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TIP Summit 2019: From Trials to Live Deployments

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ADVISORY REPORT

REPORT SUMMARY

The TIP Summit 2019 showed significant momentum in its development work and deployments in live networks. The group needs to further accelerate its projects and attract wider support from operators not yet included into its project groups.

SUMMARY

ISSUE

The Telecom Infra Project Summit 2019 in Amsterdam, the Netherlands (November 13-14) showed significant acceleration and increased momentum behind the initiative, which aims to evolve telco infrastructure through industry collaboration on open and disaggregated solutions addressing critical issues operators face when building their networks. Unlike standards organizations or lobbying groups, TIP is trying to achieve its goals by establishing wide industry collaboration on technology specifications, reference designs, and finally finished products ready for deployment in operator networks.

TIP was launched in 2016, supported by Facebook, a small number of Tier 1 telcos, and several mostly smaller telco equipment and ICT vendors. It has since evolved into a wide industry association gathering over 500 members- telcos, network equipment vendors, ICT vendors, and SIs- that build and deploy solutions in support of telco network transformation. Its main goal continues to be opening and disaggregating telecom networks, from access to the core, and fostering competition in the open telecom networking ecosystem.

This year's Amsterdam summit represented somewhat of a watershed in TIP's development, with the organization launching several key initiatives at the event, most importantly TIP Exchange, an online marketplace allowing potential users (operators) to quickly identify TIP solutions and vendors relevant to their network deployment projects. TIP has also extended its work with a new project group- 'Non-Terrestrial Connectivity Solutions,' aiming to integrate terrestrial and satellite networks to produce better coverage in sparsely populated areas. Finally, the event was a first outing for several key new platform projects and new members (most notably Dell/EMC and mobile operator Rakuten) as well as the first live deployments of its more mature developments.

KEY TAKEAWAYS

- TIP is reaching a critical mass, as projects developed within its framework are beginning to reach maturity and are being deployed in live networks. This creates a need to increase the participation of players, notably systems integrators, which can help in industrializing its solutions.
- TIP membership and its ambitions are growing, as well as the role of TIP-developed solutions in participating operators' deployment plans.
- The organization is increasing its outreach to potential users of technologies it helps create, through the launch of TIP Exchange.
- TIP's open RAN deployment results are encouraging, but the open RAN technology needs to develop further.
- The momentum behind the TIP 'Open Optical and Packet Transport' (OOPT) project group is increasing, with platforms deployed in live networks and new designs on the horizon.

PERSPECTIVE

CURRENT PERSPECTIVE

Building the Open Telco Infrastructure Ecosystem

Since its founding in 2016, TIP has grown from a handful of members to a 500-strong organization today, counting smaller and larger vendors among its members, but most importantly some of the world's largest CSPs. At this year's event, representatives from Telefónica, Vodafone, Deutsche Telekom/T-Systems, and others not only demonstrated their support for the project, but also identified practical results they have achieved with TIP designs.

The projects and results presented focused on two TIP priorities- 1) 'cloudifying' and opening the telco infrastructure ecosystem and 2) connecting the unconnected- both guiding principles of TIP design work. Each of the technology-focused project groups identifies use cases, issues specifications, and proceeds to design specific solutions. The work resembles open source software development, resulting in open hardware and software solutions. Vendors involved in the project can either build the hardware platform, choose to deploy their software functionality on the platform, or include the solution in their portfolio and proceed to provide distribution, deployment, and support services for it.

As of this year's summit, TIP includes 13 project groups- seven focused on access networks, four on transport, and two on core and services. The new project group introduced at this year's summit was 'Non-Terrestrial Connectivity Solutions,' designed to promote the usage of non-terrestrial connectivity in conjunction with terrestrial networks.

This year's summit showed progress on several key TIP projects, ranging from open RAN to OOPT. The main message in all the presentations was that TIP momentum is accelerating; projects that have mostly been in trials and PoCs are moving into the field now, with field trials or commercial deployments. This dynamic extends the purview of TIP's work somewhat; for example, services and support are becoming more prominent in TIP, which brings more relevance to TIP members that focus on ICT services like TCTS, Tech Mahindra, and Wipro.

TIP has also expanded other aspects of its activity; it now operates 12 Community Labs, with new types of labs focused on testing, validation, and integration of end-to-end solutions. Two of the new labs will be run by Facebook in Northridge and Menlo Park, California; Telefónica will be running one focused on continuous integration/continuous deployment (CI/CD) in Madrid; and Sprint will open a TIP Community Lab focused on open RAN 5G NR in Overland Park, Kansas.

At this year's summit, TIP also launched its TIP Exchange, a solution marketplace bringing together use cases and associated solutions, which is intended to connect service providers with vendors catering to relevant use cases.

Perspective

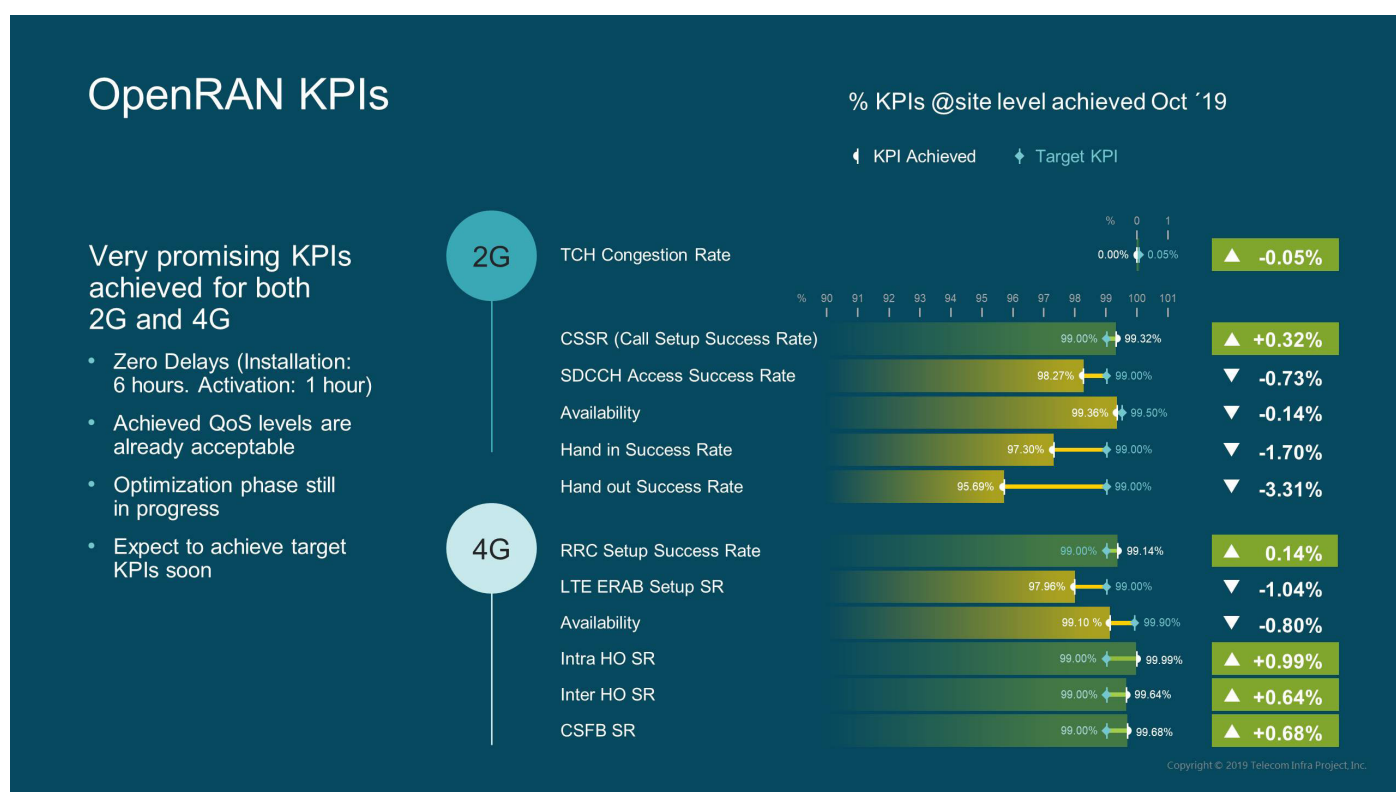
TIP Summit 2019 showed greatly increased momentum, both in terms of membership and internal activities, as well as clear evidence of traction the project is getting among SPs and vendors alike. This is due to the confluence of two major factors: 1) the increased maturity of TIP project groups and ensuing market-ready solutions; and 2) a strong shift by operators toward cloud-native architectures supporting open, extensible, and composable solutions, essentially the sweet spot for TIP projects.

Although TIP project groups and resulting solutions represent a small part of operator spending now, the mere fact they exist and are getting deployed in live networks shows that open, collaborative innovation has a lot to offer to telcos and solution vendors. TIP has also proven to be a fertile environment for smaller solution providers to accelerate their development and offer deployment-ready solutions to CSP clients or other solution vendors for joint go-to-market initiatives. By supporting disruptive vendors and a wide range of ecosystem partners, TIP promotes competition in the CSP solution market- something that is increasingly lacking as the number of traditional vendors keeps dwindling and surviving ones promote an end-to-end approach to building networks, rather than interoperability, openness, and disaggregation.

The future success of TIP will depend on how well its development work aligns with CSP network development strategy. As a result, CSPs- and especially those playing key roles in TIP project groups- must align strategies to the highest degree possible, to accelerate the development and time-to-market for TIP-based solutions. By accelerating development, TIP can ensure its solutions' performance parity with proprietary vendor platforms, while offering superior interoperability, TCO, and choice of components through disaggregation.

Open RAN Momentum Increasing

When it comes to project groups, open RAN deployments and market opportunities probably garnered the most attention at this year's summit. Vodafone, one of the pioneers in deploying open RAN, showed the results of its field trials of the technology in Turkey (Figure 1). The results are encouraging, with KPIs described as 'very promising' and optimization still in progress.

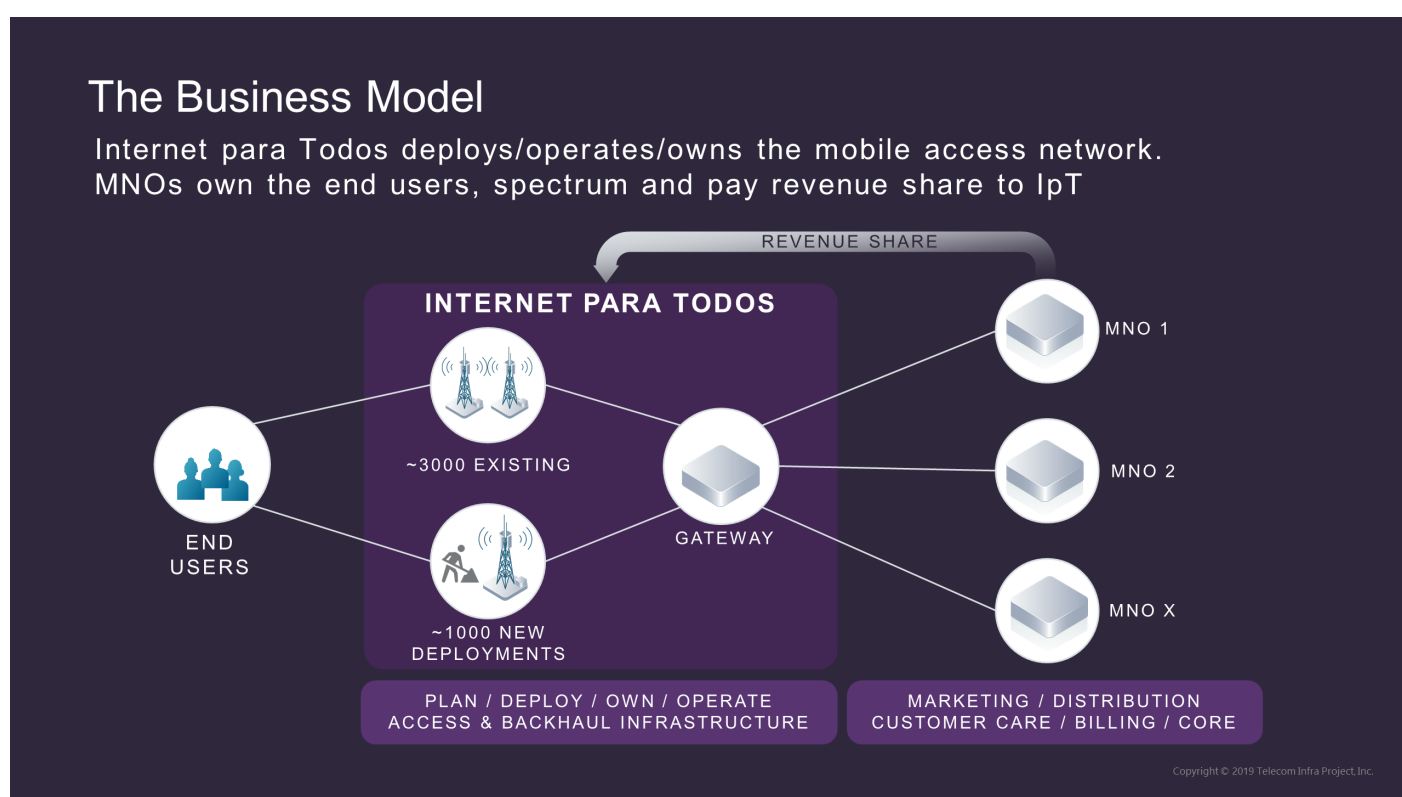


Source: Vodafone/TIP, 2019

Based on the results so far, the Vodafone group announced that it has started two more trials in Africa (in the Democratic Republic of Congo and Mozambique), and it is extending its open RAN trials to Ireland and UK, looking at scaling up the solution. Additionally, Vodafone opened the tender for its entire European RAN footprint to open RAN and traditional vendors alike, raising the stakes for both groups, and it expects to start validating open RAN in denser urban environments by Q4 2020.

But it's not all rosy in open RAN-land, and Vodafone noted that its open RAN vendors need to improve logistics, in-country presence, and service support. Vodafone also believes open RAN products need enhanced technological capabilities, such as broader radio portfolios, higher power, and dual- or triple-band radios.

As an example of innovative work to connect the unconnected, Peruvian open access wholesale rural mobile infrastructure operator Internet para Todos (which translates to 'Internet for All' and is also known as 'IpT') also received a lot of space to present its novel business model and give a status update of its project. IpT received its financing from Telefónica, Facebook, and two Latin American development banks, and aims to cover six million Peruvians in rural areas with mobile Internet (Figure 2).



Source: IpT/TIP, 2019

IpT has deployed 650 sites since its launch in May 2019 (out of 1,000 new sites it intends to deploy) and is adding LTE to 3,000 2G sites Telefónica brought into the company. It operates as a neutral carrier, giving all participating telcos the same SLAs. IpT also gave TIP members guidance on the technological priorities of rural operators: open RAN and low-power RAN, RAN sharing, advanced battery backup and power management, and long-distance microwave solutions for backhaul.

Perspective

Open RAN momentum shown in Vodafone's trials and IpT's deployment experience show that the technology is maturing quickly and will become more important as operators begin to disaggregate their networks further and adopt cloud-native functions and architecture in their infrastructures. Vodafone's decision to open its European networks to open RAN vendors is an important milestone, a significant opportunity for open RAN vendors, and a potential threat for legacy RAN vendors. It is also a call to action, inviting open RAN vendors to develop their solutions for dense urban environments and add more functionality, which will make their products applicable to a wider range of scenarios.

IpT, on the other hand, shows the benefits of tightly correlating open RAN and neutral carrier business models. If successful in achieving its projected 12-18% IRR, IpT can be a template for both TIP and open RAN solution providers in their quest to connect the unconnected and at the same time offer attractive business opportunities to potential investors. IpT may also draw interest from countries facing problems in achieving good-quality rural connectivity as well as CSPs intent on completing their geographic footprint without breaking the bank.

OOPT Deployments and Development Accelerate

TIP Summit 2019 also brought to light significant advancements in its OOPT project group, delivering packet and optical solutions. 'Disaggregated Cell-Site Gateway' (DCSG) was one of the stars of the show. The project, focused on 5G IP aggregation and started in the first half of 2018, has attracted 12 solution vendors, as well as support from Vodafone, Telefónica, TIM, and other prominent CSPs such as Airtel or MTN.

At the summit, Telefónica, with its suppliers Infinera and Edgecore, announced it is deploying DCSG in a first large-scale commercial deployment in Germany and Ecuador. In the deployment, Telefónica combines Infinera's CNOS operating system with Infinera's DRX-30 hardware or Edgecore's 7315-27X-DCSG platform.

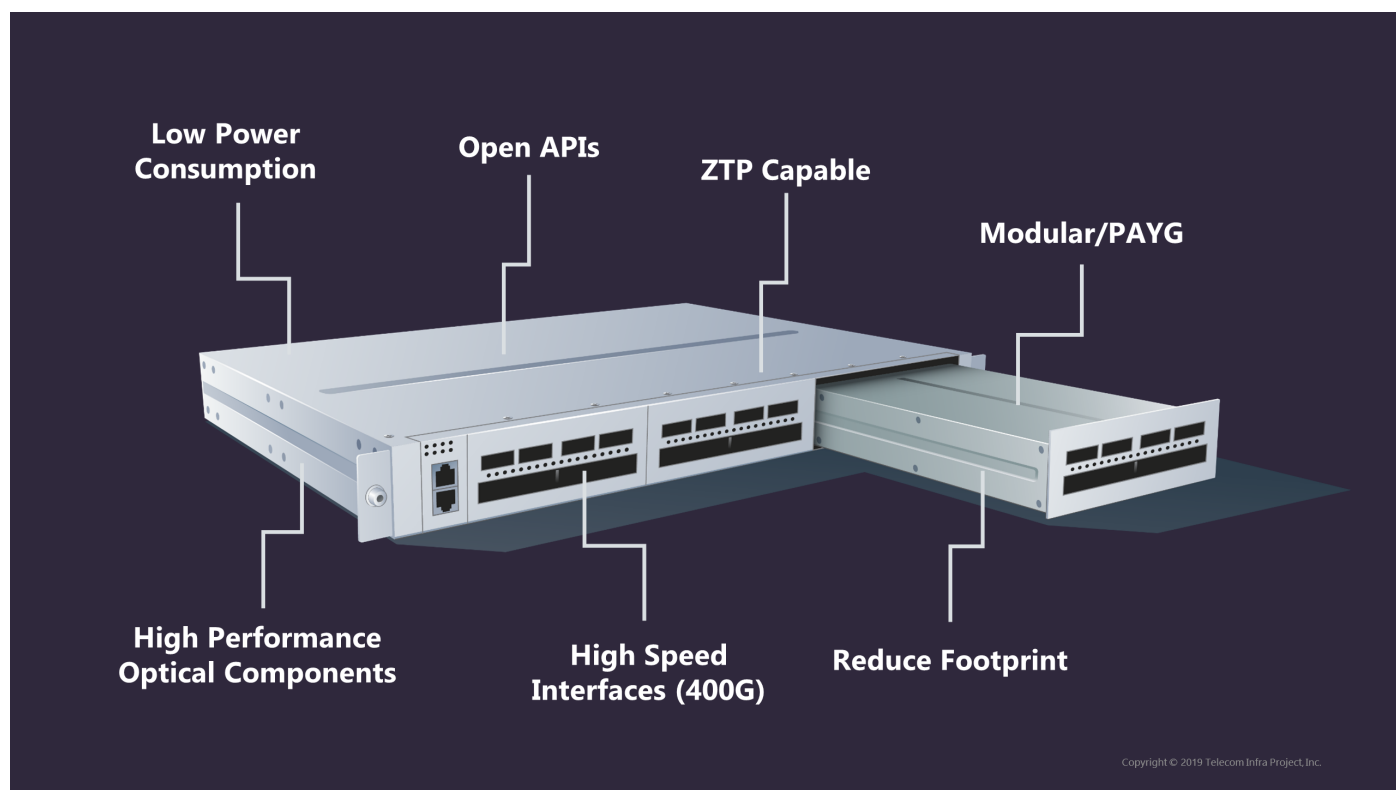


Source: TIP, 2019

The DCSG project group also announced that additional solutions are nearing general availability- combining hardware from Delta Electronics, Alpha Networks, and Ufispac and software from Volta Networks, Exaware, Datacom, Aviat Networks, Metaswitch, and Altran. The newest member of DCSG, Dell is working on adapting an existing NOS to work with DCSG-compliant hardware.

On the packet-optical front, TIP announced that its latest compact modular platform, Cassini (which is slated to be GA by the end of November 2019), has been in production network trials with NTT Communications and Telefónica (Peru), supporting storage-as-a-service and metro/long-haul DWDM use cases, respectively. Cassini is also being deployed in a live network, with Japanese CSP Mixi serving as a DCI platform, supporting Mixi's gaming-oriented connectivity services. Cassini, a 1.5RU compact modular packet-optical platform, features support for client and line pluggables (CFP2-ACO and DCO) from multiple vendors, allowing operators to choose technologies and invest in a pay-as-you-go model.

TIP also introduced its next-generation disaggregated transponder, called Phoenix, at the summit. Phoenix is a 400G/wavelength-capable compact modular platform. It is currently finalizing the specification stage, with Vodafone, Telefónica, Deutsche Telekom, and Telia defining the specification contributed to the project group. As next steps, the operators will start to engage with key players in the optical disaggregated industry with the intention to produce solutions that meet the specification, with a view of the platform entering live networks in 2021.



Source: TIP, 2019

Perspective

Both DCSG and TIP's packet-optical platforms are great examples of TIP work being driven by operator requirements. DCSG work is crucial for operators as they develop 5G IP aggregation, which will in time reach massive proportions. With thousands of cell-site gateways usually deployed, any operational or cost optimization achieved in this domain will have significant positive effects on operators' agility, operational efficiency, and ultimately TCO. The number of vendors taking part in DCSG work is growing, and IT heavyweights such as Dell can help with industrializing deployment and support of DCSG in large networks, in addition to bringing their software and hardware capabilities to bare.

The packet-optical platforms designed in TIP show an interesting evolution trajectory- and ultimately a convergence of operator requirements with webscale hardware design principles. Starting with Facebook Voyager, which was an open, fully disaggregated, but ultimately fixed form factor device, TIP has brought significant openness and modularity improvements with Cassini, while its sled-based Phoenix seems very similar in design and specs to some of the leading compact modular platforms. The response of solution vendors to Phoenix specs will show if TIP's solution vendor members can match leading commercial platforms' density, performance, and power efficiency.

RECOMMENDED ACTIONS

VENDOR ACTIONS

- Large vendors not involved in TIP should examine if, and how, they can participate and profit from involvement in the organization. TIP projects are primarily looking at use cases optimized to complement, but not fully replace, proprietary and high-performance solutions, and vendors can use them to quickly expand their portfolios or combine with their own software and services to create a market-ready offering.
- Smaller vendors should evaluate joining TIP in order to accelerate their development work, form industry alliances, and establish an additional road to market, especially after TIP expanded its marketing activities with the launch of TIP Exchange.
- Vendors should note progress in TIP's development work, especially in areas such as open RAN, cell-site gateways, and packet-optical platforms. As TIP's development accelerates, more of its platforms will become available and be applicable to a growing number of operators' use cases.

USER ACTIONS

- The telco vendor landscape is at the same time sparse (when it comes to end-to-end solution vendors) and complicated (when looking at niche vendors). Operators not involved in TIP should examine TIP designs and evaluate whether they may be useful in any of the new projects they intend to deploy in the near future.
- Operators facing challenges in serving rural areas should consider combining TIP's designs with novel business models promoted by the group. TIP's work has achieved a high degree of maturity specifically for these use cases, and it is proceeding to add new capabilities such as non-terrestrial networks to its solution portfolio.
- Operators should press their vendors to provide interoperability with TIP designs and platforms, to enable coexistence of both proprietary and open platforms in operator infrastructure.