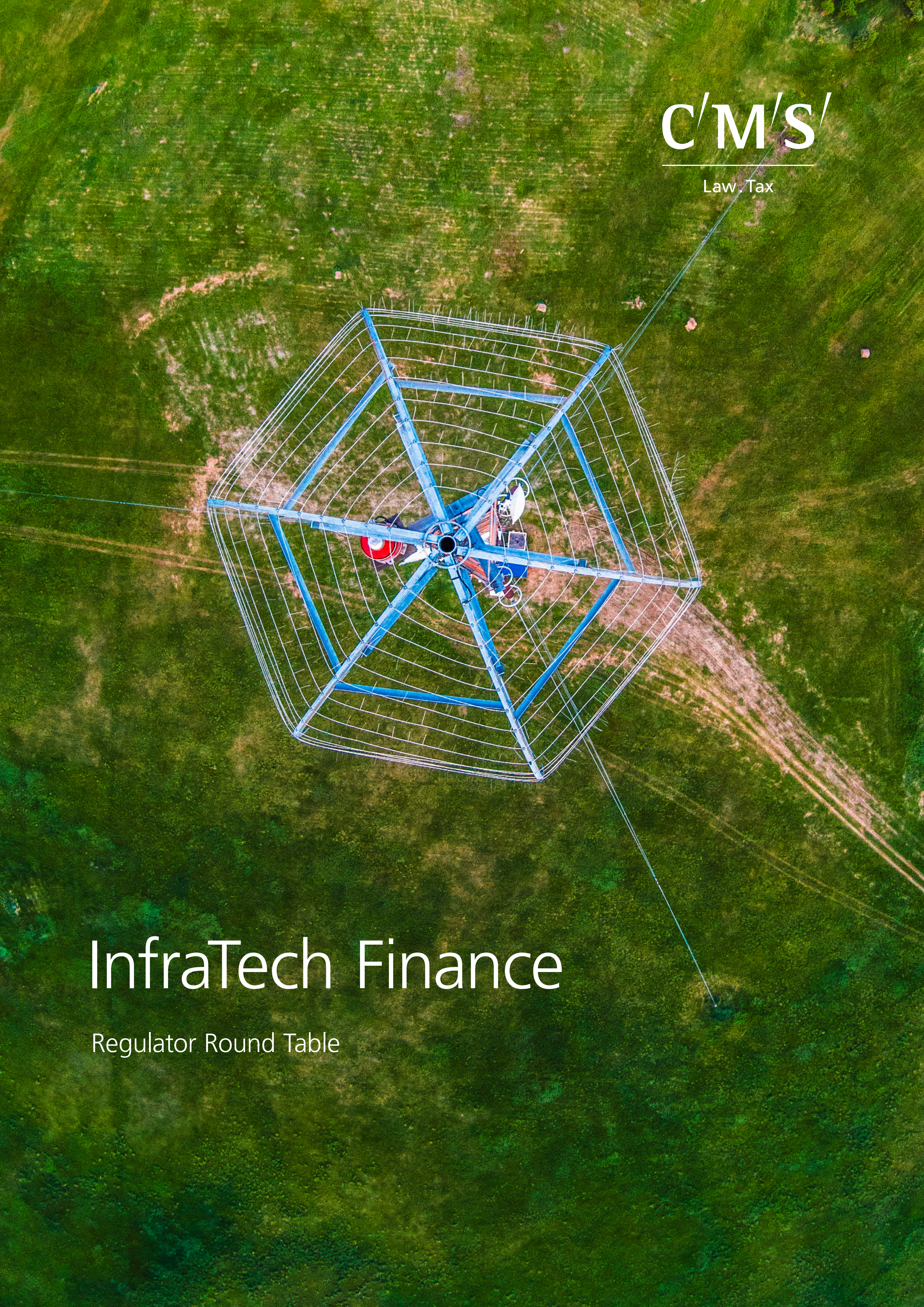


C/M/S/
Law . Tax

InfraTech Finance

Regulator Round Table

Introduction

Connectivity is the new model of what used to be plain old telecommunications. In the 5G world, humans and machines now do more than just communicate: they constantly and ubiquitously connect with each other and share data. It is not just consumer appetite for data which is driving the change but intense political pressure in the race to digitalise countries, enabling them to compete on a global scale and prosperous.

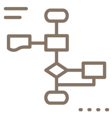
The shift towards ubiquitous connectivity requires the underlying communications network to be at least upgraded, if not completely reworked. This means large capex investments from telcos, 'over-the-top' (OTT) providers, altnets and others, backed by public or private capital. But such investments will only be made if the business model behind them stacks up and if the legislative and regulatory landscape is an enabler rather than a risk factor.

To reflect on the profound changes and aspirations for this new era, a number of senior figures from across the telecommunications and finance industries joined very senior representatives of Ofcom and the Bundesnetzagentur to discuss how regulators and investors can work hand-in-hand to build the network of the future.

The discussion centred around 5 main themes:

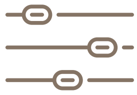
The major change of regulatory paradigm

The new ecosystem of network providers



The challenges of the business model

Network sharing/ slicing/access



5G spectrum allocation

In this report, we highlight the themes that emerged from those discussions, including how the participants feel that regulators and investors can work together and are responding to those challenges and opportunities, together with their predictions for the future.

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Regulation in the evolving world of InfraTech investment

The communications sector industry has historically been characterised as an exciting consumer industry that was built on unexciting telecoms infrastructure that no one ever talked about. That is no longer the case: infrastructure as an asset has come into the limelight.

In mobile, tower portfolios have been separated out and in many cases sold off to industry specialists or private equity and infrastructure funds. Some operators have also moved to sell off data centres while fibre assets have become a hot property and an easy asset to sell for cash-constrained operators. Meanwhile a raft of new fibre builders looking to take on the slow-moving incumbents for fibre-to-the-home have raised huge sums from some of the world's largest and most sophisticated funds. The emerging world of InfraTech assets has never been so active.

Yet this poses challenges for how the industry is regulated. The old model of telecoms regulation based on monopoly copper players and voice-centric 2G and 3G services is no longer fit for purpose in the emerging world of 5G and fibre.

Those old structures are now getting in the way of a digital infrastructure market that is moving much faster than before. Regulation is struggling to keep up in a market where operators have the challenge of justifying the capital expenditure needed to meet ambitious political targets for faster and deeper ultrafast broadband coverage as quickly as possible.

In a market that is fragmenting, how should the players adapt and how do regulators respond?

Regulation in the new world

The investment needed in new 5G networks and universal full-fibre networks is immense. Telecoms companies that would prefer to go slow on their build until consumer demand arises have come under intense pressure to invest. The key question for regulators is how best to incentivise the industry to spend more.

The old model of relying on an upstream monopoly provider to make that primary investment alone, sharing facilities as necessary, has been superseded by a deliberate move to promote infrastructure competition. Regulators including Ofcom in the UK and Die Bundesnetzagentur in Germany have tried to create breathing space allowing new entrants to invest and make a decent return. That is easier said than done and regulatory processes and strategy have had to become more sophisticated as a result.

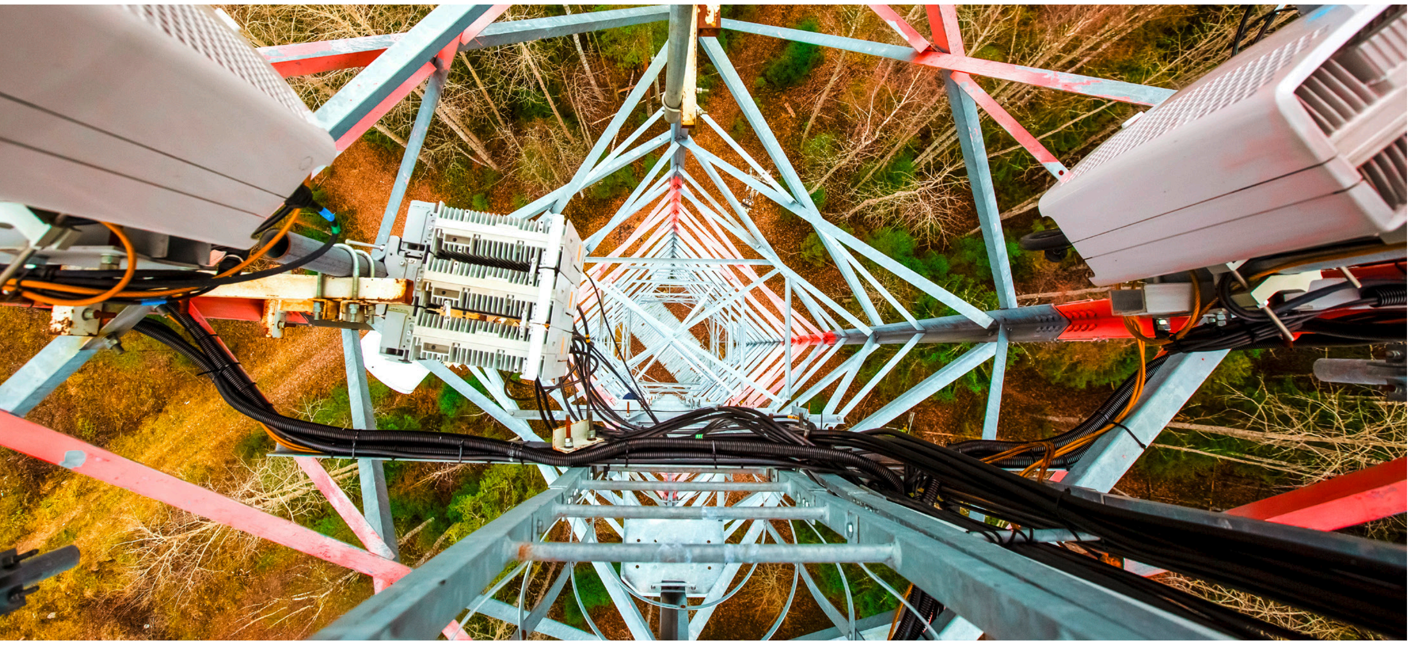
Regulators admit that at the very least there needs to be a fine-tuning of market regulation to recognise that there is no one-size-fits-all model any more. Infrastructure competition will thrive in heavily populated areas and should work - with the right incentives when spreading out into other areas where networks can cooperate to share risk and returns. However there are areas, notably rural locations, where infrastructure competition has no prospects so regulators need to support and adapt to models which entice competitors to invest with certainty.

The ultimate question is whether regulators can feel confident leaving it to the market. If highly regulated national networks are draining money out of the market, to pay dividends or invest in non-infrastructure strategies like content, then should regulators intervene to force the issue?

Structural separation – the forced break of incumbent telecoms operator businesses between the service and infrastructure assets – is a radical move and has been avoided in most markets where it has been considered. The UK's Labour Party has made the renationalisation of BT a policy objective, but even that move is not a full separation because the political promise of free broadband means that elements of the service arms of BT would also need to come under government control.

There is only so much that a regulator can do to force the commercial sector to invest, especially when political uncertainty is complicating the picture. It is up to the networks and their finance providers to allocate capital.

> It is easier said than done. The investment needed is huge. Regulatory thinking has become more sophisticated
>
> *Participant*



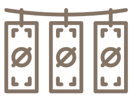
Re-monopoly risk

It is clear that competition must remain at the heart of the push for higher investment in the sector. Returning to the 1998 model of old-style monopoly regulation to achieve these aims needs to be avoided. The market needs to be careful not to go back to the so-called good old days and allow remonopolisation of the telecoms sector to justify capital expenditure, no matter what arguments politicians and incumbent telecoms companies throw at regulators.

The overall objective for a telecoms regulator today is to recognise the achievements there have been in creating a competitive environment while striking a balance to ensure there is a level playing field between the incumbent operators and the challengers in the market.

At the core of the new Electronic Communications Code implemented by the European Commission is a model of co-investment. Much has been made of this move to allow and encourage networks to collaborate heading into the 5G and full-fibre eras, but it is easily forgotten that the new rules are a continuation and evolution of the old framework.

Regulators need to delineate a way in which those co-investment rules, transposed at a national level, speed up investment while ensuring healthy competition for the benefit of consumers.



We should not go back to the so-called good old days and allow re-monopolisation to justify capital expenditure.

The market response

The challenge for the industry is to respond to these regulatory levers. The old model of regulation has hampered previous attempts to create genuine network challengers. KPNQwest was an example of a potential global success story that invested in a state-of-the-art network but could not strike a business model that enabled it to survive.

With regulators often focused on price regulation, driving down the price to the end user, the telecoms sector has found itself in a position where it has to make huge bets on technology and network investment in an environment defined by low consumer prices. They have to do both at the same time while guarding against political demands to force them to invest more.

Then there is the problem of who pays the bill. Whether a company is backed by public investors or private equity, those investors want a return. Simply put, they want more money back than they put in. If price pressure is too harsh in one market then investors will move their investment to another market, something politicians and regulators need to consider.

Regulators also need to consider the market holistically. There is little point creating an open market at the access level if regulation is going to be strictly applied further down the line. That will complicate the investment strategy for businesses willing to spend.

It is a chicken and egg problem. Whoever is prepared to go for the risk gets the reward.

A Co-Investment future

European law revisions now provide the industry with a new toolbox to tackle the investment issues at the heart of the debate. A different approach to cost allocation and sharing could have a dramatic effect as companies collaborate to roll out fibre and develop infrastructure-sharing models for the 5G roll out.

The recent collaboration between Openreach, BT's network division, and Vodafone to roll out fibre in three large British cities is a sign that strict market rivals can work together to tackle the infrastructure challenge.

Yet regulators cannot second guess the market nor force the industry to work together. Mobile phone networks had the opportunity to collaborate in the 3G era in markets including Germany but each company stuck to its own business model.

The market has evolved but the competitive dynamic at the heart of the industry remains a potential impediment to co-investment, a point that is perhaps insufficiently recognised by the European Commission.

> In the US, operators put the onus on the Mayor (of a town) to handle wayleaves, traffic and planning access if they want their town to be at the front of the line for new infrastructure. That approach improves efficiency and essentially reduces the construction cost per metre. Similarly, streamlining the wayleave and planning process for fibre optic infrastructure deployment in the UK could reduce costs and accelerate the deployment of new infrastructure.
>
> *Richard Taylor, euNetworks*

> Few cities think that they can do it on their own – and, due to lack of experience, those that do go bust.
>
> *Steffen Leiwesmeier,*
> *Hamburg Commercial Bank*

Overbuild or overkill?

The speed at which markets like Spain and Portugal have rolled out fibre has created a race to catch up in other markets. The UK's position has been widely criticised in recent years but now at least, there are genuine challengers – a new generation of 'altnets' – taking the fight to BT and doing the heavy lifting to get the FTTH ratio higher. The speed has of rollout sharply increased, with the proportion of homes able to connect to a full fibre line having doubled in the space of two years.

But this has created a new debate around overbuild, with a number of companies racing to be the first to invest in profitable areas. This creates a messy situation on the ground, with companies battling to cherrypick the best areas to invest and ignoring less profitable segments such as rural or less well-off areas. That threatens to create a new digital divide.

> How does Ofcom ensure the spending gap doesn't get wider and create a digital divide?
>
> *Ian Mason, NatWest*

The regulatory view is that overbuild makes little sense despite efforts to champion infrastructure competition. It would be irrational for one network to spread itself too thinly by racing to be first in as many locations as possible. The topdown approach adopted in France has also worked to ensure that overbuild is kept at bay.

Yet companies, especially large incumbents battling well-funded smaller players, cannot always be expected to act in the general interest. Some may be willing to forego returns in the short term to hinder the progress of smaller players biting at their heels.

There is also a mindset problem. Some large incumbents may believe they have a fundamental right to be a ubiquitous provider and will not accept that they need to cede parts of a country, even lucrative population segments, in the fibre land grab.

Regulators need to keep an eagle eye on incumbents that may be investing strategically in overbuild projects to see off potential challengers in the long run.

> BT believes it has a given right to be the ubiquitous provider in the UK. It's a mindset and there is wholesale acceptance of that. The idea that they accept their fate is something we are yet to see.
>
> *Participant*

Bubble business models

There is little doubt that fibre infrastructure is a hot market but is it also a bubble? Some business models are not going to work out, based on the amount of finance flowing into the sector judged against ambitious growth plans. There will be failures.

Operators are chasing low cost but competition is already raging. A company cannot promise investors they will take a market share of 50 percent of a target town if two other companies are promising the same thing to their investors.

Slow consumer take-up is proving the bane of the industry. In towns in Germany where full-fibre has been laid, the take up has been surprisingly low at between 20 per cent and 25 per cent. If only one in four households is willing to pay to upgrade to full-fibre then that is a serious inhibiting factor for investment. Are we hyping up a need that is not actually there or is it a matter of country competition? If they build it will the people come?

> In reality only every fourth household is taking up the new network. I'm probably pouring cold water onto business models and government objectives but we must be realistic.
>
> *Industry participant*

Regulators do not see it as their role to force people to pay for faster connectivity, no matter how intense the public debate around the need for it, although networks argue that allowing the switch-off of legacy copper networks in the medium-term could help solve that issue.

The banks providing the finance have already found that the early-moving altnets promising consumer take up rates of 40 per cent have missed that target. This has proved to be a surprise for some financial backers and has coloured the view of new investments and refinancing plans with more stringent "proof of concept" hurdles to overcome. If the financing relies on a successful land grab then, when the race runs out of steam, that money could quickly dry up.

> If business cases aren't being met then there are issues. Is it a bubble? You might see things that don't work out.
>
> *Participant*

Wolves in the ecosystem

The capital outlay required for 5G and full fibre is so immense that there has to be an ecosystem of network providers. But an ecosystem does not consist entirely of wolves. Every level of the food chain needs representation. In telecoms this means we need healthy competition between mobile players, altnet fibre builders, maverick operators and incumbents.

Regulators need to provide breathing space for different models. Micromanagement of the sector will not encourage the investment that is needed by all players in the ecosystem. The regulators and governments have so far used traditional tools at their disposal, including state aid and utility regulation, as a result of which the industry is tapping into a new class of long-term investors attracted to that unexciting infrastructure. Regulators need to adapt their approach to allow that ecosystem to thrive.

The challenge for the industry is to justify how to spend a huge amount of capital when the business model is uncertain. Customer acquisition costs remain high, whether in the form of handset subsidies, price competition or content acquisition, with returns still unclear compared to other infrastructure assets.

Despite the debate around the need for it, few people need a full fibre line or 5G service right now. Consumers are able to stream Netflix and watch the Champions League final in 4K without those expensive networks. But no one knew they needed Netflix 10 years ago nor that they needed 3G or 4G until they bought an iPhone.

The industry is looking to Silicon Valley for the next application that will drive a huge spike in data, obliging them to build as a result. This creates a chicken and egg problem.

Who is prepared to go for the risk gets the reward, but will regulators allow it?

An ecosystem does not consist entirely of wolves. Every level of the food chain needs representation.

Slicing the problem

New models are emerging within the industry to tackle these issues. Techniques such as network slicing – apportioning small amounts of a wireless network to an industry player – are possible in a 5G world. True wholesale access networks, such as the rural project in Ireland, open up the possibility of a more dynamic and ultimately efficient telecoms market. This is a world where there is dynamic competition and more industry sharing sitting on top of a common infrastructure.

> Network slicing is the new dynamic in networks. More sharing, yet greater autonomy in service competition. New, fundamentally different networks on the same physical infrastructure.
>
> *Stuart Blythe, CMS*

This, however, requires a radical shake-up of how the industry and regulators treat the telecoms market(s). Spectrum licenses are still sold on a national level, meaning that only established, well-funded players can participate. Selling spectrum at a local level to allow for bespoke industrial uses creates a more dynamic market and allows for a better use of capacity in areas where consumers are less likely to need it. This is something that Ofcom and other regulators are trying to encourage.

Yet the local industry opposed the move by the German government to apportion a chunk of the airwaves for industrial usage which, combined with an aggressive new entrant to the market, pushed the price of spectrum in the country's 5G auction much higher than had been expected. The established networks were quick to argue that the German consumer would suffer as a result.

The industrial push into 5G also creates a dynamic where large conglomerates start to invest in their own network infrastructure. Network equipment companies have eyed an opportunity to build those networks outside the carrier-led paradigm. Such host networks threaten to add further complexity into the market.

> We need a dynamic spectrum policy aimed not at consumer but at industrial usage.
>
> *Laith Sadiq*

Even if new models flourish, the heart of the debate remains the same – how can the industry keep up with the pace of necessary investment. The infrastructure needed to enable a world of autonomous cars and smart city infrastructure means the number of mobile 5G sites needs to increase five-fold according to some operators, yet industry-specific tests suggest that network density may need to increase 7 to 10 times. That means more capital expenditure and the need for more flexible regulation.

If regulators and business models don't adapt then we will go backwards, slowly.

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