



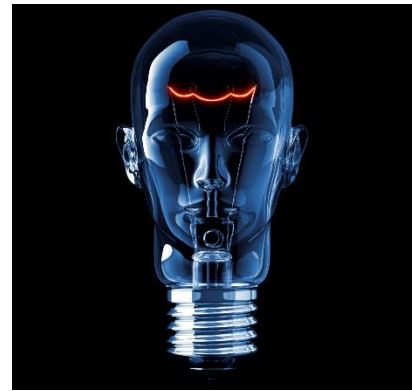
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## Addressing the Telecom Innovation Deficit

By: [John Cioffi](#), [Don Clarke](#), [Mark Cummings, Ph.D.](#), [Yuri Gittik](#), [Klaus Martiny](#), [Vance Shipley](#), [Katarzyna Wac](#), [Peter Willis](#)

Telcos have lost much of the capability to influence the evolution of the technologies on which they depend. They have become aging monocultures; disruptive innovators have left the industry and innovation is outsourced. The result is overreliance on a small number of large vendors and diminished participation by smaller vendors, resulting in a deficit of innovation that is harmful for telcos and the societies that depend on them. Innovation arises in unexpected ways and the telecom industry, despite its maturity, should not be considered immune from the benefits.



The Telecom Ecosystem Group (TEG) is a global initiative seeking solutions to this problem. In July 2020 we published a white paper inviting comment on how to address it, followed by a series of colloquiums to collect opinions from experienced individuals. This article details the recommendations that emerged.

### Telecom ecosystem dependencies

We define “ecosystem” as the diversity of players needed to build, maintain, and evolve telecom infrastructures. The figure below depicts one view of the telecom ecosystem. Hyperscalers dominate in the digital services provider domain where competition is high, driving innovation. A variety of players, notably cloud providers, occupy the digital network provider domain. Telcos dominate in the physical infrastructure domain where competition is low (due to the inefficiencies of building overlapping infrastructures), resulting in weak drivers of innovation.

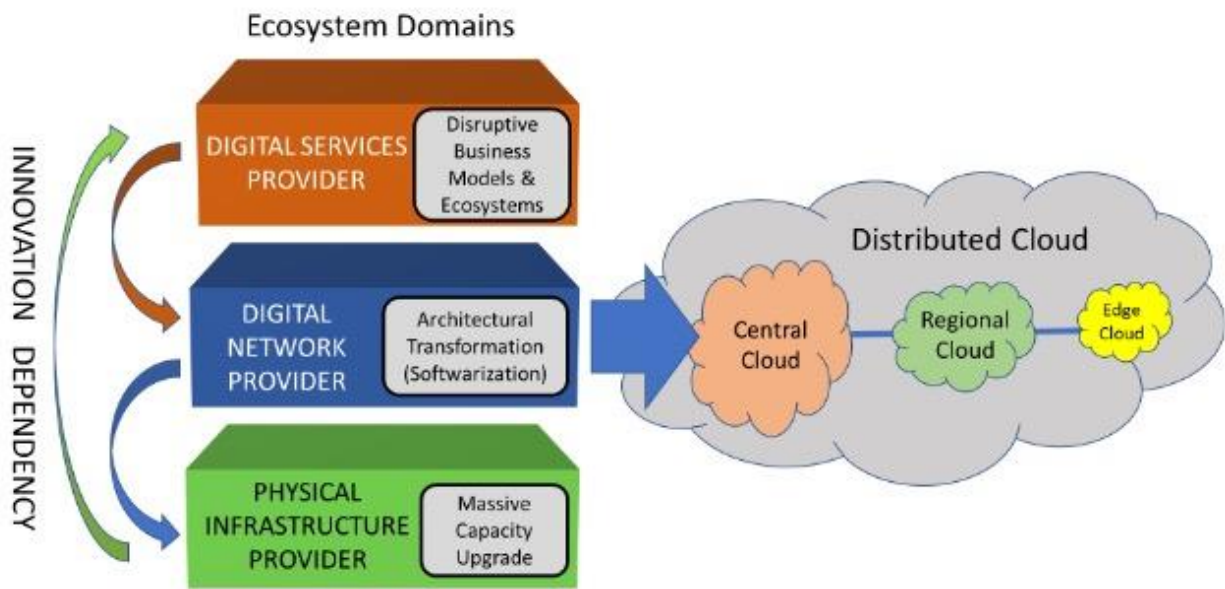


Figure 1: The telecom ecosystem  
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Telcos could be expected to leverage domain synergies—capabilities in one domain that are beneficial in another but seemingly incapable of realization. Moreover, telcos become barriers to innovation in the dependent domains if their investments in infrastructure are inadequate. For example, the ITU-T estimates that 37 percent of the world’s population still does not have access to the Internet.

## How has this happened?

The deficit in telecom innovation has arisen due to the tenets on which telecom networks are built and operated:

- Affordable ubiquitous connectivity commensurate with the demands of society.
- End-to-end interoperability across international boundaries and network islands.
- High reliability, including support of public safety and law enforcement.
- Resistance to attack by malevolent actors, including nation-states and well-funded criminal networks.
- Service persistence through successive waves of technology obsolescence and evolution.
- Compliance with often-onerous regulatory obligations and uncertainty.

In the face of these expectations, telcos have evolved a conservative mindset characterized by risk aversion, organizational stasis and nepotistic relationships with a small number of vendors

large enough to shoulder the development and procurement risks. Smaller vendors are locked out or exploited just for ideation.

## What can be done about it?

We considered the following questions:

- What does innovation mean in the context of the telecom industry?
- How can supply chain diversity be encouraged and supported?
- What are the barriers to innovation, and how can they be overcome?
- How can investment risk be reduced?

In 2021-22, we held a series of private colloquiums with leading telecom industry veterans. The discussions were under Chatham House Rules to encourage candor and resulted in our publication in November 2020 of a “code of conduct” to encourage adoption of best practices for telco engagement with vendors. We followed this up with a series of published articles by invited authors who described their experiences. Our recommendations are detailed below.

### Funding

The scale of telecommunications networks leads to investment cycles of years if not decades. This has an effect on the vendor ecosystem where the return on investment (ROI) on new products extends well beyond the timeline for smaller vendors to survive, or for large vendors to build a business case. It is therefore difficult for start-ups in the telecom sector to attract venture capital. Larger vendors also need an ROI to justify investment in new products and to maintain profitability. Telcos should:

- Allocate at least 5 percent of all procurement funds for start-ups and smaller vendors.
- Engage existing investment entities to boost enthusiasm for investment in the telecom sector.
- Set up named investment funds, possibly per telecom sector, with a specific investment size, along with sustained PR to advertise the funds.
- Fund infrastructure and middleware vendors, not just (or only) over-the-top start-ups.
- Lead in at least half of the deals in investment rounds and plan to make multiple-round funding commitments for each investment.
- Establish partnerships with VCs and financial institutions for joint funding and raising debt where needed.

- Commit to non-trivial investments in Series B/C rounds (e.g., >\$2M).
- Build a dedicated team to help investment portfolio vendors to succeed. For example, shepherding them through the multiple internal groups and processes necessary for success.

## Innovation Processes

The critical nature of telecom networks creates a very high barrier to entry. Typically, a year or more of lab tests are conducted before limited field trials, and two or three years may elapse before any reasonable deployment contract. Diminishing participation by smaller vendors coupled with industry consolidation and geopolitical pressures have significantly reduced vendor diversity, thereby diminishing competition in the sector. This is compounded by telecom operators cutting core R&D spending and delegating innovation to a few large vendors who wield immense influence and continually seek opportunities for lock-in. Telcos should:

- Disaggregate architectures away from monolithic or single-vendor solutions; commoditize where possible and drive innovation in areas that add business value.
- Openly publish (and keep up to date) system architectural and functional models, which enable vendors to identify areas where they can contribute innovative new products.
- Clearly indicate new technology innovation requirements in RFI and RFP documents.
- Remove onerous legacy feature requirements for new vendors, and work to understand what minimum viable product unlocks the value of the new solution or vendor.
- Allocate funds to pay for lab and field trials with new vendors on an annual basis.
- Create a shared testing lab open to start-ups to accelerate testing in a realistic network set-up. The lab should be funded by government-telco partnership.
- Define clear decision gates to drive new technology from lab to deployment over a fixed time period; for example, from lab to field trial within one year and deployment within two years.
- Work with new vendors to innovate in all the telco silos (such as operations, support, finance, marketing, and so on).
- Where risks are perceived to be too great for a small vendor who has been successfully evaluated, offer to take appropriate fair patent licenses on the technology, whether the less risky alternative is an internal solution, or a solution purchased from an alternative vendor.
- Offer prepayment for requested features that require additional development.

## Competition

There is not a level playing field for small vendors. Large vendors have large teams on each account and engage multiple telecom operators to identify common requirements, or influence technology choices to minimize product variants and achieve economies of scale. Telcos also demand long-term R&D engagement and participation in standards development, open source and other organizations, as well as insisting on proof of concepts which the telco is often unwilling to pay for. Telcos should:

- Identify technology, solution and business areas that require innovation and make public calls for new vendors and products linked to investment cycle and indicate budgetary spending. This also gives VCs a heads-up that the telco plans to spend money in this space.
- Commit to increased use of new vendors and partners for architectural components.
- Create a level playing field for small vendors. Dedicate a small team to ensure that smaller vendors receive the same “air-time” as the larger vendors but be diligent not to waste their time. Help them navigate internal telco organizations so that a lack of existing contacts doesn’t prevent them from reaching the appropriate decision-makers.
- Help small vendors to win business without forcing them to partner with a large vendor or partner (who would likely prefer to squash them). Set up an onboarding process. If partnership is necessary, pay an appropriate patent or intellectual-property license directly to the smaller partner.
- Reduce compliance requirements for smaller vendors with <\$100M run-rate business (for instance, ISO9001), unless required by law.
- Allow vendors to publicly reference progress within telco accounts to encourage traction for them in their markets.

## Procurement

The time allocated for vendors to respond to large and complex telco requests for proposals (RFP) is often very short and may span holiday periods, creating an almost impossible hurdle for smaller vendors to navigate. Assuming the vendor can meet the technical requirements of an RFP, the terms and conditions and pricing requirements are often the killer, which renders a response from a smaller vendor impossible to contemplate. Telcos should:

- Create suitable contracts for small vendors with relatively small deals. Don’t negotiate with small vendors for a \$2M deal in the same way as a \$2B deal.
- Eliminate over-negotiating with small vendors in telco procurement organizations. Winning a 30 percent additional discount from a start-up kills their ability to provide support and grow.

- Pay software licenses and support agreements up-front. Count consumption across the network or move to an enterprise agreement quickly. Don't try to enforce better terms from start-ups than from larger vendors.
- Commit to recurring-revenue models for software purchases (SaaS in particular), which provides higher valuation returns to investors.
- Create simple agreements that allow smaller vendors to transact up to \$5M a year without a master services agreement or similar.
- Pay invoices on 30-day terms for vendors with <\$100M revenue without negotiating extra discounts or forcing them through a partner banking relationship.

## Conclusion

This article is intended to trigger industry debate on how to increase telecom innovation by eliminating barriers for smaller vendors. We have recommended a number of actions which we believe are essential to achieve this goal. However, we are realistic about the prospects for these changes to take place in a timely manner due to the entrenched culture. We believe that external pressure from regulators and regional and national governments is also likely to be needed, both to act as a catalyst, and to foster discussions around the broader changes needed to create a healthy telecom innovation ecosystem longer term.

If you have any questions or wish to participate in our activities, please visit our [LinkedIn page](#) or email us at [enquire@telecomeco.org](mailto:enquire@telecomeco.org).