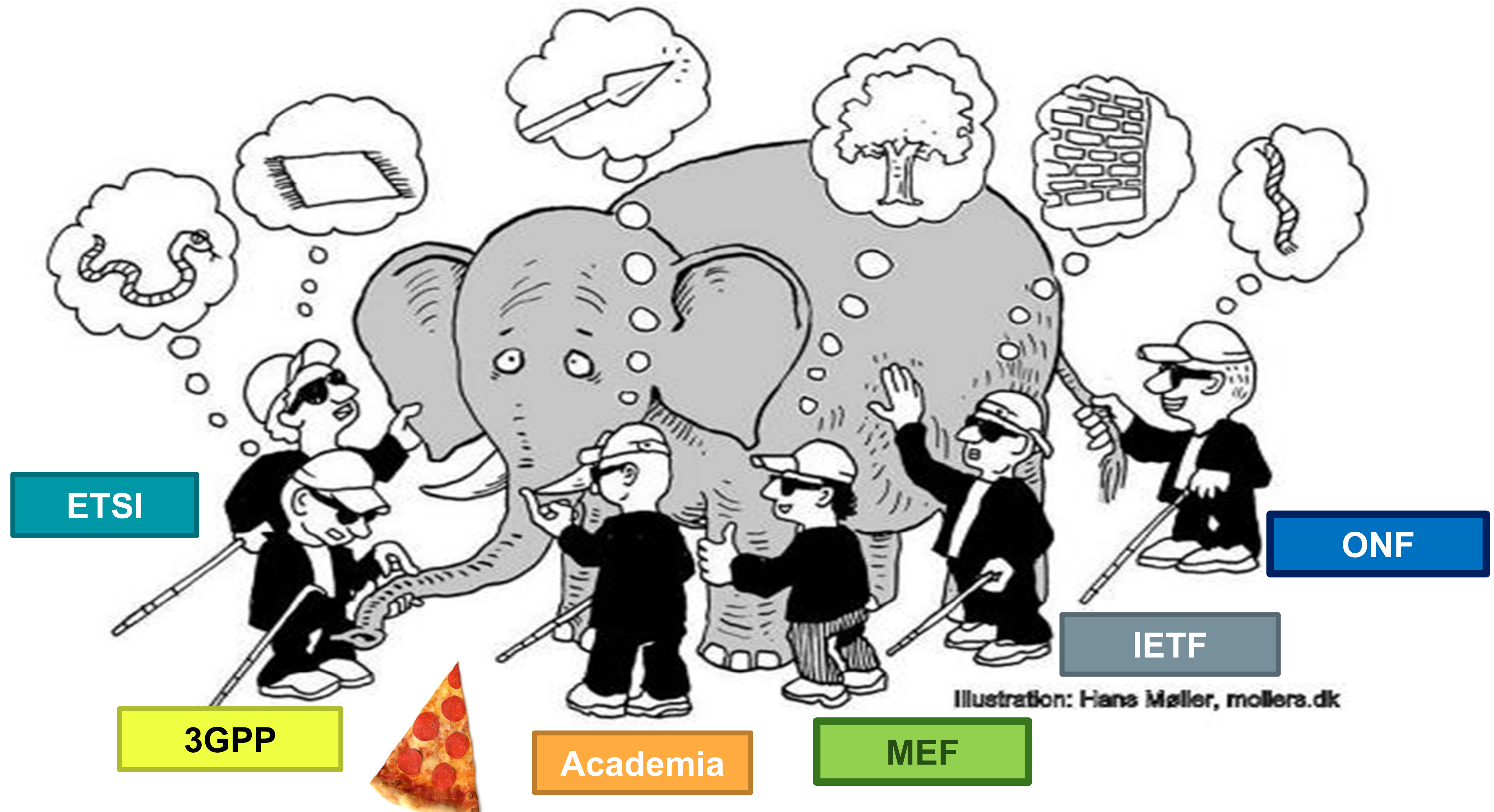
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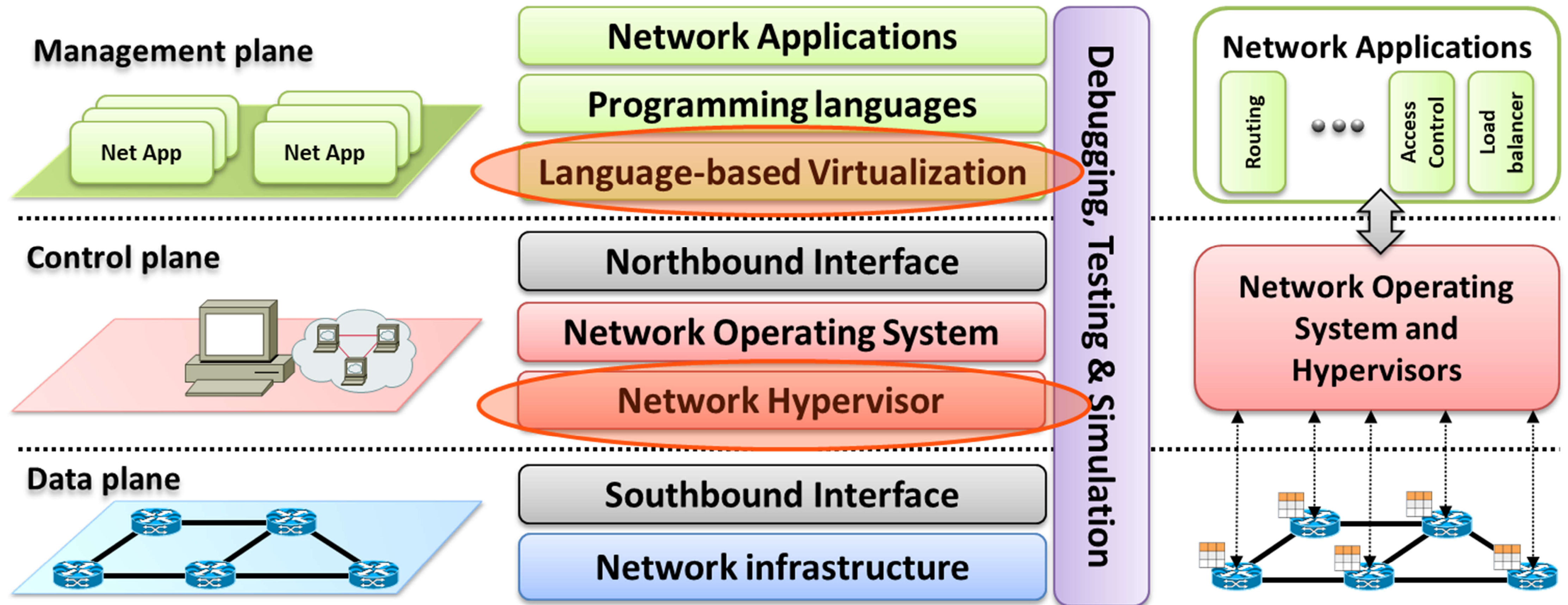
INFORMATION & NETWORKING
TECHNOLOGIES RESEARCH &
INNOVATION GROUP



What is a **Slice**?

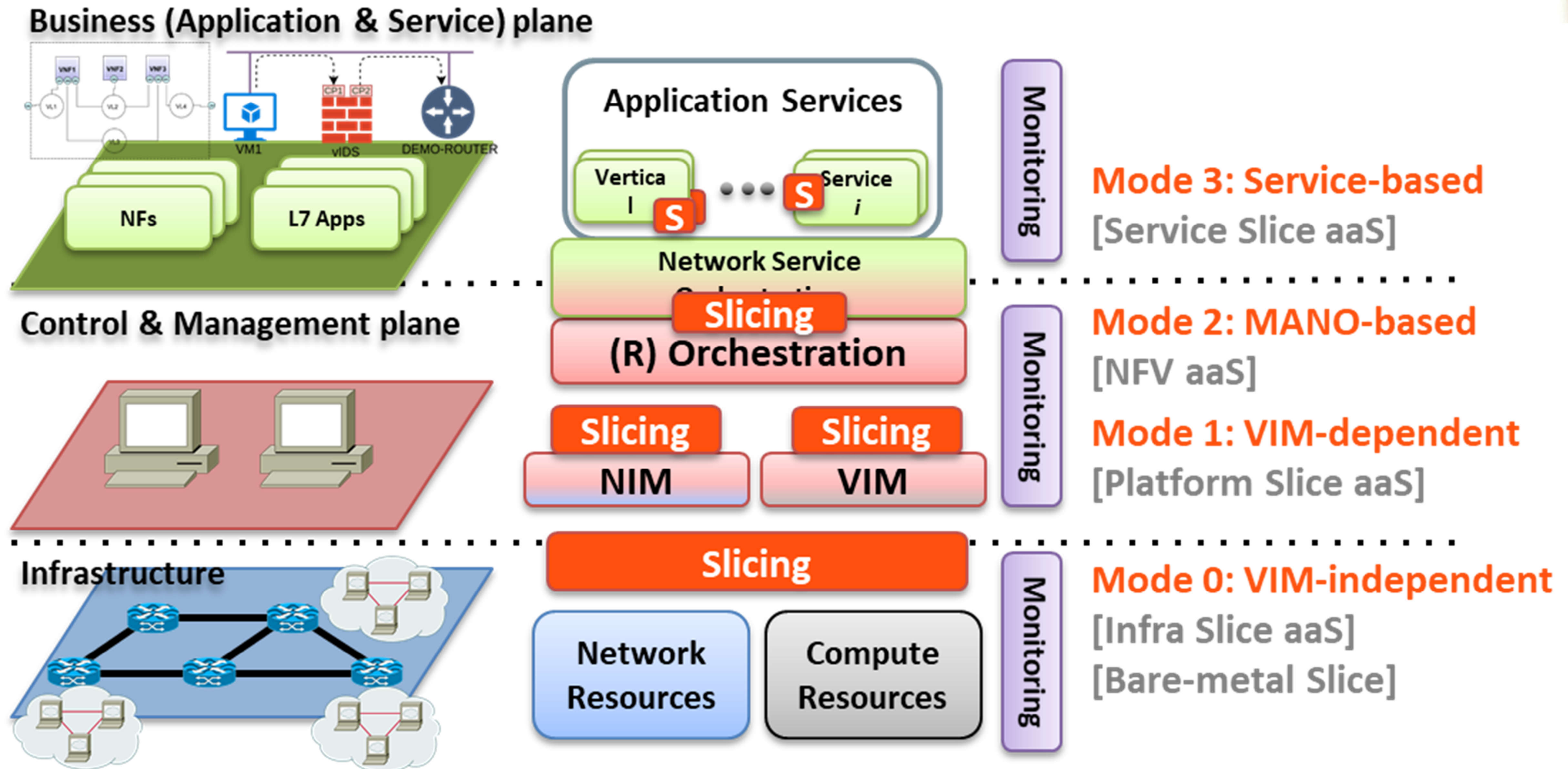


SDN & Virtualization vs Slicing

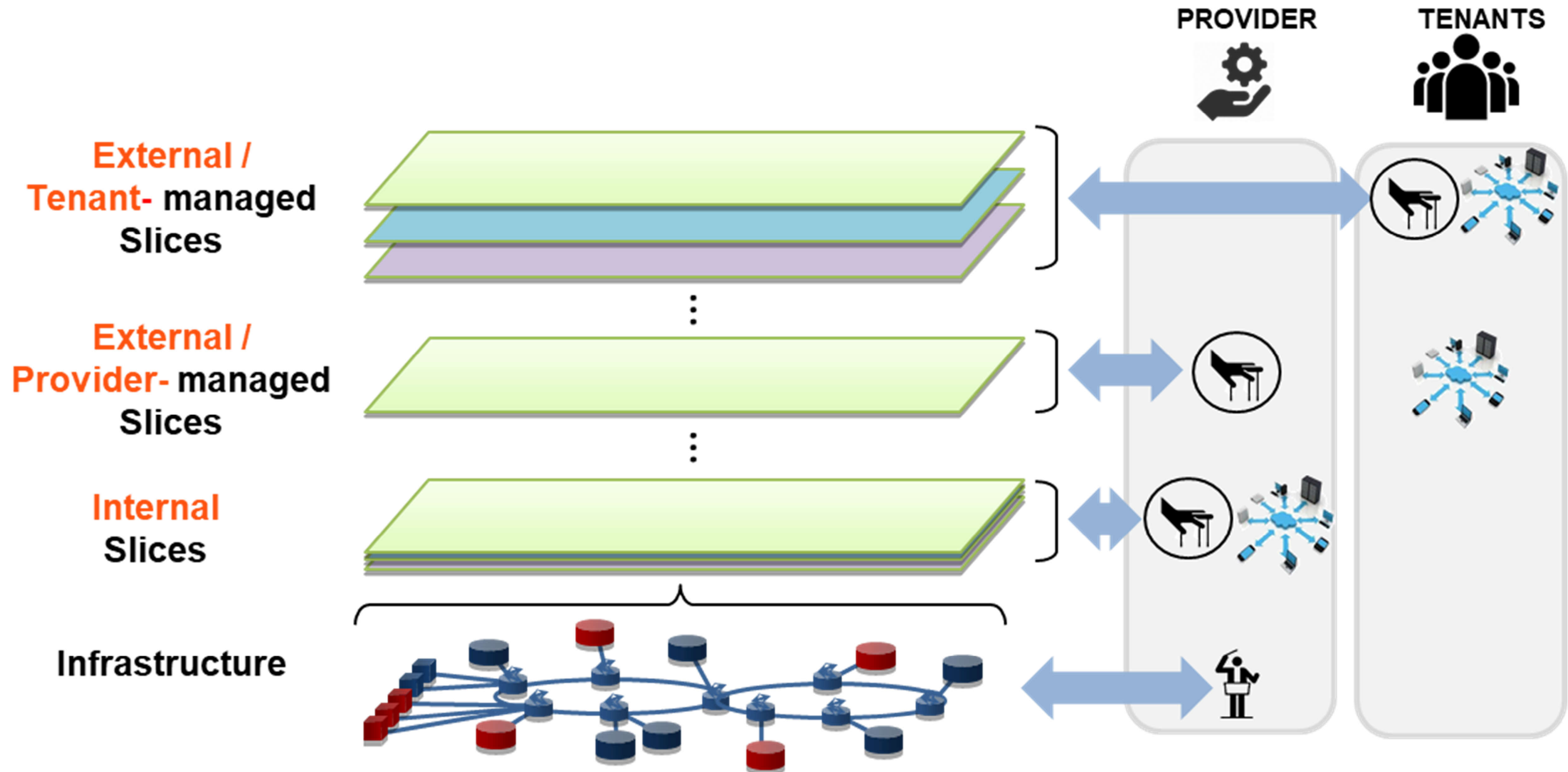




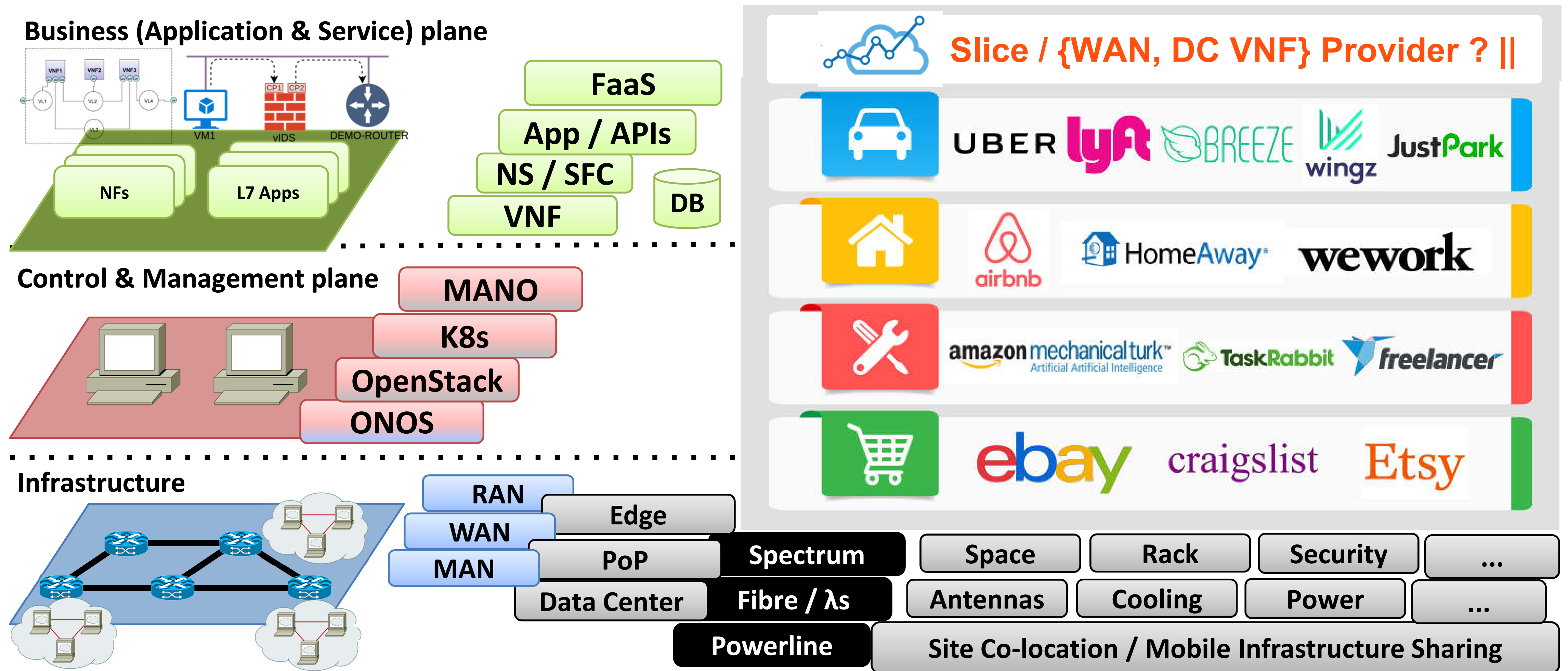
Different Slicing Models & Approaches



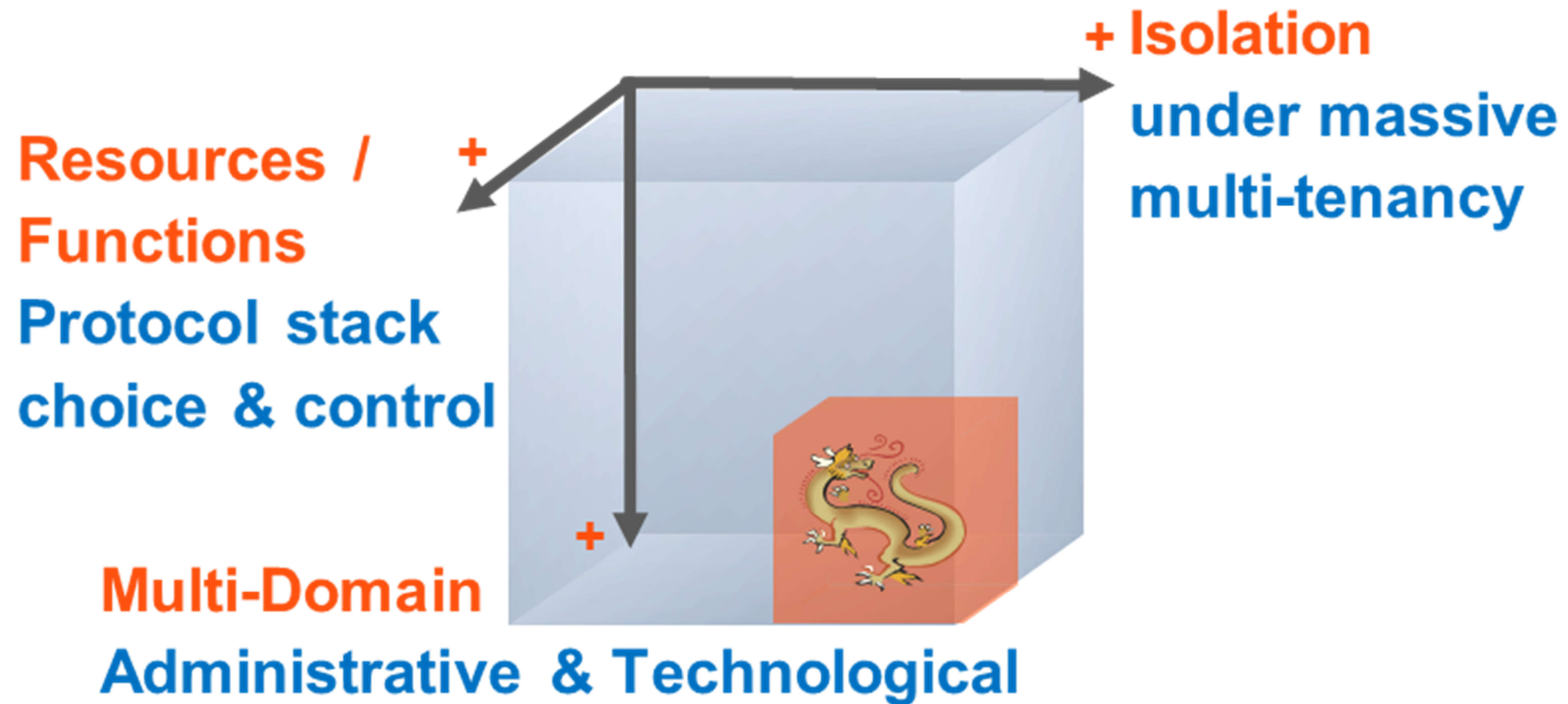
Types of Slices and Control Responsibilities



Slicing under massive any resource multi-tenancy (gone wild) ... or when sharing economy meets cloud network slicing



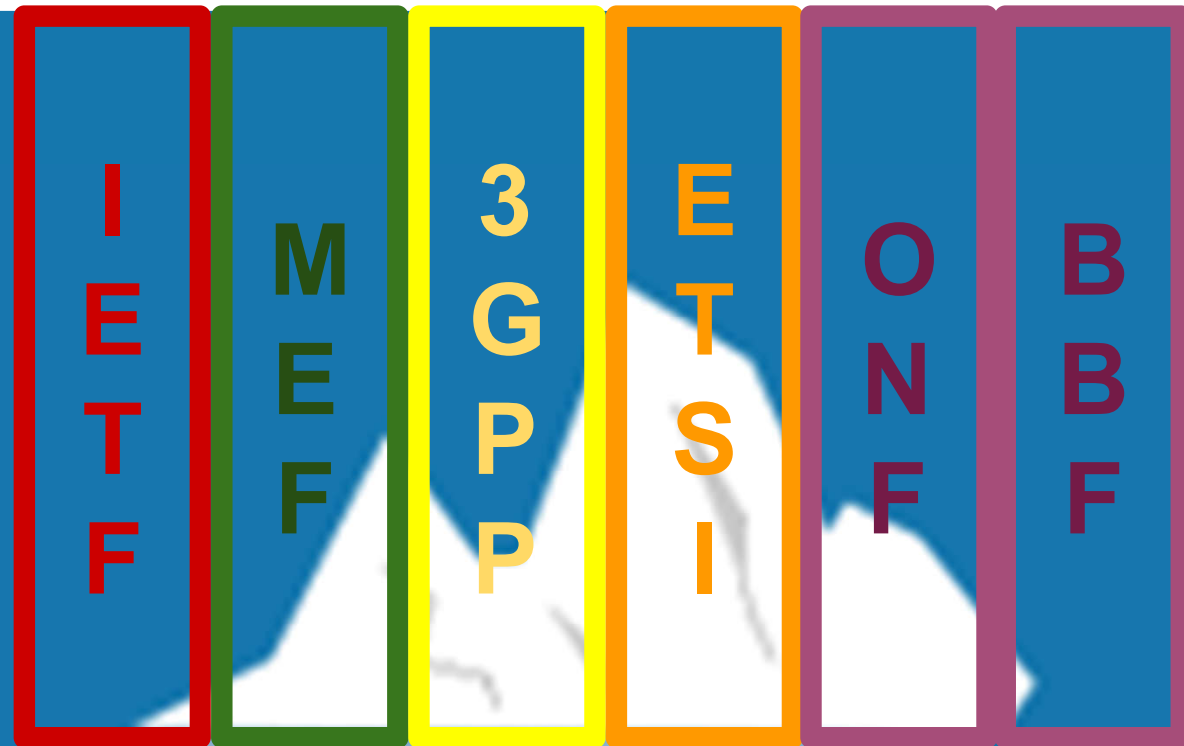
Deep Slicing: Concept and Challenging Trade-offs



Source: Inspired by the author (C. Rothenberg) **P³** trade-offs: **P**rogrammability, **P**erformance, **P**ortability.

<https://www.slideshare.net/chesteve/ieee-hpsr-2017-keynote-softwarized-dataplanes-and-the-p3-tradeoffs-programmability-performance-portability>

Towards Deep Slices



Fragmented Standardization

Business & Technological challenges
From infrastructure sharing to any-layer any-resource sharing (from PHY to APP)

Deep
Slicing



Deep
End-to-End, Multi-Domain (tech + admin)
Tenant Choice & Control
Isolation
Scalable

any resource, any function anywhere

Network programmability? By who?

Technical Expertise + Single Throat to Choke

Players with sufficient
SW Eng. + Network Eng.
& in-house Devops (NoOps?)

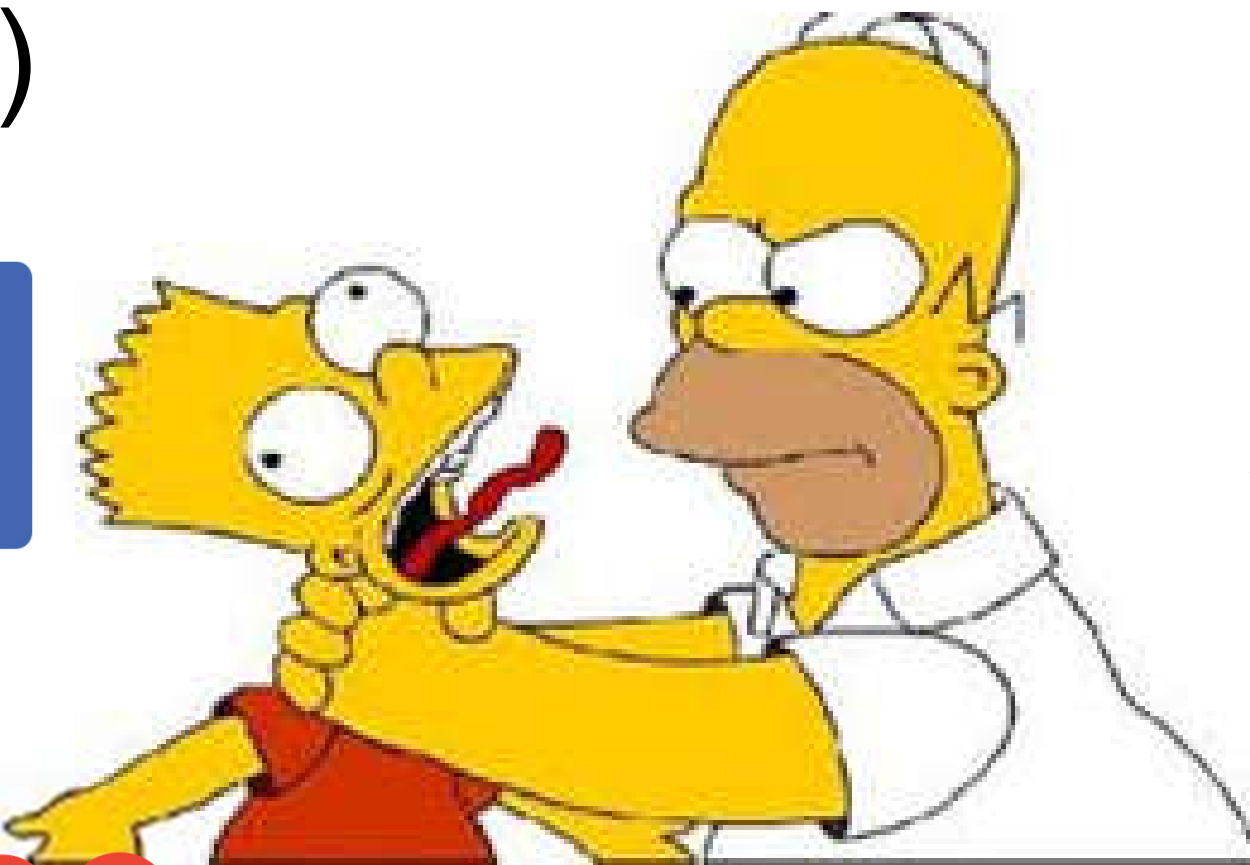


Microsoft



NTT

Google



- Intent-based (languages + APIs)
- Design + Run-time (NS)DKs
- ML/AI assistance
- Automation of Test + Benchmarking (pre-deployment + + day0 & day-2 ops)

The **long tail** of players

(e.g. smaller SPs, ISPs, enterprises, campus, governments, etc.)

Fluid Networking @ run-time

SW

HW

