



The Telecom Infra Project (TIP): Accelerating Rollout of Open Networks

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Facebook



What is TIP?

FOUNDED IN 2016

Telecom Infra Project (TIP) is a collaborative community accelerating and transforming the way telecom infrastructure is created, taken to market, and deployed.

Together We Build

Why does TIP exist?

TO ACCELERATE INNOVATION



Global data consumption

predicted to rise annually by 47% over the next few years. Meanwhile, **mobile ARPUs** have been falling for many years



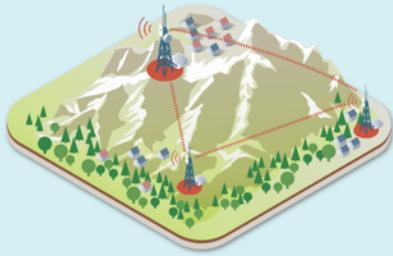
Networked devices and connections (mobile & fixed) expected by 2020



Over half of the world's population, primarily in rural areas, still do not have basic access to the internet

TIP IS ADDRESSING

Connectivity challenges in every environment



Ultra rural



Rural



Suburban

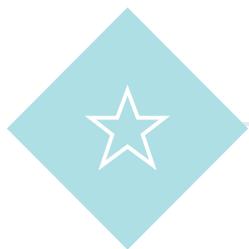


Dense urban



TIP IS BUILDING

An active community delivering results



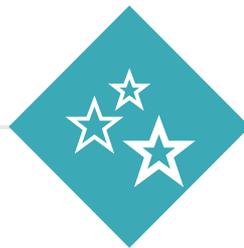
2016

- **TIP launches with 30 member companies.**
- Founding Members include **Deutsche Telekom, Intel, Facebook, Nokia, & SK Telecom**



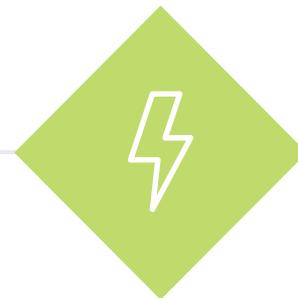
2017

- Tech in global field trials
- **TIP Community Labs**
- **TEAC** startup accelerator



2018

- **BT, Vodafone and Telefonica** join TIP BoD
- Operator-led RFIs
- Trial deployments
- Over 500 member companies.



2019

- TIP demonstrates **end-to-end network architecture.**
- Operator-led **OpenRAN field trials**
- Tech prototypes

Telecom Infra Project

Over 500 member companies

NOKIA

vodafone

Telefonica

facebook

T ..

intel

BT

ISA INTERNEXA

Globe

MTN

SK telecom

kontron

Deloitte.

LITEON®

Amphenol

P

Inphi

Telia Company

MyRepublic

TELSTRA

MTL

BRCK

EQUINIX

ciena.

NEXIUS

axiata

NURAN WIRELESS

Quanta Computer

orange

OPENET

JUNIPER NETWORKS

accenture

hietu

TATA

SAMSUNG RESEARCH AMERICA

COBHAM

radisys

Gilat

E E

Tech Mahindra

TOWERSHARE

swisscom

Fujikura

Verveba Telecom

Infinera

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TIM

INTERDIGITAL

iDIRECT

BROADCOM®

Coriant

LUMENTUM

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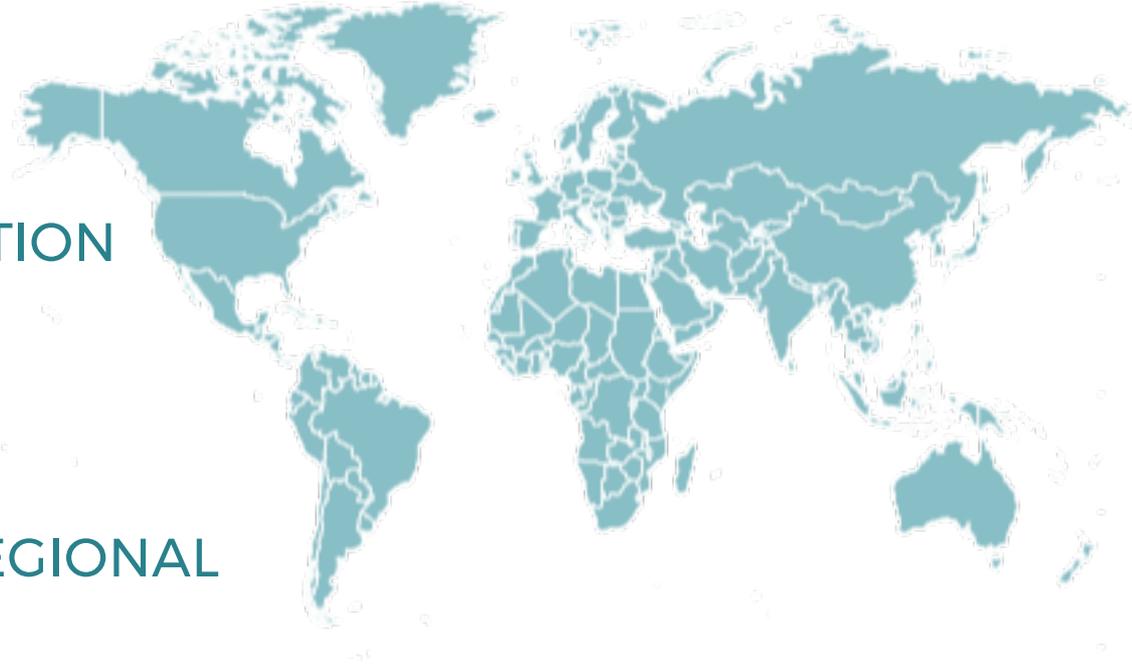
TURKCELL

TIP is global

DIVERSE REPRESENTATION

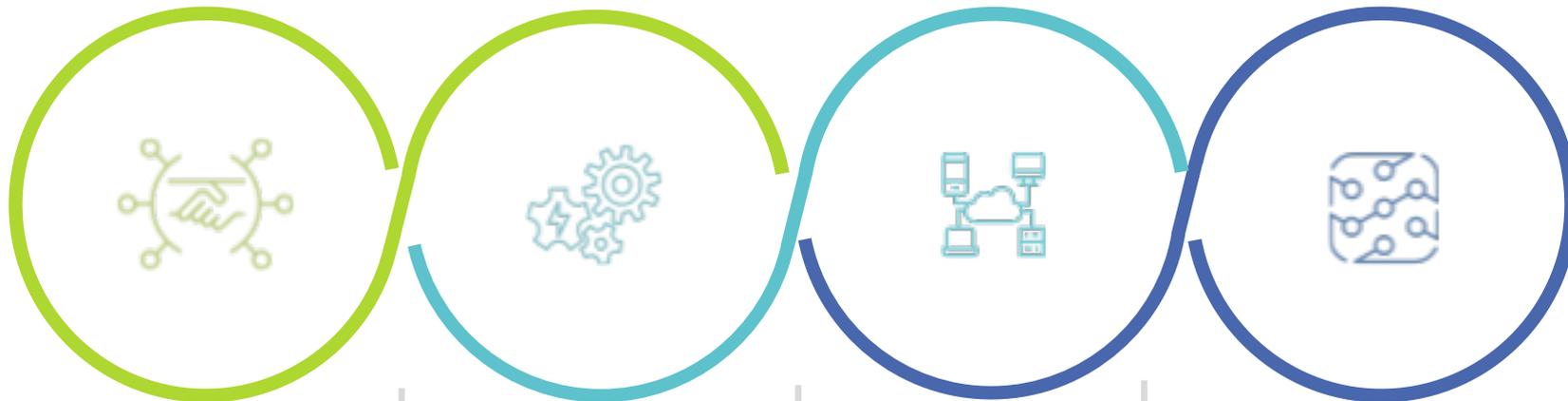
A VISION FOR GLOBAL
DEPLOYMENTS

ENGAGEMENT WITH REGIONAL
STAKEHOLDERS



TIP IS CONNECTING

A diverse community



SERVICE PROVIDERS

Satellite ISPs
MNOs MSOs

TECHNOLOGY PARTNERS

Established &
Smaller OEMs
Startups
Research Institutes

SYSTEM INTEGRATORS

Professional Integrators

CONNECTIVITY STAKEHOLDERS

Municipalities Enterprise
Internet Companies

TIP IS LEVERAGING

New channels for collaboration



Project Groups



TIP Community Labs



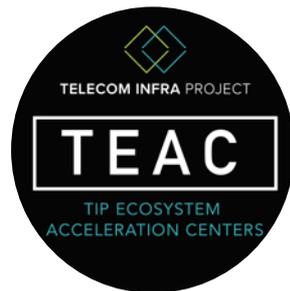
Deployments

TIP IS GROWING

A healthy pipeline of ideas and investment

TEAC (TIP Ecosystem Acceleration Centers)

TIP's Startup Accelerator



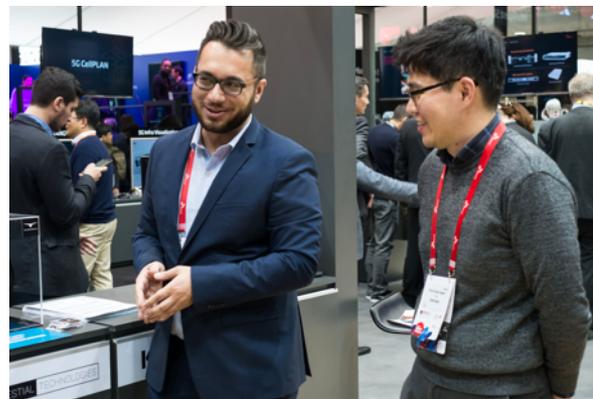
Startups fast track to mentorship and potential commercialization opportunities



Operators gain access to innovative startups and collaboration across the global TEAC network



Investors benefit from early access to startup deal flow



How We Work

TIP Project Groups

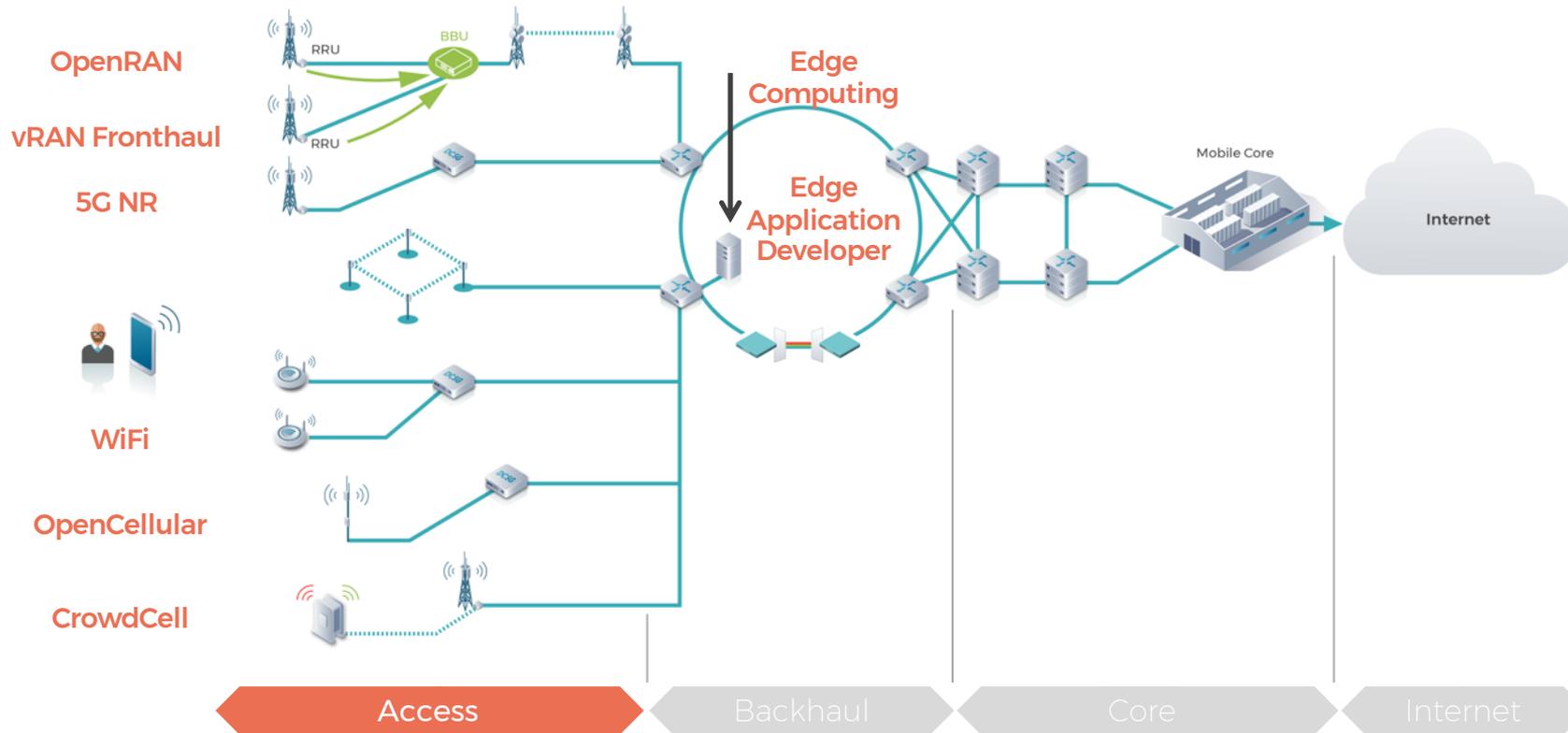
DIVERSE MEMBERSHIP

DIVERSE LICENSING STRUCTURE

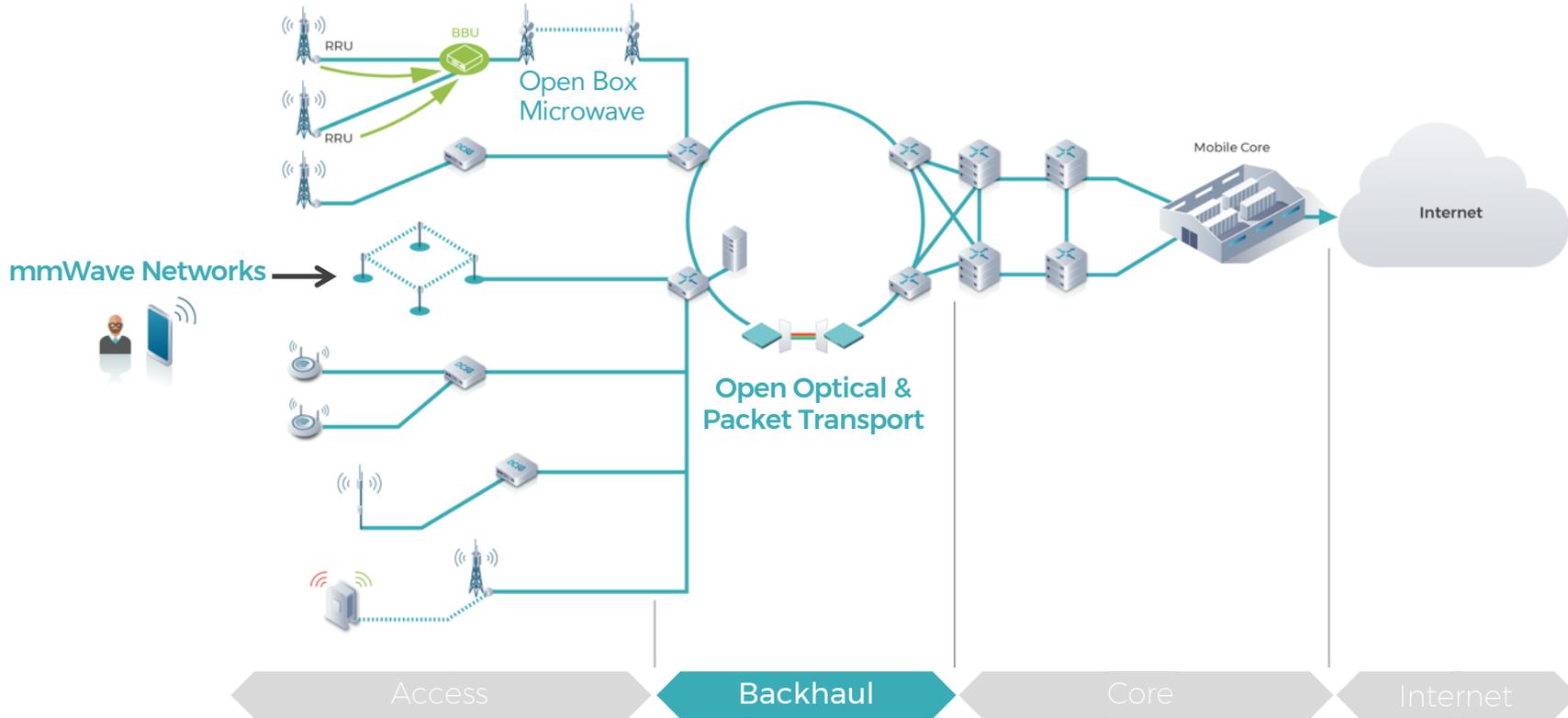
ENGAGING DISCUSSIONS



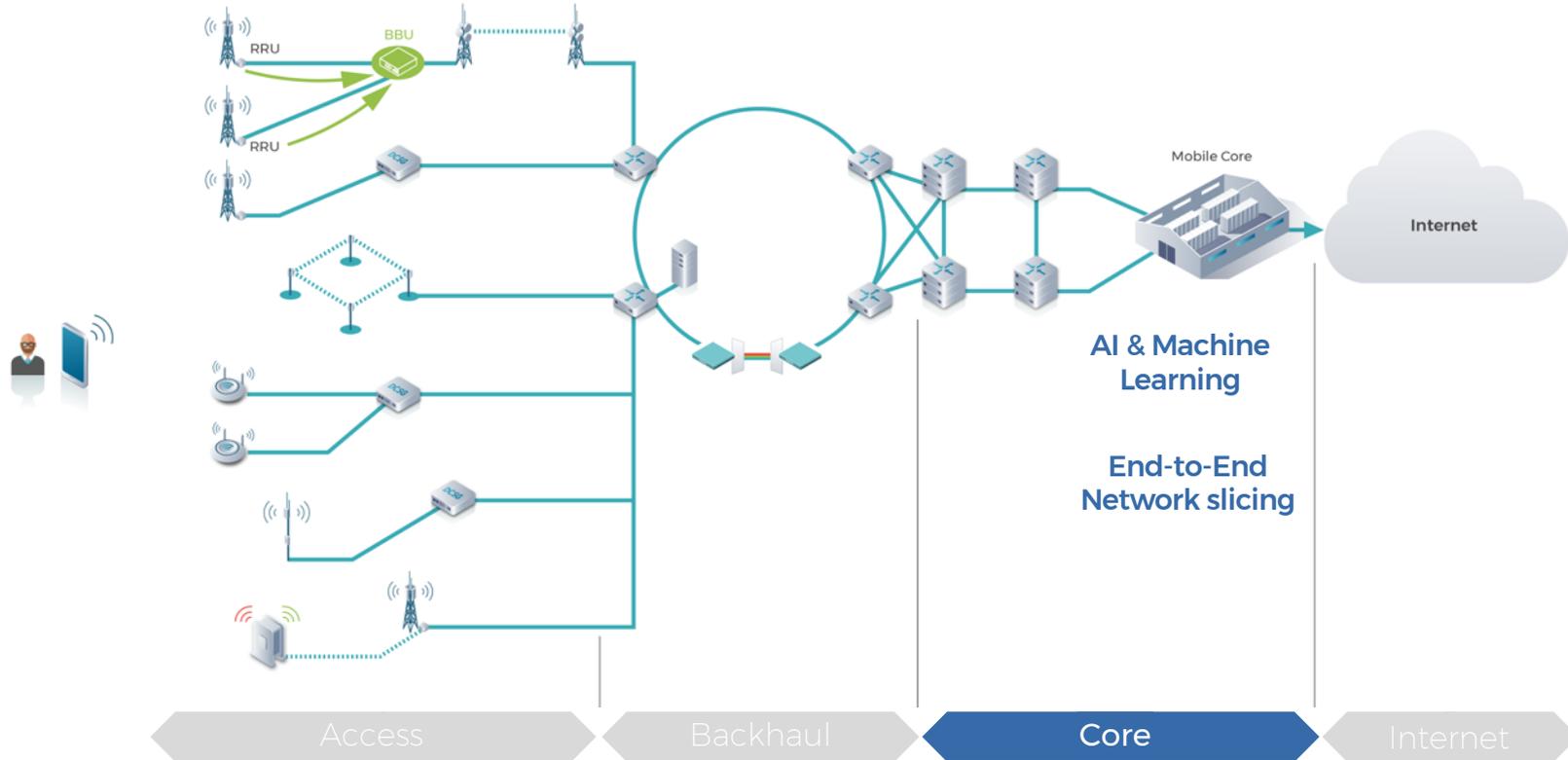
TIP Project Groups - Access



TIP Project Groups - Backhaul



TIP Project Groups – Core & Management



TIP PROJECT GROUP HIGHLIGHTS

OpenRAN: the road to Turkey field trials



LAUNCH

November, 2017

OpenRAN Project Group launched at TIP Summit



INNOVATE

June, 2018

Telefónica & Vodafone issue RFIs for OpenRAN technologies



BUILD

October, 2018

RFI results announced at TIP Summit: AltioStar, Mavenir, Parallel Wireless (most compliant E2E platforms)



DEPLOY

April, 2019

Vodafone OpenRAN field trials in Turkey with RFI winner Parallel Wireless



TIP PROJECT GROUP HIGHLIGHTS

Disaggregated Cell Site Gateways: Collaborating to Build Tech



LAUNCH

February, 2018

The Open Optical & Packet Transport Project Group launches sub-group Disaggregated Cell Site Gateways (DCSG)



DESIGN

October, 2018

At TIP Summit Vodafone, Telefónica, TIM Brasil, and Orange release their DCSG technical requirements and deployment scenarios



BUILD

February, 2019

Vodafone, Telefónica, and TIM Brasil announce RFI results

Vodafone showcases first DCSG HW Prototype



TEST

April, 2019

Vodafone, Telefónica, and TIM Brazil meet tech partners developing DCSG prototypes. Make plans for global lab trials (Madrid, Rio, MPK, London)



Telefonica

TIM

vodafone

ADVA
Optical Networking

DELTA

edge-core
NETWORKS

Infinera

ipinfusion

VOLTA
Networks

ONF
CONNECT

TIP PROJECT GROUP HIGHLIGHTS

mmWave Networks

Co-chairs:  
Promoting wireless solutions for gigabit connectivity



OpenRAN 5G NR (New)

Co-chairs:  
Envisioning a disaggregated Whitebox 5G NR Base-Station



WiFi (New)

Co-chairs:  
Working toward better WiFi Connectivity



TIP Community Labs

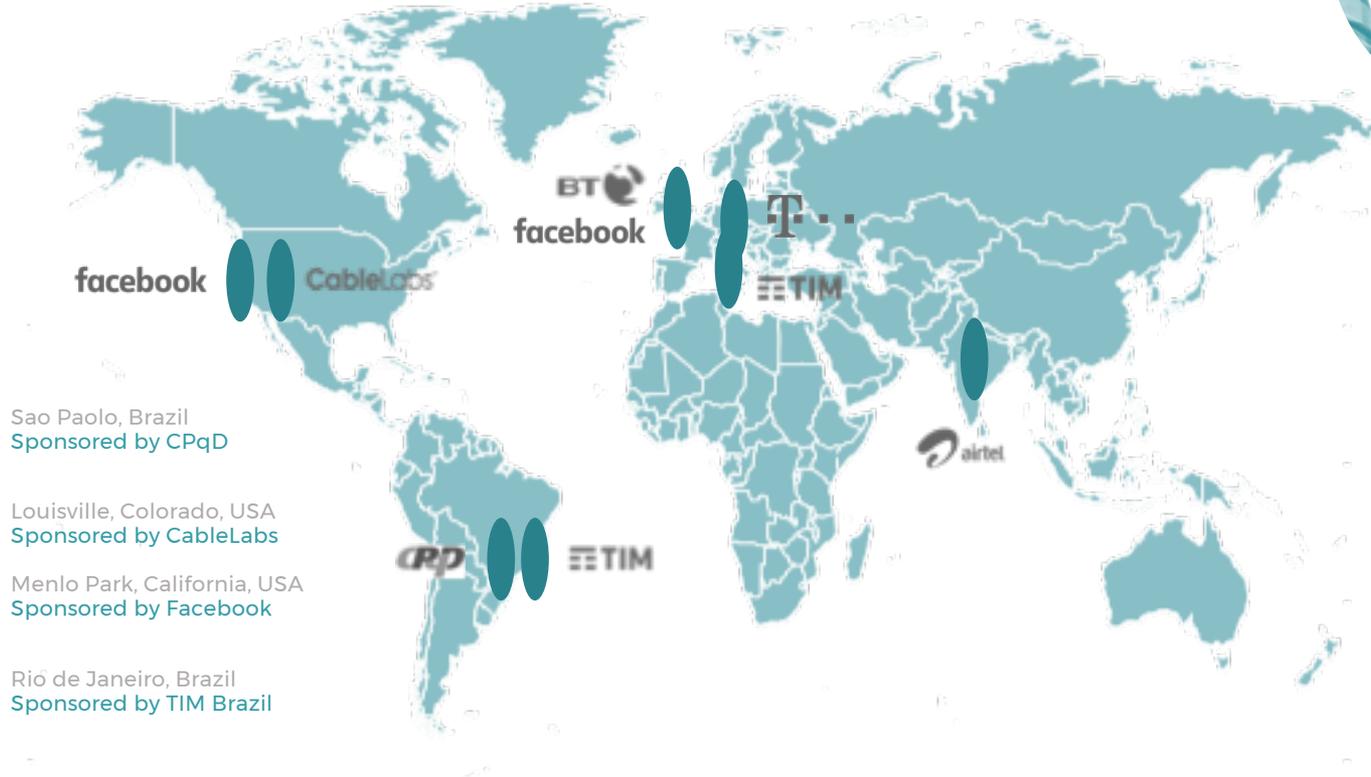
HANDS ON INNOVATION

COMMUNITY RESOURCES

INTEGRATION



TIP Community Labs Worldwide



Sao Paulo, Brazil
Sponsored by CPqD

Louisville, Colorado, USA
Sponsored by CableLabs

Menlo Park, California, USA
Sponsored by Facebook

Rio de Janeiro, Brazil
Sponsored by TIM Brazil

Adastral Park, Ipswich, UK
Sponsored by BT

Berlin, Germany
Sponsored by Deutsche Telekom

London, UK
Sponsored by Facebook

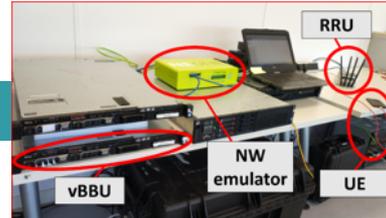
Manesar, India
Sponsored by Airtel

Turino, Italy
Sponsored by TIM

COMMUNITY LAB HIGHLIGHTS

vRAN Fronthaul: Driving RAN virtualization through TIP

Multi-vendor commercial-grade vRAN Fronthaul solutions in development or in trials in four community labs:



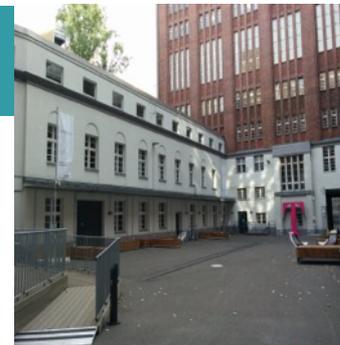
COMMUNITY LAB HIGHLIGHTS

Testing mmWave Technology

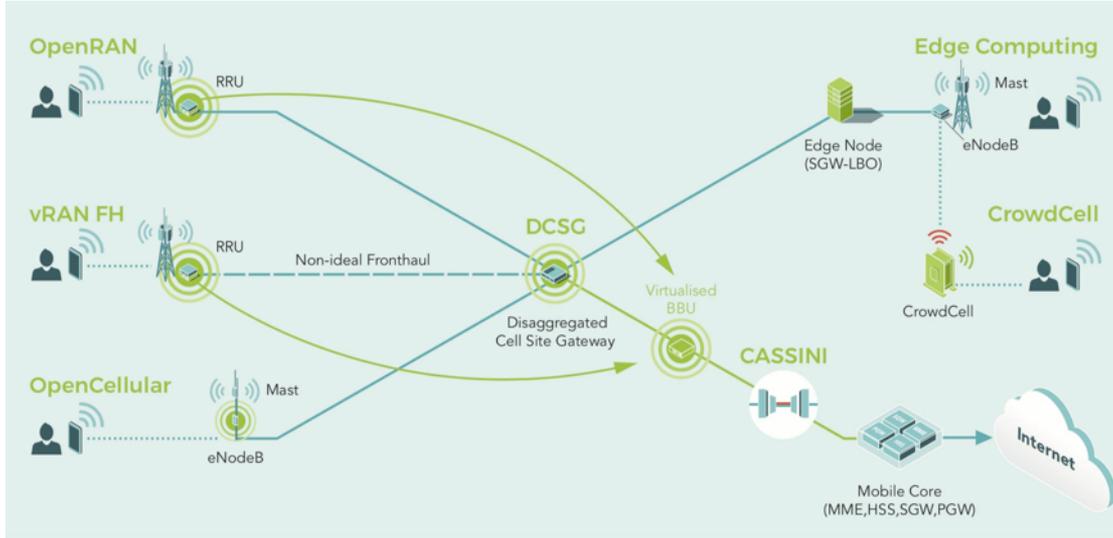


Deutsche Telekom hosts a TIP Community Lab for mmWave Networks in Berlin

The lab allows DT to validate mmWave technology capabilities & characteristics in a near real-world environment

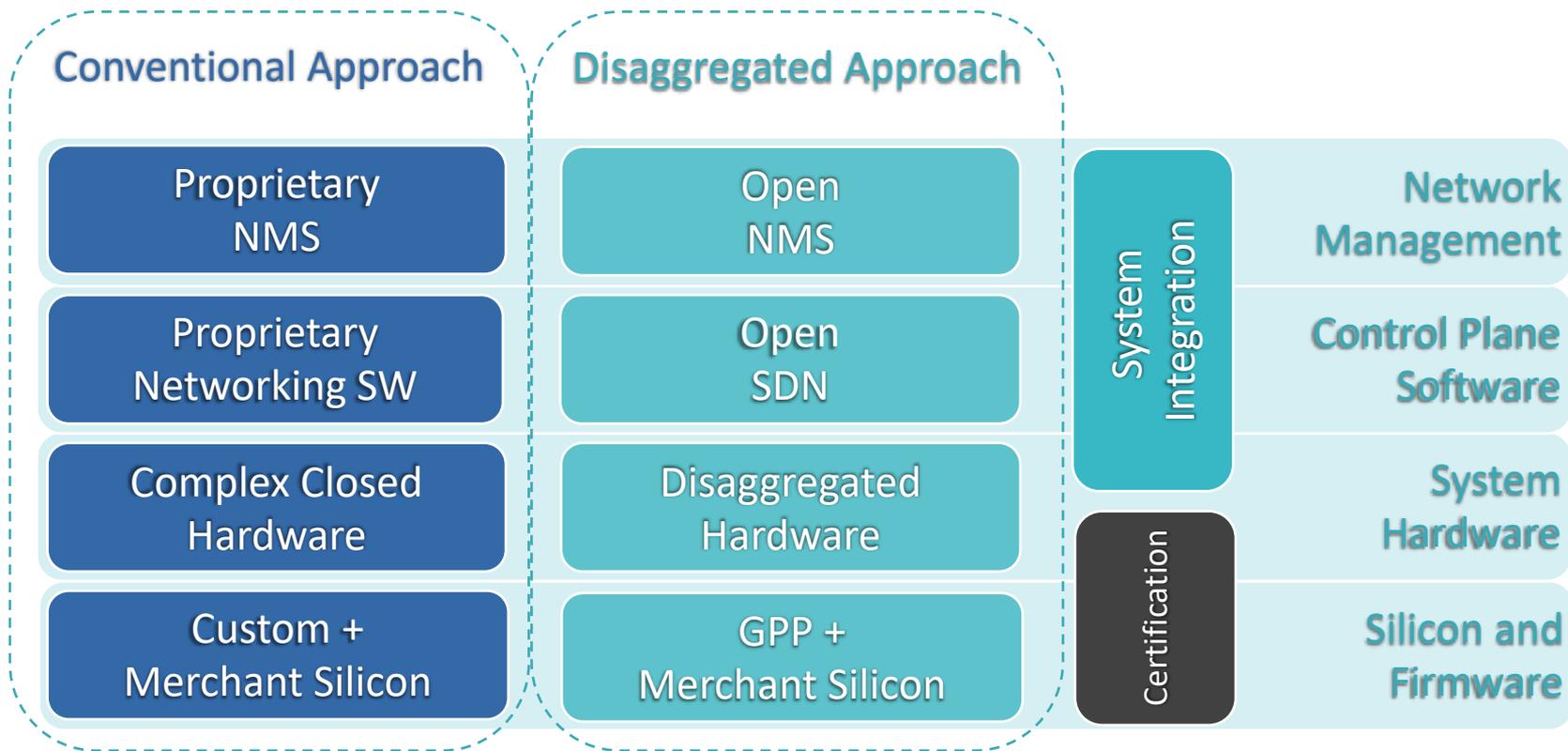


VALIDATING END-TO-END NETWORKS @ MWC 2019

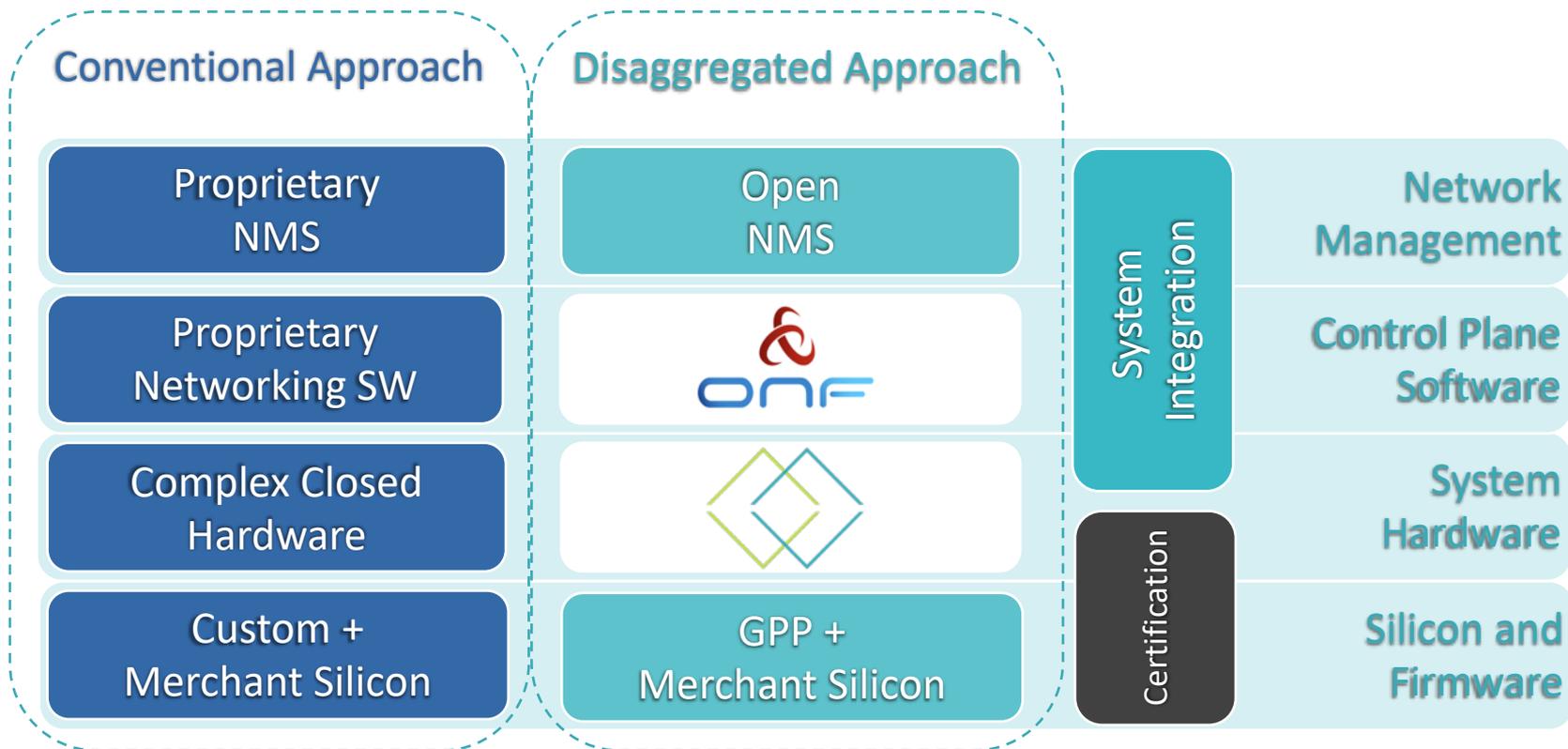


TIP & ONF Collaboration

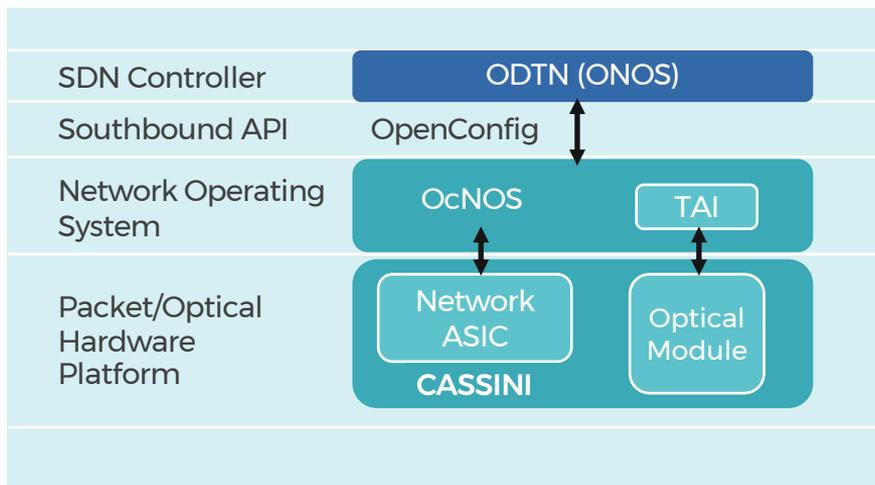
Transformation to Open Networks



Transformation to Open Networks



TIP OOPT / ONF ODTN Collaboration



TIP scope

ONF scope



ODTN: Open Disaggregated Transport Network
 OOPT: Open Optical Packet Transport; ACO: Analog Coherent Optic; DCO: Digital Coherent Optic



Collaborate with Us

BECOME A MEMBER

<https://telecominfraproject.com/apply-for-membership/>

Service Providers:

HOST A COMMUNITY LAB

<https://clabs.telecominfraproject.com/>

HOST A TEAC STARTUP ACCELERATOR

<https://teac.telecominfraproject.com/>

ISSUE AN RFI/P

JOIN A PROJECT GROUP

<https://telecominfraproject.com/project-groups/>

Technology Providers:

DEVELOP A TECH PROTOTYPE

TEST INDIVIDUAL/ A SYSTEM OF TECHNOLOGIES

DEPLOY NEW INNOVATION

TIP Summit '19

The Conference for Telecom Innovation

Together We Build · November 13 - 14 · Amsterdam · #TIPSummit19

Industry Leading Speakers at TIP Summit '19



Enrique Blanco Nadales
Global CTIO
Telefónica



Dan Rabinovits
Vice President
Facebook



Tareq Amin
CTO
Rakuten Mobile, Inc.



Miguel Marin
Technology Director, AMAP
Vodafone



Axel Clauberg
VP & CTO
T-Systems International



Caroline Y. Chan
VP, Data Center Group
Intel Corporation



David del Val Latorre
CEO, Research and
Development
Telefónica



Pardeep Kohli
CEO
Mavenir



Yago Tenorio
Head of Network Strategy
Vodafone



Steve Papa
CEO
Parallel Wireless



Mansoor Hanif
CTO
Ofcom



Wing K. Lee
CEO
YTL Communications



George Tchapanian
CEO
Edgecore Networks



Christoph Glingener
CTO
ADVA



Durga Satapathy
Director, Technology
Innovation & Architecture
Sprint



TIP IS BUILDING
Community

**Take your place
at the table
and build with us.**



Thank You

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