TELCO FORGE

Telecoms and the question of scaling

Executive discussions on competing at global scale

A TelcoForge Leaders' Meeting Report

May 2025

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INTRODUCTION

TelcoForge is holding monthly meetings mainly for C-level and SVP-level professionals from as diverse an array of stakeholders as possible. These meetings take place under Chatham House Rules to enable senior professionals to speak frankly. However, we capture the anonymised ideas and outcomes for the wider industry to digest and act upon.

Executives addressed the issue of how telcos struggle to build into adjacent markets during TelcoForge's February Leaders' Meeting. Often, difficulty lay in the fact that most competitors operate on a global basis, enabling them to reap economies of scale and focus in ways which a nationally bounded telco cannot rival.

Today traditional national-scale telcos also face a risk from IT giants who are not constrained by spectrum and, in the longer term, from global non-terrestrial direct-to-device communications.

Mobile telecoms providers are principally bounded within countries by the limitations of their spectrum licenses. However, the last few years have seen some scattered initiatives to reduce or eliminate the impact of borders.

So **what options** do telcos have to compete against global rivals at scale?

How does this relate to other fundamental questions of **agility and innovation**?

What opportunities are there to compete effectively against global powerhouses, driven by changes in business and operational approaches and enabled by current technology?

In March 2025, over the course of two one-hour calls, around a dozen executives from different parts of the industry and different continents shared the following insights.

EXECUTIVE SUMMARY

In previous discussions on why telecoms providers have struggled to effectively enter adjacent markets, the point was strongly made that a national-scale service provider struggles to compete with global-scale companies working in the same field. This time we dug into that point: if that IS the case, then what can telecoms providers do to compete? Or are they doomed to failure if they try to expand?

Discussions covered a variety of different kinds of scaling:

Geographical expansion. While the most obvious way to compete at global scale would be to operate globally, participants pushed back against the idea that this was a necessary or obvious move. Certainly for offering consumer telecoms services, companies are limited by who owns a suitable SIM card as well as where their spectrum license terms permit. It is not obvious that economies of scale apply to these elements.

Historically there have been **elements of the telecoms market** which operated, and still operate, at a global scale. However, over the previous decades many of these, such as satellite, datacentre, subsea cable and interconnect businesses, have been sold off. As a result, the primary players in those markets have little overlap with the telcos.

Instead, there are a variety of initiatives which aim to give companies the **beneficial effect of global scale.** The most obvious is the standardisation that allows telephone conversations anywhere in the world. In later generations creating uniform services has not kept pace with the speed of the market, however, leading to even domains such as messaging falling out of the exclusive hands of the telcos. Meanwhile, there have been activities by individual operators or groups to deliver quasi-global services. However, these have not yet taken off effectively.

Participants were quick to point at conservatism within the telecoms environment as one reason why new approaches have not taken off. However, they did also highlight significant evolutions under way today which may offer **different ways to compete**. Principally they discussed:

- The implications of **infrastructure and service disaggregation**. While infrastructure and spectrum may be regulated and operate at a national scale, there is no limitation on most digital services.

- A further shift towards cloud-native, software-based architectures will enable companies to create services and iterate much more rapidly than they do today, with much more development in-house. This will enable telcos both to compete more nimbly against large global players and to **scale up the quantity of new services and new capabilities** they are offering.

A combination of those two factors would lead to 'telcos' in future looking and acting very differently from those we see today.

THE SCALING CHALLENGE

When exploring the challenges telecoms providers face in moving into adjacent markets, as outlined in our February 2025 report, a consistent challenge lies in competing with specialists who are able to deliver a service at global scale, whether that's in smart home solutions, datacentres or other elements. By scaling, they firstly gain economies of scale, but also they gain experience and competence which can be replicated from one country to the next.

Particularly in the mobile arena, telecoms providers tend to be limited to a national scale by the licenses they hold to operate and use spectrum within specific areas.

So... are telcos destined to be limited in both geography and activity by this national focus? Over a series of conversations, a panel of experts shared their perspectives on the true nature of the challenge and how it can be addressed.

> When they end up competing with others that have inherently a global market access, a global audience, they typically fail.
> I mean, if you build an app that works in the US, but then you compete with the likes of Google that has 5 billion people as a market, you fail every time

There are very different pressures on scaling for different parts of the market, however. Vendors and buyers have quite different perspectives on drivers and bottlenecks.

"A vendor requires scale because in my business unit, I'm researching and making our product that gets adopted by one mobile operator. Does it pay me back? No. So typically I need to multiply that at least 15 times. So a vendor is interested in scale; and an operator needs to buy, especially from vendors, because it's going to be cheaper and perhaps better quality than developing it by themselves."

On the other hand, the operator perspective focusses more on regulatory barriers.

"We can't scale beyond the limit of the country of course, because we can't expose our APIs – well, we could, we could. But then at the end of the day, you need to reach customers within the range of distribution of your SIM cards."

IS INTERNATIONAL EXPANSION THE ANSWER?

"I think the question is also "Do they really want to do that global thing?" I don't think going global is necessary a thing."

Those harkening back to the heady days of the 90s and early 2000s might recall the rush to expand geographically. Companies like Orange, Vodafone, MTN, Airtel, Telefonica and Veon pursued intensive international expansion. While individual opcos could be based in one nation, at one time it would have been credible to imagine operator groups building economies of scale by owning opcos in significant chunks of the global market. In contrast, we have seen scaling back by companies including Vodafone, Telenor, T-Mobile and TeliaSonera.

How the industry is perceived by governments is undoubtedly one major constituent. While initially seen broadly as a source of economic growth and useful tax income, countries around the world have realised that communications infrastructure is now of critical significance to their national security. That gives rise to a different international dynamic from 20 years ago.

"Does any telecoms company in the US think they're going to go global and actually have a global service? Not a chance in hell. I mean, there's just no government in all these other regions that's going to support that. So it's going to come down to brands that we trust - like you could say that Apple is a brand that we trust, Google is a brand that we can trust - and they are global because it's all about over-the-top. It's all IP."

We might see a parallel with Huawei's ongoing political challenges and their removal from various countries' infrastructure. Telecoms systems are too linked to countries' identities and sovereignty today to welcome global giants who might, for example, treat a small country's vital infrastructure as an afterthought in their overall activities.

There are also some clear downsides of global scale caused by differences in societal set-up and business culture.

"For companies like [satellite provider], it's a pain to go global. I mean, I meet with the woman that travels the world to try to activate services internationally. And it is a massive, massive challenge. And unfortunately, in a lot of places it has to come down to bribery to actually even get the services activated."

While a global company might be expected to conform to business norms in the countries where they operate, bribery scandals in the 2010s underlined how police, regulators and the general public in a company's home country have very different expectations.

As a result, achieving scale is going to mean something very different from building opcos everywhere and we may need to be more creative with how we accomplish this.

In recent years we have seen a number of efforts to proxy a global reach. Participants discussed:

11) Singtel's Paragon programme, which offered a template to other telcos for business services, so that international enterprises would be able to have an identical experience internationally from their service providers. While not enabling any individual company to build global reach, it would enable operators to benefit from that uniformity of experience and create network effects by supporting simple management experiences for customers. The verdict?

"It's a good story, but it hasn't really worked."

2) Proximus' strategy using its ownership of BICS and other companies to deliver digital services outside their home nation of Belgium. From generating 30% of revenues in 2024 from overseas, their CEO is aiming at making that 50% in just a few years. While this does have merit, this is hard to replicate as a whole-of-industry strategy due to Proximus' strength in the international market. However, in the next section we will explore this in more detail.

> If we go back 30 years ago, the ITU made sure that telecom networks operated essentially as one big network across the world. You could phone anywhere.
>
> It frustrates the hell out of me that I've got five messaging apps on my phone today.

3) A new wave of software-based telcos who have not tried to scale their services, but have tried to replicate their software stacks globally..

"Over the last five years or so, they end up, I don't know whether by design or not, being like a vendor competing with vendors as opposed to being like a service provider. Jio is one example, Rakuten is another."

We'll explore this more in later sections.

4) Global industry bodies as methods to build consensus and alignment on consistent global services and capabilities. Participants expressed frustration with the current state of play, where technical standards are driven mainly by vendors who have the R&D resources to do so, not always to the ultimate benefit of the customers.

However, industry commercial initiatives to create unified services have not been perceived as effective (see insert). The relatively slow and ineffective Joyn programme, OneAPI and other initiatives underscored the challenges in delivering not just consistent technical capabilities but unified services. However, given the relatively promising performance of the Open Gateway initiative this might be less an industry failure as having past efforts not properly set up or financed to deliver at speed and scale.

BUSINESS MODELS

For a global market, the question of how to scale might seem like an odd one. On the face of it, telecoms is inherently global. However, the industry has structured itself in such a way as to create the challenge of competing against scale that we see today.

“If you look at the telco from the past, it used to include connectivity and the service on top, but included many other things. They used to have datacentres, they tried the cloud business. Obviously they had their towers, they had their managed service provider business, they had the wholesale business.

“And what happened? Over the years a lot of these businesses got spun off. Take the datacentre business, maybe or two players kept them and went global with them. Take the submarine business - . same thing, right? Same in the managed service business, a lot of them used to have their own. They went global, and over the years they got acquired by private equities and merging to other entities. So what happened is that a lot of the things that were probably easier for the telco to scale with globally ended up being different businesses. So I think it's not that they did not succeed, it’s just the model evolved differently.”

Image by Louis from Pixabay

“At Mobile World Congress, what was the number one thing talked about?

Cutting cost, cutting cost, cutting cost, not creating any new market.”

It seems reasonable to ask what has caused this sell-off in assets. Datacentres would arguably be a great investment.

“Well, that investment was 20 years too early. They have a history of seeing where things are going, but they don't have the patience or to do it, or maybe they need different holding company structures. They tend to be very quick to sell off these things while it’s still early days because it's hard and it doesn't generate an immediate return... but they got it right. And then ten years later, when it takes off, they don't own it any more.”

This was verified by another participant, who gave the following case study:

“Telcos often see the opportunity early, but they don't have the staying power.

“Hans at Verizon I think did an exceptional job. He bought Skyward, he got into mobilising robotics for public safety and emergency response, he got into autonomous cars and trucks. The problem was Verizon could not overcome Silicon Valley's ******** of saying “Oh, we don't need any infrastructure, we're going to do full level 5 autonomy.” That was an absolute false flag. Well, now it’s come full circle, the infrastructure’s needed, and unfortunately Verizon already wrote off hundreds of millions of dollars. They can't really get back into it again because it's too big a risk.”

Pricing structures, business structures

Participants made the point that, at a global level, the telecoms industry has tended to lock itself in some specific ways of charging for their services, which limits their ability to innovate and, therefore, binds them into their current position.

“It comes back to this: How do you decouple net services from connectivity? Which has been, you know, the way telco started, going back to the analogue days, and, when the situation moved from the network being the service to the network being the pipe, they never reinvented the service. As a result they've slowly lost the services to other people.”

Image by Ruttinan from Pixabay

This is where we call back to Proximus’s strategy of monetising where they don’t have physical infrastructure, for example by being the digital merchant for Delhi’s train tickets.

“The nub is, I think we do need to separate connectivity from services, to break that mentality once and for all amongst telcos. They can operate with a regulated arm and an unregulated arm. So the regulated arm would be providing the physical infrastructure, spectrum and so on. The unregulated arm could be essentially providing OTT services on top of that, same as anybody else.”

We might reasonably ask whether this leads to some seemingly outlandish outcomes, such as having a telecoms service provider being effectively an MVNO on their own infraco. If so, they could also build their reach to other markets as an MVNO.

We might also ask to what extent an OTT service provider in this vein is still a ‘telco’. However, perhaps we should be asking why that should matter if it leads to good returns. Perhaps we should instead be asking why this isn’t happening more.

CULTURAL ASPECTS

"100% it's cultural," came the answer to that particular question.

One comment summed up the culture of business decision-making fairly pithily:

"The problem that telcos have is they listen to every single McKinsey report and unfortunately that is the exact opposite of where the market goes. Remember when AT&T decided not to go into cellular because McKinsey said there's only going to be 900,000 phones by 2000? And they listened to McKinsey when they said smartphones were not going to be a big thing, only used by business users. So once again, they didn't get into that market. "Cloud? Nobody's going to get into cloud because nobody's going to trust the cloud for their sensitive data." It plays to the conservative stance that telcos always had and gave them psychological permission not to cross that line."

While participants agreed that the telecoms industry has tended towards the conservative, especially when it comes to business models, they had different explanations for what caused this. Is it historical?

"Telcos come from a pre-regulated environment where effectively their business was guaranteed and they've never, ever learned. Partly because fundamentally they are critical infrastructure, so it's hard to imagine a government letting that fail. If they do completely split service from infrastructure, though, all bets are off."

Is it because of a cost reduction approach?

"I went to an innovation event at BT when it had just been deregulated (1984). It was pretty interesting. They took us to the different departments and the last one, interestingly, was AI And he proceeds to do this presentation about how they can learn things, which was fairly primitive in those days. But anyway, he said, that BT is so advanced in AI that they use it to determine how long they can stall before they have to deploy a technology. And that was an *innovation* day."

While this may be an accurate reflection of the culture, there are signs that this is changing; not least because of a growing awareness at senior levels that the status quo is unsustainable and therefore more risk has to be taken (see PWC's 26th CEO Survey for details). While major announcements such as KT 'heclaring' itself to be an AI and ICT company are not mainstream today, there is nevertheless a push to try doing things differently.

However, the ability to do things differently depends on having operational and technology stacks capable of operating in a different way...

A DIFFERENT TECH STACK CHANGES THE SCALING QUESTION

Economies of scale have traditionally been driven by the lower cost to create the same thing many times in an automated process. While there has occasionally been talk of Industry 4.0 changing mass production to 'mass customisation', that's of limited benefit in the telecoms context. However, what happens if we can adapt our technology and operational structures in such a way that buying from vendors with economies of scale isn't a consideration?

"Things are changing now because all my applications will be on Kubernetes," commented one operator. "If everything is simply an application that comes on my Kubernetes platform, I can develop it in house. I don't need, don't want to have a vendor."

"That means my connectivity layer communicates at the same level with my applications and I can enable many new services. I don't even need standardisation."

In this environment, the network is functionally IT, and this is the ultimate goal for many operators who have been working through the days of NFV and SDN. While initially network function virtualisation replaced hardware with software that did the same things, and delivered relatively low impact as a result, today we are starting to see the influence of the 'IT-isation' of the telco play out in 5G Standalone.

"It changes the game so that an operator can start their own developments. They can go and adopt open source stuff. Through open source you would in a way reach an economy of scale, but you need to have a completely different infrastructure."

Gaining economies of scale from open source is one thing. However, there is a second approach to scaling which this opens up as well.

Image by kewl from Pixabay

SOFTWARE-DEFINED BUSINESS

Adapting to a software-based, open, cloud-native network also lets telcos put in place a different service creation setup, with IT professionals in-house able to bring together resources in creative ways much faster than ever before.

In that sense, it allows them to compete by being able to *scale their output of services* even where they are limited by a geographical footprint.

"Say you want to build a MEC service - it's simple. I have my servers, I have my GPUs and I am building the technology stack. I have a stack that that enables me to run any sort of service I can think of."

In other words, it gives more operational agility both to launch digital services faster and at lower cost, but then also to compete better.

"Cost is one thing, but I could think of reducing my risks. That's already a gain, right, if I can reduce my risk."

In this case, risk can take many forms. The cost of failure for a service is less if it hasn't had to go through a long and costly procurement process, but the risk of failure is also lower if the telco, as the owner of the software, is able to adapt it and improve it in response to customer feedback.

Not that this comes without a price. Even with capabilities like SDN under development for years, the need to sweat existing assets is very real. Meanwhile, adopting a cloud-native infrastructure is pricey because of the new elements that are needed - in this case, largely GPUs.

"If you're building your infrastructure, the major costs are only on GPUs. I'll tell you this because I'm building my order for this now. The GPU is a big issue. The GPUs are the most expensive element within your setup, especially if you're going to leverage AI or host AI. You might say you don't need GPUs except for training AI. That's not true, you need the GPU for inference. And then you end up having... I've calculated two to four GPUs per node and we have 4,500 nodes.

So you end up with numbers that do not scale. So there comes the question, how am I reducing cost?"

There might not need to be a direct cost reduction from this, in fact. It could be argued that a transfer of capabilities from legacy systems to a cloud-based architecture would be one of the first things on the to-do list, removing the need for maintaining large swathes of legacy infrastructure.

That said, participants highlighted methods to make any GPUs act more effectively together, such as composable disaggregated infrastructure. "That could allow you to run your app wherever a GPU is available, but you can *manage* it as all one cluster."

While there are a few pioneers out there building out and using this kind of technology infrastructure, there may be an inflection point coming up.

“90 to 80% of the infrastructure globally is still on boxes provided by Huawei or Nokia etc,” one participant pointed out. “But a major change doesn’t need 100% replacement. When people achieve 30% in production, you'll be seeing the new technology in action.”

While, as previously noted, participants weren’t optimistic about the culture of innovation within the commercial arena, they certainly saw reasons to be optimistic about the development of a different kind of market where the services are increasingly independent of the underlying physical assets.

“Ultimately if telcos keep disposing of their assets, that would make more sense. Why should three telcos put up towers when one tower company can build the tower and just make it a neutral host? Before, regulations stopped that. But modern regulations actually encourage network sharing in places like the US, and spectrum sharing may well follow.”

“The same thing in the UK, with the altnets being the ones building out fibre. It's just a pipe, you know. If I don't sell pipes but I sell services, at some point do I even care if I own the physical fibre infrastructure? We may see the emergence of a future telco that is essentially just a software business and doesn't actually own physical infrastructure.”

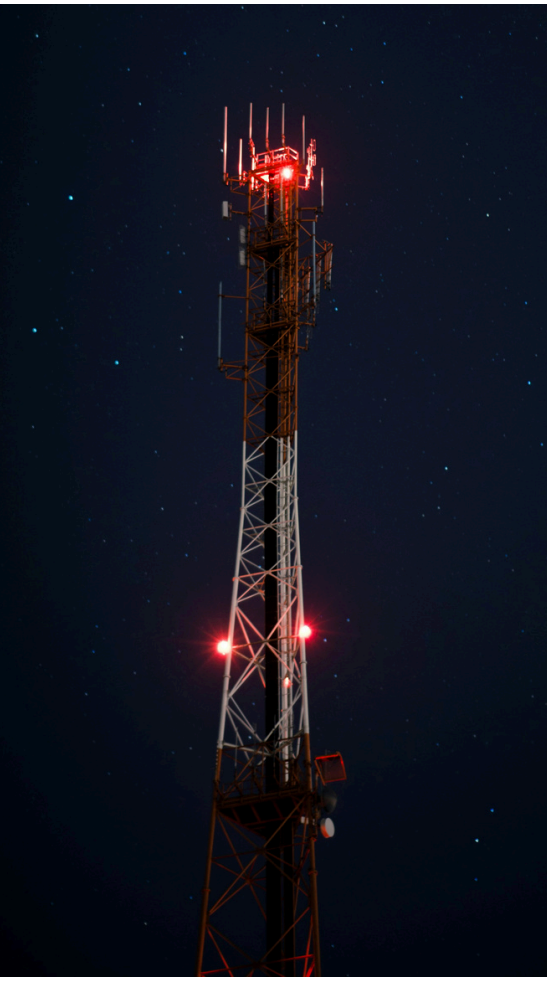

Photo by Joshua Slate on Unsplash

Participants highlighted the cost of infrastructure - not least GPUs - as a driver towards a different kind of business model.

“Everybody has a need for the edge, but no one vendor, no one carrier, not even AWS can build out edge without some type of collaboration. Is that going to be what enables that neutral host paradigm? That is far more than just spectrum, it's neutral hosts of computers and sensors and other types of devices.”

There is an interesting argument here, essentially that, by continuing the direction of travel in infrastructure ownership and the evolution of the software stack, we might reach a vital inflection point which changes the whole landscape for vendors, for service creation and, essentially, for the identity of the major players today.

“There is a point as we move to SDNs where we do more of our own engineering. In the western world at some point, maybe we’ll spend less time building infrastructure and more time building these API gateways. We’ll start to think about the network a little different.”

“We're at the point with the technology where the core network functionality is a given and that's not going to change. Right? But networks are going to change from a services point of view.”

ENERGY-DEFINED BUSINESS MODELS

While there is a strong argument for handing off much physical infrastructure to others, service businesses are still going to want to keep the data processing in-house. Especially with a shift towards AI and GPUs there may be a problem here.

"After the cost of the GPUs, the number two problem is the power. You need 150% more power in a datacentre with AI compared to traditional apps.... You need a nuclear power plant next to the datacentre when we scale because AI can also generate synthetic data."

So, does this scupper the business case? Does this leave telcos waiting for energy providers to upgrade the power grid sufficiently? It feels like it may be a case where the fundamentals might defeat telecoms.

"I disagree with that. I think this comes back to attitude again. And we have some public data on this which I can share."

Ultimately it starts with the business case. This is telco looking at everything as a cost. But really, the energy cost, the hosting cost is irrelevant as long as you make more money than you spent, right? So let's assume there's a profit to be made. Then the question becomes, how do I solve the energy problem?

We built out a datacentre in Memphis in 120 days, 100,000 GPU's. It typically takes three years to build the datacentre from start to product.

A datacentre that size is multiple football fields, and one of the challenges is how to get power to it. The power was going to come from Tennessee Valley, but they were taking their time. So the CEO puts gas turbines on the side of the thing and generates the power in the meantime.

The next problem is these gas turbines. It turns out GPUs work in a highly peaky way. There were points where the GPUs were resetting because of spikes in the power usage, to put it simply. So what does he do? Takes a bunch of batteries and puts them in the middle. So now you've got gas turbines feeding the battery packs feeding the datacentre. The whole thing done in 120 days.

But he didn't start with "Oh, where am I going to get power? How much is all this going to cost?" And that is the cultural difference between telcos and other industries. They have a belief in their business model. They have a belief in what they can do and they're willing to make the investment.

CONCLUSIONS

The telecoms industry is in many ways unusual, insofar as we find private companies limited by national licenses to operate. This month's meetings aimed to understand in what ways telecoms operators could compete effectively against companies with global scale now and in future.

BUSINESS STRUCTURES

The gradual change in what telecoms providers are was brought into sharp contrast.

"What used to be a telco is now multiple things, including connectivity. But they're now other businesses as well, often in different hands."

Many parts of telecoms businesses which are inherently global in scale have become independent entities.

Ironically, while telcos have a perception of moving slowly, in the business of acquisitions and sales they tend to move too quickly.

"Mikitani was willing to spend $10 billion to build a network, not because he was going to monetise that network. He was going to monetise the Rakuten services, the Rakuten brand and the Rakuten following. He just needs the network as otherwise he's giving a good percentage of the money he's making to somebody else."

"It was a big investment, and it's only now starting to turn positive because telco investments go like that; they're extremely cash flow negative for years until they turn positive. Telcos or their boards never seem to be able to get past the fact that it's gonna cost them money for ages. They give up some point at the bottom and they sell it off, or outsource it, or change it rather than sticking with it and wait until they get the return."

TECHNICAL STRUCTURES

A different form of scale relies on the technology stack. With a cloud-based and highly programmable logical architecture it's possible to deliver rapid prototyping of new services and new capabilities to experiment with new revenue streams with relatively little time and cost invested in the technology; instead, the key role would be played by the product definition and commercialisation side of the business.

However, this needs a very different set of skills compared to what most telcos are familiar with. "You need to work with the cloud teams. When you go into telco they have no idea. They have no idea. They've never run a Kubernetes command."

The flip side of pursuing a strategy of dematerialising and disaggregating the network is that it largely becomes a business choice whether or not to have your own hardware, not a business necessity. There is only one element where a telco is likely to want to keep their own hardware, and that's in relation to compute and storage capabilities.

"Typically an operator would potentially prefer to have that in House, to have the control over their information. It's very sensitive, right? Do you want to pass all your knowledge to Google?"

Taking advantage of a hardware-light model can assist in changing the operational dynamic in areas such as procurement. Meanwhile, using systems which are familiar to any enterprise IT team also allows telcos to bring service creation and management more in-house.

INFRASTRUCTURES

Participants were optimistic about the growing independence between services and the physical delivery mechanisms they run upon. They viewed the separation of service and infrastructure entities as one which would enable the service side to reduce their dependence on a single national set of customers.

If the telecoms industry follows that trend towards increasing separation, it's foreseeable that it will create quite a different market.

I" think the the the challenge for this next build out has nothing to do with the telcos. It has everything to do with the business model and the real estate to make it happen. It is far more of a business challenge than it is about technology."

"Given that really the transport layer now is at the IP level, not at the physical level, and we do see sell-off and with neutral host coming, I do wonder if at some point telco physical networks as we think of them today will cease to exist."

ACKNOWLEDGEMENTS

The TelcoForge team would like to thank the senior executives for their time and insights making this report possible.

We look forward to many other constructive insights.

Leaders' Meetings take place monthly on an invitation-only basis. Executives on the invitation list have no obligation to attend but may propose an alternate participant if they are unable to join.

Please contact TelcoForge below if you would like to:

- *Nominate a colleague or be nominated to* ***join the invitation list*** *for monthly Leaders' Meetings.*
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