

Joint Regulators Group: shared works, shared facilities and revenue sharing

Introduction

Predictable Network Solutions (PNSol) works with large national and international companies, helping them reason about all aspects of performance: scalability, service effectiveness, cost etc. Our particular mathematical competence means that not only can we reason about existing systems, but can also perform such analysis before systems are constructed. This makes us the world's only ex-ante network performance engineering company.

We are contributing to this consultation because, as part of our work, we see an emerging pattern that points to structural flaws in the UK telecoms market. In our view, these flaws constitute a substantive risk that many of the potential benefits to the UK of robust, reliable, ubiquitous and cost-effective telecommunications will not be realised.

A large element of this risk is that other market sectors and regulatory bodies assume that mass-market services will be “fit-for-purpose” (for their particular purposes) at retail, or near retail, pricing. However, the current market is structured so that the created retail services are, essentially “purpose-for-fitness”, in that “you get what you get”; there is no specification of what is delivered, and it is the end users' problem to find a way of exploiting whatever it is. It is this divergence of expectation from delivery that is creating large-scale (and costly) hazards.

We find ourselves repeatedly advising on projects that are failing because of this situation; our clients purchased an appropriate capacity of services that they assumed would be fit for purpose, only to find that their characteristics are not guaranteed, and that the companies providing them take no responsibility for their outcomes. In the past, by contrast, telecommunications service outcomes were well defined and users of them could be confident in what they were purchasing.

Market Structure

Regulation is required where there is a risk of monopolistic power distorting the market. This is particularly the case with national infrastructure, where the costs of complete competitive offerings would be prohibitive, leading to an unstable situation where the economic incentive for mergers and acquisitions is so great that a collapse into monopoly is inevitable.

However the current market structure has led to a focus on only the rate of financial return on capital investment, to the detriment of service outcomes.

We understand that many aspects of telecommunications delivery are best served by elements of monopolistic provision. However the market and

regulatory structure that has emerged is one that requires the monopolist to charge 'rent', and where there is no other measure than the rent that is charged, the result is a race to the bottom where monopolists become 'slum landlords' and fitness for purpose is entirely lost.

Money is charged for **access** to the resource, not for the resultant outcome, and this attitude persists along the value chain, so that all the accumulated risk (that outcomes will not be achieved) is dumped onto the final customer. This is a particular problem with mass-market packet-based services, for which there are no quantifiable outcomes on which reliable higher-level services can be based (NB 'committed bandwidth' is not sufficient). While other, reliable, services are available, such as point-to-point TDM circuits, these have neither the reach nor the cost-point to form the basis for a national service infrastructure. Thus, where there is fitness for purpose in the current system (e.g. TDM), it is fitness for a historical purpose, with no flexibility that would encourage innovation.

A further consequence of this 'rental' model is there is no market for concurrent services to the end user; while they may have the ability to switch from one sole provider to another they do not have the option to buy a selection of different services from different providers (one delivering reliable streaming video, one VoIP and one general web access, for example). This creates a substantive barrier to entry into the market, because a large scale of operation is required in order to manage the risk associated with uniquely owned resources having no 'tenant', and the incumbent renter is in a position to charge a prohibitive tariff for admitting an innovative service.

Thus the lack of real competition inhibits innovation and also creates a risk that the current market players are 'too big to fail' while at the same time heading for failure because the decoupling of the services offered to the delivery of end-user value means that the 'rental income' is not sufficient to cover the costs of upgrading the infrastructure.

Examples

A. Interaction between Telecommunications Market structure and Electrical Production / Distribution Market

The Telcoms market creates time/space monopolies. In the case of BT, Openreach "owns" the physical path (with all the associated wayleaves etc), this (for example) is then "re-rented" via BT-Wholesale to a ISP – what is important to note is that this ISP (be it BT Retail, or anyone else) now has the **exclusive** "ownership" of the network connectivity to that premise.

The energy market needs to manage supply and demand over various timescales to manage hazards that manifest themselves in the electricity distribution chain, that are increasing due to developments such as embedded generation (wind, solar etc.) and new types of load such as electric car charging. To mitigate all of these hazards requires a secure, real-time (sub second), scalable communications infrastructure; however the ubiquitous version of this (i.e. DSL) has now been "sub-let" to a multitude of different ISPs, thus any attempt to

create a mechanism using this infrastructure has now become a complexity nightmare in just forming the commercial relationships.

Thus the emergent effects of one regulatory framework have damaged the ability of another regulatory domain to construct effective solutions.

B. Large-scale femtocell deployment

MNOs wish to deploy 'small cells' for a variety of technical and commercial reasons. These need to be backhauled to the MNO network, and the TDM circuits used for macrocells are prohibitively expensive, as would be any new solution developed specifically for this purpose. Thus MNOs need to use existing mass-market connectivity such as DSL. However, the lack of any guarantee of the transport characteristics of such connections (i.e. mass-market DSL) makes their use in a RAN problematic, as the protocols employed were developed to work over TDM and have limited tolerance to the unmanaged emergent behaviour of statistically multiplexed packet networks.

Consideration of an alternative

We understand that the regulatory problem is complex, however we suggest that Ofcom should begin to consider regulations and changes thereto in the context of their opportunity cost, in terms of the potential for competition and innovation they are enabling or suppressing.

The current market and regulatory structure is based on vertical silos, inherited from the era when telephony was the principle service. The problem with such silos is that they do not provide entry points at which competition (and hence innovation) can occur. For example, while LLU unbundling adds an entry point at the level of the exclusive access to a line, it otherwise just builds a different vertical silo all the way to the ISP, who becomes the sole provider of services to that endpoint, i.e. the monopoly is transferred from one entity to another.

We expect that there will be other submissions to this call demanding better access to functional monopolies (such as ducts, fibres etc). However we see that while creating more points of competition may have benefits, it does not represent a solution to creating ubiquitous connectivity that is fit-for-purpose for the new services needed by the UK in the coming years. What is needed is an underlying carrier that can offer services that are appropriately isolated from each other and differentiated and guaranteed performance characteristics. A competitive market can then develop in delivering concurrent services over this infrastructure (including, but not limited to, non-discriminatory Internet access).

While there has been an attempt to split the market horizontally with the division of BT into Openreach, Wholesale etc, the current approach suffers from the identification of the service layer with the organizational entity delivering it.

A preferable situation would be one in which entities offer a set of services with well-defined, quantifiable and verifiable outcomes (which could be equally well offered by competing entities), on which further layers of service can be built (by a range of players) i.e. there are clear compositional service boundaries, as distinct from organizational ones.

Conclusion

We understand that this will be seen as a radical departure from the current status quo. However, we would wish to point out that the nature of telecommunications has changed; the mass of communications are now using statistical packet-based multiplexing NOT deterministic and centrally controlled TDM circuits. The emergent effects of that change have rendered the current regulatory framework a hindrance to, not an enabler for, the required further evolution of the telecommunications market.