


# Open Source vs Proprietary Software Running on Disaggregated Hardware

2023-05-01 IEEE ComSoc Webinar and Panel Discussion

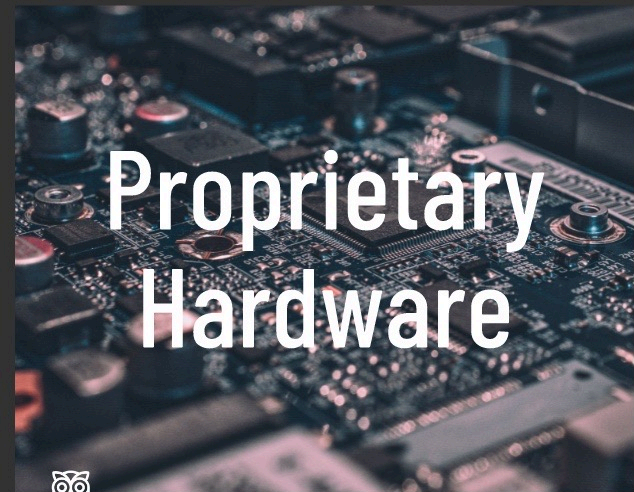


**If Software is Eating the World, and  
Open Source is Eating Software,  
is Open Source Eating the World?**





# What Open Source Likes to Eat



Proprietary  
Hardware



Proprietary  
Software



People?



# Open Source in Networking is Everywhere

Let a hundred flowers bloom...

## Hardware Related

SONiC, ONIE, P4

## Orchestration

ONAP, DSM, EMCO, Nephio

## Security

Snort, BRO, Suricata, etc

## Automation

Ansible, Puppet, Chef, and more

## App Infra

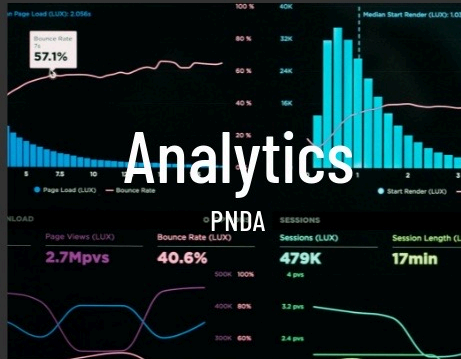
Service Mesh - Istio, Envoy, Linkerd

## Infrastructure

OpenStack, KVM, Network Service Mesh, Calico, FRRouting

FD.io VPP, DPDK, eBPF

## Analytics

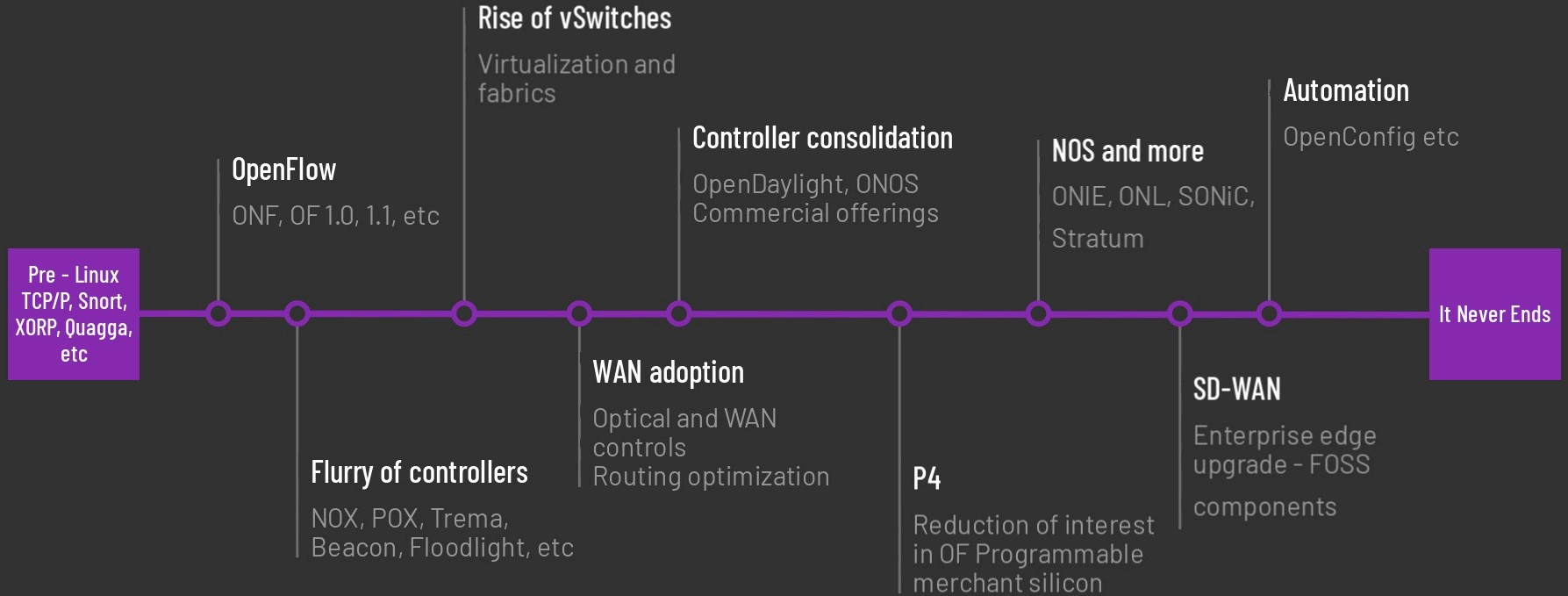


## and more...

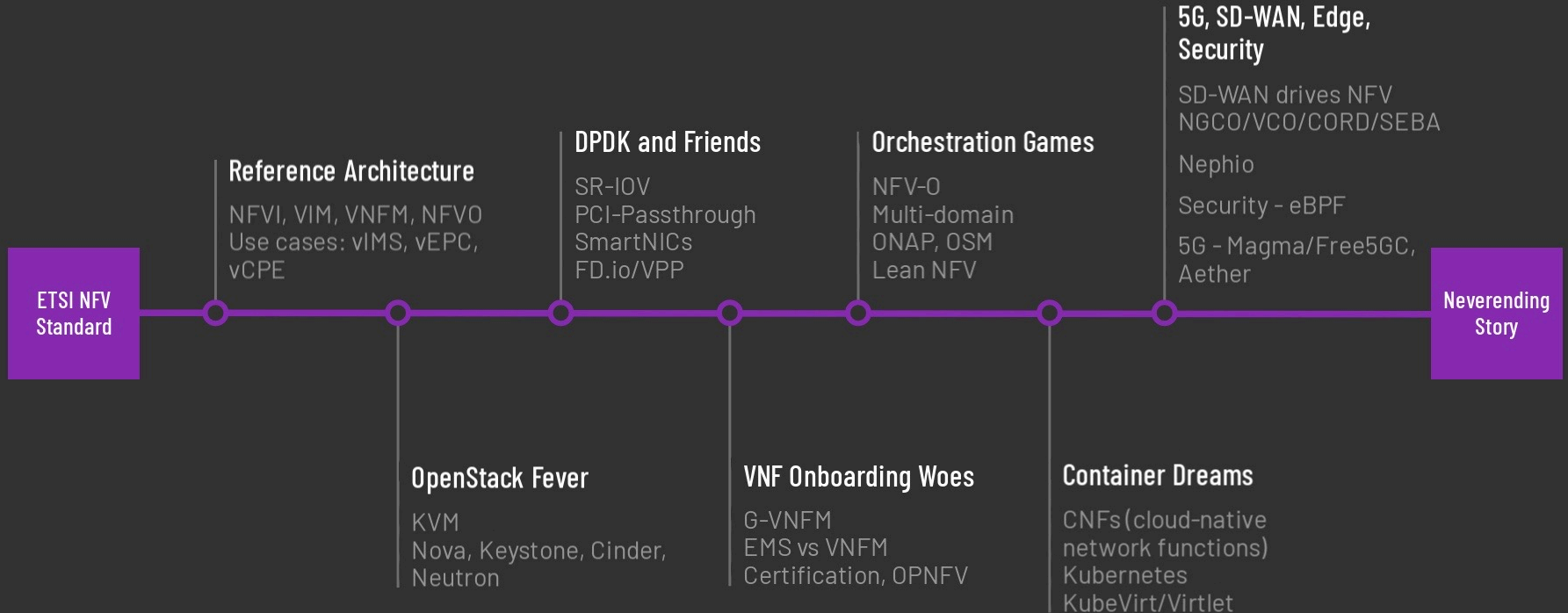
kitchen sink - anyone?



# SDN and Open Source Networking - A Long Journey



# NFV - Just as Long a Journey



# Open Source in Networking Ecosystem

Some More Prominent Organizations



Apache Software Foundation



MEF



OpenInfra Foundation



ETSI



Open Compute Project (OCP)



Telecom Infra Project (TIP)



Linux Foundation - Networking and Edge



Open Networking Foundation (ONF)




TM Forum


Plus many independent projects



# Enterprise Initiatives




Digital transformation  
(data, IoT, IIoT, AI/ML)



Maintaining productivity and secure access  
(WFH/WFA, ZTNA)




Mobility strategy (5G)



Managing threat surface and attacks in cloud, campus, WAN




Cloud transformation  
(multi-cloud, hybrid, edge)



Unified collaboration  
(UCaaS, XR, X-verse)



Campus connectivity  
(P5G, WiFi6/6E)



Building new services with fast TTM





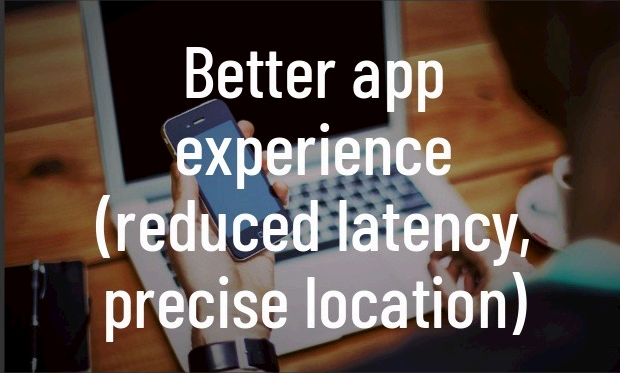
# Consumer Needs



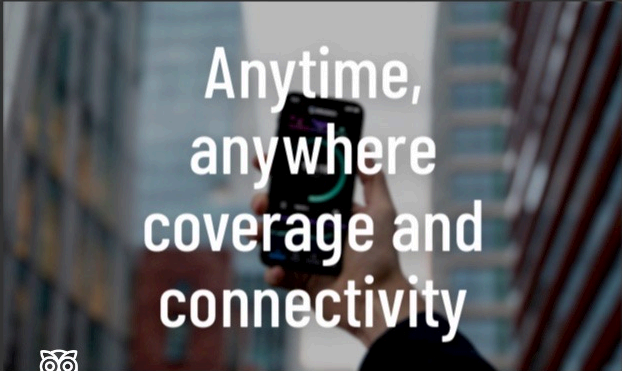
Faster and  
cheaper BW



Transparent  
and safe IoT



Better app  
experience  
(reduced latency,  
precise location)



Anytime,  
anywhere  
coverage and  
connectivity



New experiences  
with XR



Internet in  
everything, Digital  
everything



# Carrier Concerns

## End-to-End

Application experience

E2E network slice

QoS/SLA

Visibility/troubleshooting

## Changing First Mile

Hyperscaler backbone

Subsea cable expansion

Direct cloud connections

## The New Middle Mile

Metro networks expansion

Multi-edge

Co-lo and edge DC

SD-WAN/SASE gateways

## Diverse Last Mile

FTTx

5G/5G FWA

SD-WAN/SASE

LEO

# Different Viewpoints

## Cloud Providers

Love open-source networking  
Taking advantage of it  
Sometimes give back

## Service Providers

Love open-source networking  
Trying to take advantage of it  
Figuring out how to give back (except for a few)

## Enterprise

Not sure how to deal with open-source networking  
Not sure how to take advantage of it  
Give what? (with exceptions)

## Vendors

Love/hate open-source networking  
Taking advantage of it?  
Sometimes give back



# Challenges with Open source in Networking

- **Dealing with all those flowers**

Keeping track of projects

One hit wonders

Darwinism and assisted pruning

Intelligent selection

- **Role of standards today**

Less of debate - but still ongoing

Organic, ad-hoc versus structured

Battle of code contributions

- **Limited commercial success**

Where's the Red Hat, Canonical, SuSE?

- **Independent developers and open-source organizations**

Role of LF, ONF, MEF, ETSI, OIF, TMForum

Marketing vehicles?

Building community!

Giving the independents voice!

- **Absorptive capacity and contribution capability**

Many organizations can't consume open-source, much less contribute

Security and legal worries hold many back



# Where Do We Go From Here? 1/2

- **Continued expansion of scope**

Data center

Campus

WAN (SD-WAN)

Public Clouds

Transport

Edge

- **Growth of vertical stack - up and down**

Containers and app infrastructure - service mesh

NICs/FPGA

Switches, Routers

Chips and chipsets

- **Continued cross-org efforts**

Drive substantive cross-pollination and integration

More neutral parties - AMD, Arm, Intel, Nvidia, CSPs, cloud providers play roles



# Where Do We Go From Here? 2/2

- **Ecosystem will grow before it shrinks**

Waiting for the Kubernetes moment (when it all folds in)

SDOs, open-source organizations are critical as stewards

Open-source orgs must cull and retire mature projects past-prime (e.g. data center and NV stacks)

Meanwhile, dilution of resources, battle of egos, end-user confusion and Darwinian battles

Cloud providers and carriers can accelerate by selecting winners

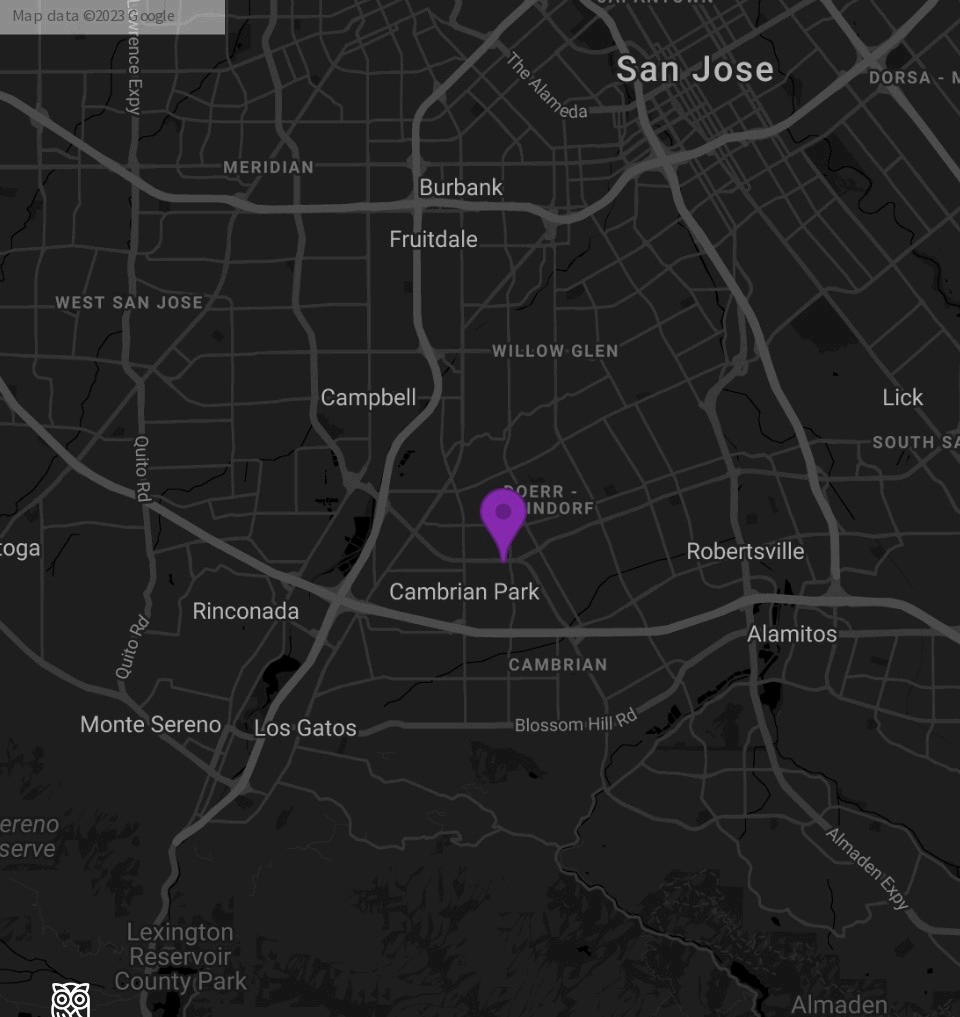
- **Momentum rules**

For most enterprises and carriers, align with high-momentum projects

Ecosystem support important

Enterprises/CSPs not equipped to consume OSS directly should still choose OSS-based solutions (support, compatibility, feature velocity, potential portability)





# Thank you!

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