Office of Utility Regulation

Next Generation Networks in Guernsey

Discussion Document

Document No: OUR 07/21 **December 2007**

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CONTENTS

1. Introduction

Historically, operators generally managed one network, the Public Switched Telephone Network ("PSTN"), which was designed to carry voice. As demand for data communications developed, operators built new networks for data, called the overlay networks in parallel with the PSTN. These new overlay networks were designed to carry data traffic. The continued development of network technology led to an increase in the number of networks and today, many operators typically have 5 to 10 different network platforms (ATM, IP, Frame Relay, ISDN, PSTN, X.25 etc.).

At a simplistic level, Next Generation Network ("NGN") can be described as a single network supporting multi-services that allows operators to deliver converged services and new services using IP-based, high bandwidth networks. NGN aims to go back to a single network by deploying one network platform capable of supporting all traffic types. This offers the potential to bring new products to market, simplify the network, streamline the support structure and reduce operational costs.

Regulators are faced with the challenge of seeking to lay down broad principles for the transition to NGN networks in advance of the investments taking place. This contrasts with the current regulatory context of legacy networks in which the telecoms business model, network and to some extent the products, were established prior to regulation. With this background, operators and regulators around the world are therefore considering how to promote infrastructure investment in NGN while ensuring competition is sustainable in a future NGN environment.

As part of this process the OUR has identified a number of key areas where it believes clarity would be beneficial both in terms of ensuring ongoing investment and the promotion and sustaining of competition. These include:

- Current Products;
- Future Products; and
- Regulatory Principles.

NGN deployment has the potential to represent a major development in a country's infrastructure that will affect network operators, businesses and consumers. It is intended that this discussion document will contribute to laying the basis for achieving greater clarity on various regulatory aspects of NGN and ensure that its introduction as a key part of Guernsey's 21st Century communications infrastructure is achieved in a smooth and timely way, supporting the continuation of a diverse and competitive sector for the benefit of all Guernsey consumers.

As part of the consideration of the issues highlighted in this paper the DG will shortly be organising an industry workshop for licensed operators to enable OLOs to understand C&WG's plans for NGN more fully. It is intended that this workshop will further clarify the key regulatory issues that may need to be addressed.

This document does not constitute legal, technical or commercial advice; the Director General is not bound by this document and may amend it from time to time. This document is without prejudice to the legal position or the rights and duties of the Director General to regulate the market generally.

2. Structure of the Paper

2.1. Structure

The rest of this paper is structured as follows:

Section 3: explains the nature of NGN networks and the distinction between NGN and NGA;

Section 4: provides some information on developments in Guernsey;

Section 5: sets out views on the implications of NGN for existing wholesale services;

Section 6: sets out views on the implications of NGN for future wholesale services;

Section 7: outlines general regulatory principles that may be relevant in the NGN context are discussed; and

Section 8: discusses the next steps in the process initiated by this discussion paper

2.2. Comments

Parties are invited to submit comments in writing on the matters set out in this paper to the following address:

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Email: info@regutil.gg

All comments should be clearly marked "NGN in Guernsey" and should arrive before 5pm on 8th February 2008. Upon receipt of those comments, the DG will consider further the key issues raised and what further actions are required.

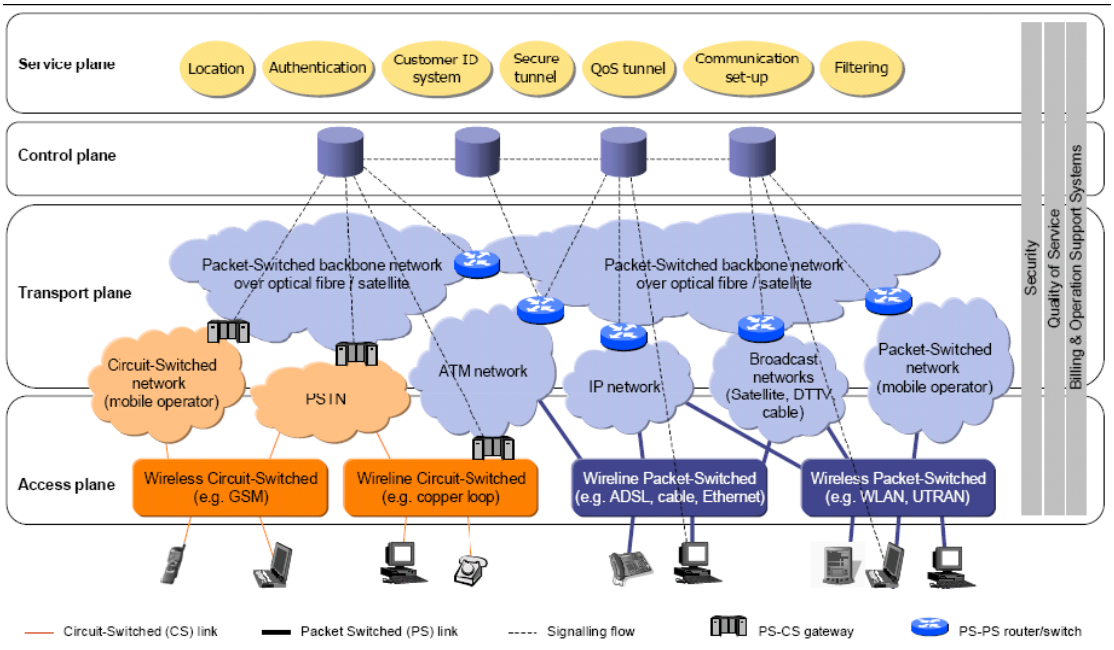
3. NGN and NGA

3.1. Definition

In its broadest sense an NGN is essentially an IP based network that includes both the core and access networks that enable any category of customers (residential, corporate or wholesale) to receive a wide range of services (voice, video, data etc) over the same network. IP access is enabled across a wide range of broadband technologies, both wireless (3G, WiFi, WiMax etc.) and wireline (copper DSL, fibre, power lines etc.). Although 'NGN' refers to the overall concept of core networks, the term is sometimes used to include access networks. The NGN architecture is structured according to a service layer and an IP-based transport layer, which provides IP-connectivity to end-user equipment. Investments and developments on a single all-IP network to substitute multiple traditional core networks are therefore separate from developments in Next Generation Access – "NGA".

NGA implies current and future developments in the local-loop, covering the segment between multi-functional access/aggregation nodes and the end-users. An NGA network can be made of fibre, copper utilising xDSL technologies, coaxial cable, powerline communications, wireless technologies, or hybrid deployments of these technologies. Network upgrades in the context of NGA comprise some deployment of optical fibre. The broad options for NGA can be distinguished by how far fibre is rolled out towards the end-user, enabling increasing reach and bandwidth to the end-user. Figure 1 below provides a typical representation of the NGN architecture.

Figure 1 :Typical representation of an NGN architecture



Source: EU Study 2003

For purposes of this document NGN is the term used to describe an IP based core network, and NGA refers to the access network with investment in access network technologies that provide connectivity between the end-user and the transport plane (or the 'local loop').

3.2. Drivers of NGN and NGA

Some examples of the drivers of NGN and NGA are discussed in this section.

3.2.1. Growth in broadband usage

With Broadband becoming increasingly popular, more easily accessible and more affordable to business and residential customers, more and more applications and services have developed and evolved based on the IP technology of the Internet[1]. The proliferation of IP-based services has in turn driven the rapid development of packet-based networks in the access, transport and core layers of the telecommunications infrastructure to cater for the increase in the volume of IP traffic. This change in telecommunications services brought about by the Internet has paved the way for the development of IP-based NGN.

3.2.2. Supplier rationalisation

As major technology suppliers reduce the level of support they offer for legacy technologies, it becomes more expensive and in certain cases impossible for network operators to maintain their older equipment.

In the context of Guernsey this is a very real issue for C&WG as its core switches are Marconi System X switches. With installed equipment having a limited asset life and reduced support available for existing switch technologies, the resilience of a network can become weaker over time. This gives rise to a trade-off between increasingly expensive support and new investment, including the option of adopting NGN technology.

3.2.3. Reduced operating costs

A related driver is that technological advances in telecommunications are forcing a trend towards a narrower range of technologies and unification of networks and services. A single network involves a single technology where common equipment and skills are required to support that technology. This compares favourably with the existing situation where a number of different networks employ various technologies to support the different services provided. For example, in the UK BT has a number of legacy networks supported by some 3,000 operation support systems. Consolidation into a single integrated network promises a huge reduction in the IT costs associated with these systems, as well as the elimination of as many as 100,000 network devices. The extent to which different maintenance skills and procurement of equipment takes place to support an NGN is therefore expected to be substantially less than a multiple network environment.

[1] These vary from narrow-band voice telephony services (i.e. VoIP) to broadband applications such as high-speed Internet access, video conferencing, multi-casting of TV programmes etc.

3.2.4. New services

The technological benefits of NGA are known, namely more consistent speeds across users and over time, higher download speeds and higher upload speeds. In turn, these characteristics would improve the consumer experience of existing services as well as make new services viable[2]. The ability of such a network to interact with central or peripheral capabilities will also be an important feature if new services are supported. The evolution of broadband has increased the potential for convergence of services facilitated by digital technology, which has in turn generated demand for networks capable of delivering a wider and more flexible range of services. The advantage of moving to NGN is that it brings a common protocol between different services, making it easier to develop these new services.

3.2.5. Aggregation efficiencies

End-to-end packet based networks have the potential to support more efficient aggregation since different services used by customers can be treated on the network in the same way. Aggregation can therefore be managed earlier in the network and economies of scale currently realised at higher levels within the network (core) can be achieved closer to the customer (periphery). This improvement in utilisation efficiency reduces the network capacity otherwise needed, bringing savings in investment costs.

[2] For example, real-time HDTV, enhanced scope for consumer generated content sharing and online back-up, as well as more reliable and sophisticated services over the internet.

4. NGN in Guernsey

To date C&WG's proposed NGN investment has not been accompanied by a level of industry consultation and discussion comparable to that in the UK. OLOs do not appear to have been informed to any great extent about C&WG's plans, details of the timing and the potential for any impact on their businesses in terms of provision of existing or future services.

C&WG has provided the OUR with the following illustrations to convey its current view of the NGN investment plan and timescale.

Figure 2: C&WG Next Generation Network – today and tomorrow

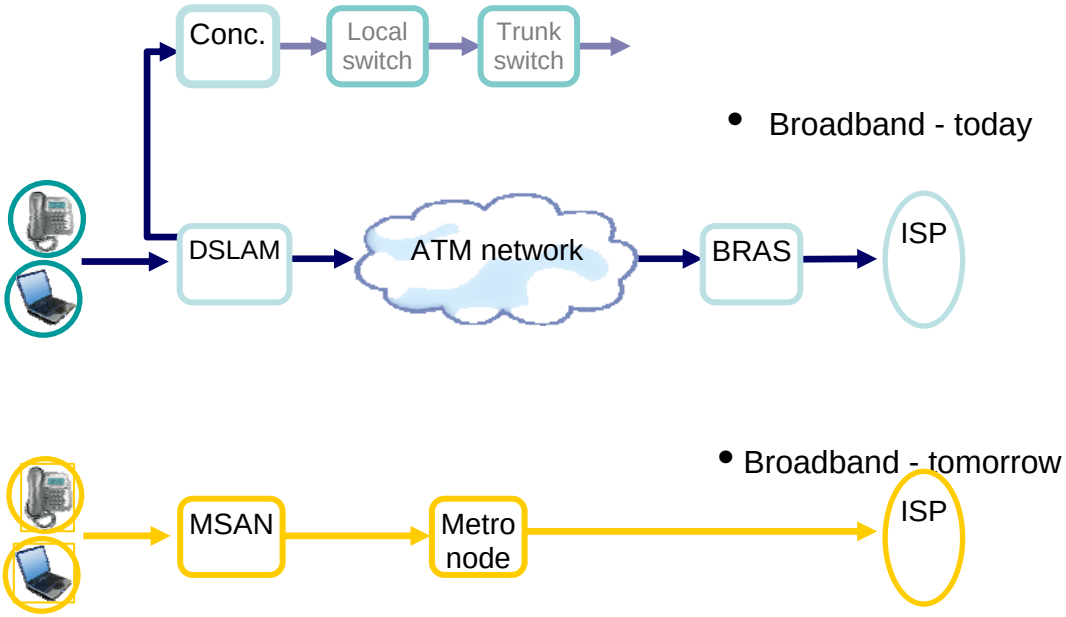


Figure 3: C&WG's future NGN network

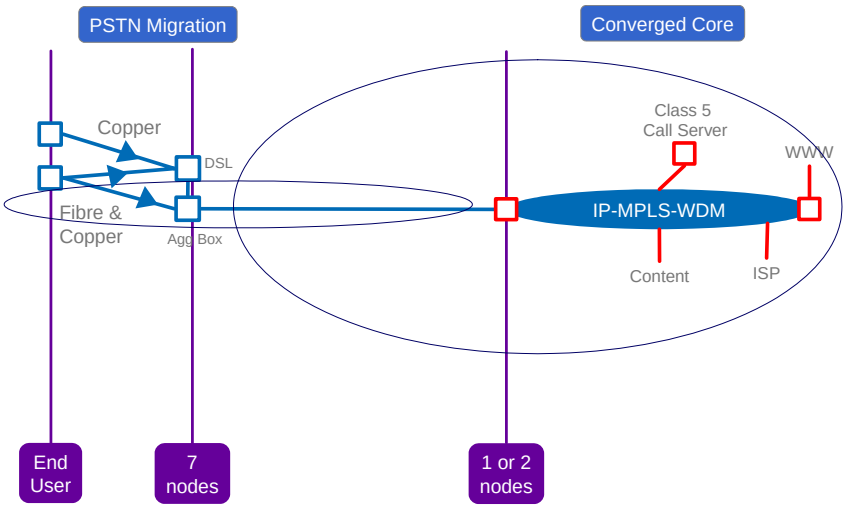
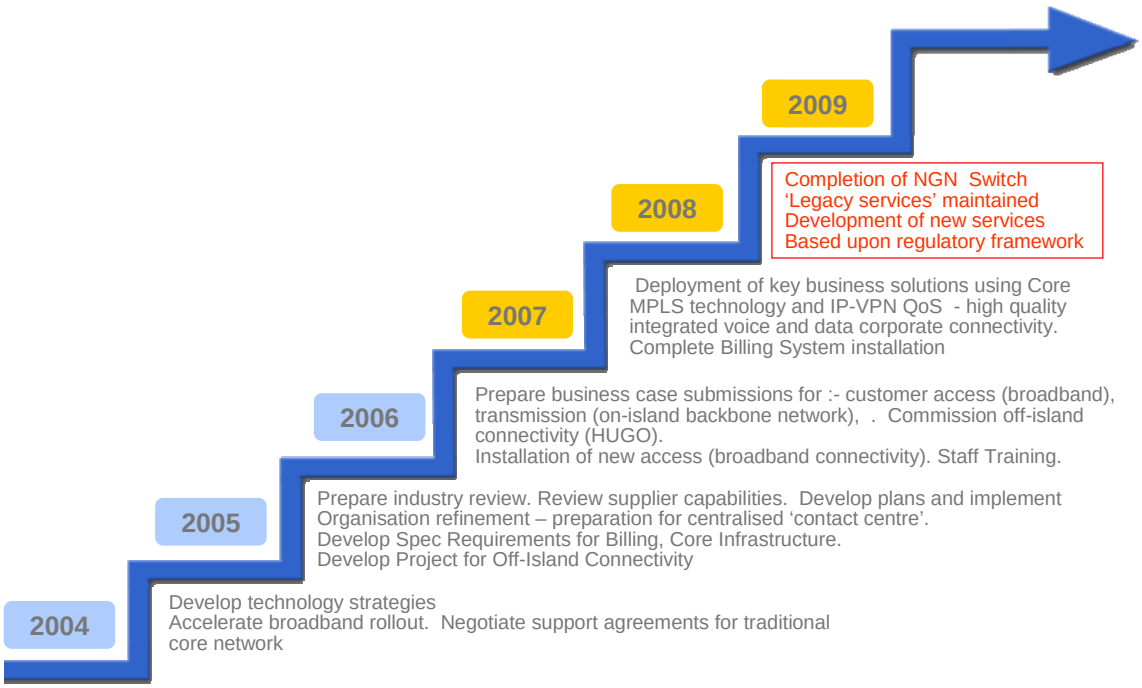


Figure 4: C&WG key milestones



The extent to which these investments and the timing of changes are likely to impact on the business of OLOs is best understood by themselves rather than C&WG or the regulator, given the potential step change in technology represented by a replacement of the existing fixed network with an NGN. While the DG notes that C&WG's own view is that its proposed changes should have minimal impact on OLOs, it is important that the maximum degree of transparency possible is provided to OLOs regarding C&WG's investment plans in this area to enable informed decisions on future investments and service delivery.

It is the DG's view that a transition plan would play a key role in setting out the detailed process for managing the transition from existing to NGN networks (including the process for migrating PSTN interconnection to NGN interconnection if necessary) as well as the production of a communications plan setting out how this transition will be communicated to consumers. Obligations to produce a reference interconnection architecture[3] that sets out the manner in which networks are expected to interconnect with each other are further elements identified in the UK as a basis for industry to assess the implications of NGN for their business. This may also prove valuable for OLOs in Guernsey.

[3] i.e. a Reference Offer for an NGN operating environment

5. Impact on Wholesale Services

The introduction of NGN raises issues as to which regulatory obligations will apply and which will not. Such uncertainty can be of concern to a number of stakeholders including investors, incumbents, OLOs and customers. In this section, the OUR outlines how it expects the introduction of NGNs in Guernsey may affect existing regulated wholesale services in the short to medium term based on the current UK and international experience.

5.1. Broadband Services

Wholesale broadband access is provided behind the active access equipment at the MDF (or equivalent). As a result, an OLO utilising wholesale broadband access does not have the same capability in controlling the quality and other key parameters of its retail service offerings as it would if it were utilising LLU for example. While this limits the scope for product innovation and dynamic efficiency gains, wholesale broadband access is an important enabler of service competition and efficiency gains in the Guernsey context.

C&WG is dominant in the market for wholesale fixed line telecommunication services which includes broadband service provision and is therefore required to provide wholesale broadband access. That obligation applies to the range of broadband products in C&WG's existing product portfolio irrespective of technology or speed, together with any substitute broadband products it may introduce in the future. The DG does not anticipate that this obligation will alter with the introduction of NGN.

However, the manner in which these services are provided and the impact on the business model of others operators may alter. In these circumstances greater transparency is likely to be needed to address the potential implications of these developments.

5.2. Wholesale Leased Line Services

Whilst broadband services facilitate the delivery of asymmetric services, operators that wish to provide leased line services typically use other regulated wholesale products, namely wholesale leased lines and private partial circuits (PPCs). Generally, these products are used as inputs for the terminating segments of a leased line service, with the operator's own network infrastructure forming the main trunk segment. When assembled together these elements enable the offering of various retail services typically to larger business and corporate /government users - including leased lines, VPNs and a range of data management and network services.

The regulation of leased line services stems from the OUR's findings of dominance by C&WG in the provision of fixed line wholesale and retail telecommunications services. This places requirements on C&WG to offer these services on conditions set out in its licence. It is not anticipated that this obligation will alter with the introduction of NGN.

5.3. Voice Products – access and calls

Operators that wish to provide voice services can configure their use of the various wholesale products in different ways in line with their particular service strategies and

infrastructure assets. Operators with their own access infrastructure typically provide their own interconnect, transit and/or call termination services to onward route their traffic to called parties, whereas OLOs without access infrastructure generally rely on the incumbent's network to provide an indirect access solution (such as Carrier Select in Guernsey). Arguably, the latter is the only service in this category that competes with C&WG's voice products over landlines in Guernsey. Alternatives such as VOIP services currently use broadband to deliver voice calls though there are issues around reliability, while mobile calls involve a significant price premium for call charges given features such as mobility. Ideally a flexible range of wholesale products is important to accommodate different circumstances and enable competition in the voice services market. It is at present unclear to what extent NGN might alter the potential for voice call services to be delivered alternatively. The issues around fixed and mobile calls may differ and these are discussed separately below.

5.3.1. Fixed Calls

The obligations on C&WG to provide interconnect, transit and fixed call termination services arises from C&WG's dominant position in the provision of these services. Existing obligations are not expected to alter with NGN deployment nor is a significant change in scope expected. However, the OUR will keep interconnection developments under review.

5.3.2. Mobile Calls

C&WG has been found dominant in the retail mobile telecommunications market and both C&W Guernsey, Guernsey Airtel and Wave Telecom are dominant in the wholesale mobile telecommunications market on their respective networks. The OUR does not anticipate the regulatory status of mobile termination would change for the foreseeable future.

6. Impact on Future Wholesale Services

The OUR's short-term priority is to clarify its intentions for the existing range of regulated wholesale services, with a long-term priority to resolve the matter of what future wholesale services might be required and what those services might consist of. Although the OUR is presently not in a position to know what particular wholesale services will be needed in an NGN environment, in an effort to stimulate consideration of these issues, this section outlines some of the potential competition remedies identified.

6.1. Migrations

Regardless of precisely what new wholesale products are developed it is essential that effective migration processes from existing products are put in place and that this is understood in advance. Operators must have the assurance that they can invest in their businesses using currently available wholesale products in the knowledge they will have the option, if they so choose, to migrate to new products when they become available.

6.2. Next Generation Broadband Services

It is expected that so-called next generation broadband services will, in addition to broadband, offer multi-cast capabilities, though this could require the deployment of fibre deeper in the network. Such offerings are beginning to emerge in Europe where it is expected they will facilitate the delivery of competitive triple-play offerings (which generally refers to the provision of telephony, television and broadband). In time, this could potentially lead to broadband services over alternative wholesale access products, although changes to current service level agreements to more appropriately reflect the evolving needs of both other operators and end-users would be required. Given the scale of investment needed, there are suggestions that the prospects for infrastructure-intensive wholesale alternatives may reduce with the arrival of NGN. If this is the case, reliance on broadband service competition may increase in future.

As regards the possible make-up of any wholesale product, this is difficult to predict as operators around the world are deploying differing network architectures, and may offer handover at various levels in the network. For example the extent to which multicast capabilities will be embedded in the access network as opposed to the core network has yet to be determined in many cases. In the absence of such details, it is difficult to provide definitive guidance on the possible make-up of any regulated product.

It should be noted that such considerations extend only to the underlying transport services and related facilities and not to the provision of content carried over that transport layer. The OUR considers all content and similar high layer applications as falling outside the scope of markets identified for ex-ante regulation.

6.3. Next Generation Leased Line Products

The leased line markets are concerned with the provision of point-to-point

connections and capacity dedicated to the use of specific customers.

Other regulators have observed that the relative lack of alternatives has meant that historically these services have generally been provided using traditional TDM-based circuits. Given dedicated point-to-point connectivity in these services, such uncontended solutions offer high levels of security and reliability, but are not as well suited for the increasing volumes and patterns of IP-based traffic driven by growing broadband adoption. As a result, in Ireland for example, where previously only dedicated TDM-based leased lines would have been considered, service providers are now seeking to migrate to more cost-effective contended and alternative solutions based on SDSL, Ethernet and other technologies. Ethernet in particular is increasingly being adopted in the backhaul and higher capacity market segments as TDM-based circuits become no longer cost-effective.

It is unclear whether the same issues are relevant in the Guernsey context. An examination of the manner in which C&WG and other operators currently provide leased line products and the implications arising from an NGN network is needed to identify such issues. In the DG's view this would assist operators in planning their future needs and improve an understanding as to whether migration to alternative solutions will be a feature of the market in future.

6.4. Summary

It would appear from the above discussion that there are a number of options and challenges for the appropriate regulation of C&WG's network over the coming years. The main challenges would appear to be:

- Identifying appropriate levels in network at which the regulator might facilitate competition?
- Determining what criteria to apply in terms of efficiency given parallel running of two networks (Current Generation Networks and Next Generation Network) over a transition period?
- Implementing the form of regulation for a network from which old and new services are phased out and in over the future?

These issues will be considered further in light of developments and feedback to this paper.

7. General Principles

In considering the issues discussed in section 6, a set of principles need to be developed to inform regulatory policy in this area. In this section, the OUR outlines the type of principles that may be relevant going forward, how it foresees the application of these principles and how these are likely to influence the OUR's approach when dealing with wholesale products in an NGN environment.

7.1. Technology Neutrality

If dominance is found to exist in any defined market, the OUR may need to impose relevant regulatory measures to facilitate the development of competition in that market, regardless of the technological platforms which are used. If services delivered over NGNs are found to belong to a defined market that is not effectively competitive, then the OUR will impose appropriate obligations on those undertakings found dominant in that market.

The key factor to the introduction or maintenance of obligations is therefore the existence of dominance, rather than the nature of the technology employed. Use of more efficient technology to provide existing regulated services does not alter the justification for that regulation. The move to NGNs would not appear to provide an opportunity to roll back existing regulation on services if the competitive conditions have not changed.

7.2. Non-Discrimination

Under Licence Condition 24 the licensee shall at the request of the OLO or if directed by the DG, make equal access available to that OLOs. Licence Condition 26 requires a dominant operator to offer leased circuits on terms that are no less favourable than those on which the Licensee makes equivalent leased circuits available to its associated companies or its own business divisions. General requirements relating to undue preference and unfair discrimination are set out in Licence Condition 29 while Licence Condition 32 sets out requirements to ensure a dominant operator's behaviour does not breach obligations relating to fair competition.

The application of the non-discrimination principle requires careful consideration in an NGN context, specifically in the area of new services. The obligation on a dominant operator to make its services available to OLOs enables competition by ensuring competitors are not prevented from offering comparable services. However, there are arguments that the non-discrimination principle can stifle innovation by reducing the rewards to the incumbent who is constrained in its commercial decisions by such an obligation and may invest less than it might otherwise have done. The application of the non-discrimination principle in an NGN environment (and possibly to a greater extent in an NGA environment) may therefore raise issues that are different to those in the context of Current Generation Networks.

7.3. Infrastructure and service based competition

In accordance with Section 2 of the Regulation of Utilities (Bailiwick of Guernsey) Law, 2001, the DG has a general duty

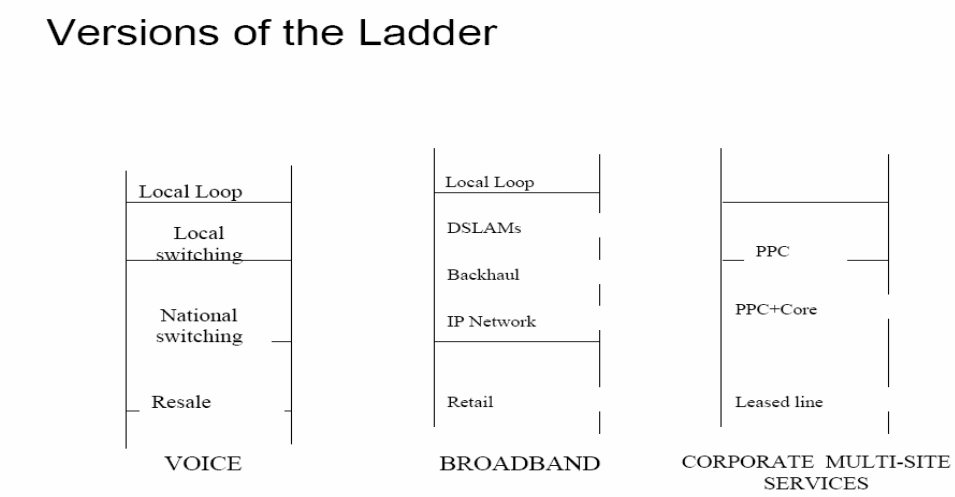
a) to protect the interests of consumers and other users in the Bailiwick in respect of the prices charged for, and the quality, service levels, permanence and variety of , utility services;
b) to introduce, maintain and promote effective and sustainable competition in the provision of utility services in the Bailiwick.

In economic terms, such improvements in consumer welfare derive from the gains in both dynamic and static efficiency that occur through competition.

Dynamic efficiency gains occur when innovation in technologies and services reduces production costs and/or provide services that are valued by consumers. In contrast, static efficiency gains arise with the most efficient use of existing technologies. The deployment of NGNs should lead to dynamic efficiency gains, while infrastructure competition is generally associated with greater dynamic efficiency as there is more scope for innovation in products and processes when there are competing infrastructures. Also, with infrastructure-based competition the competitive pressure to minimise costs is exerted over the entire value chain, potentially leading to greater value for consumers.

The concept of a 'ladder of investment' is used to assess the prospects for increased competition based on the need for a higher order of investment in the value chain to compete with a vertically integrated incumbent. Figure 5 illustrates this for certain telecoms services, where higher levels of investment in infrastructure needed to provide a given service are seen to move the competitor up the investment ladder, improving the prospects for competition in that market.

Figure 5: The ladder of investment[4]



[4] Source: Presentation by Martin Cave, Warwick Business School

7.3.1. Infrastructure competition

The extent to which the OUR should seek to promote infrastructure competition at the deepest practicable level in the network (i.e. as close as practical to the customer) is therefore relevant in an NGN environment. In the Guernsey context, the prospects for such competition may be greater in the area of mobile networks, whereas initiatives in fixed line networks are restricted by geography and the nature of the technology deployed in the Guernsey network. In a relatively rapid changing technology environment it is however also the case that the particular level in the network at which infrastructure competition is practicable may shift in response to changes in what is technically feasible and the associated economies of scale. The OUR is therefore mindful of the need to ensure the benefit of such advances are not excluded through a regulatory approach that is overly short term.

In jurisdictions where NGN rollout is planned there is some concern about the ability of the incumbent to close off avenues of competition by building the new NGN network in a way that further entrenches its market position. Incumbents have expressed a counter view to the effect that design of networks by committee is not a feasible way forward. These opposing views needed to be taken into account in any regulatory approach to NGN.

7.3.2. Service competition

In those areas where NGN infrastructure competition is not feasible, the OUR proposes to continue to encourage service-based competition in the interests of static efficiency since in the absence of competing infrastructures, increased consumer welfare depends upon vigorous competition in services. As service competition tends to be a 'stepping stone' to long term infrastructure competition, the OUR will ensure that suitable and seamless migration processes are established to facilitate the movement of OLOs and their customers from all existing regulated access products to their equivalent and/or successor products in an NGN environment (and between different NGN products).

7.4. Facilitating Efficient Investment

The DG has a general duty to ensure that telecom activities are carried out in such a way that best serves and contributes to the economic and social development and well-being of the Bailiwick. It may be argued that in the context of NGN, this objective can best be achieved by adopting a 'regulatory forbearance' approach to NGN investment.

This would involve exempting investments in NGN infrastructure from regulation for a set period of time, even if the infrastructure constituted an economic bottleneck. An example of this is access to the C&WG exchanges. The aim of such a policy would be to provide incentives to prospective investors in network infrastructure by allowing them to operate in an unregulated market for a limited period, thereby increasing their confidence of securing a positive and timely return on their investments.

There are also disadvantages of 'regulatory forbearance'. Such a policy could actually increase, rather than reduce, uncertainty for investors – particularly where such investments are in the access network such as NGA. NGA investments can have very long pay-back periods while periods of regulatory forbearance are likely to be more short-term. The impact of regulation on revenue streams in the years following a forbearance period can be material and therefore remain relevant to any business case. Further, if the next generation of services supplied over an NGN network is intended to replace the existing regulated services, then a policy of forbearance could simply entrench existing dominance in the market. The competitive benefits gained from first mover advantage and the economies of scale involved could mean that it would take many years after the period of forbearance before competitors could return to the position they hold in the market today.

In common with the approach of the European Commission, the DG's view is that if a new network is not meeting the needs of new services then it is likely to fall into the same market as existing access services and in the presence of dominance be subject to ex ante regulation. The DG therefore does not consider regulatory forbearance to be a practical option as there is no guarantee that regulatory forbearance would best protect the interests of consumers and other users - indeed in the absence of competitive pressures the opposite may well occur.

The OUR does however recognise that potential investors are likely to require some degree of confidence that they will be able to earn an appropriate return. In this respect, it may be appropriate to distinguish between investments in NGN and NGA. In relation to the former, there is growing evidence to suggest that the deployment decision is driven primarily by the scope for potential cost savings with the emphasis on continuity of existing services. The investment risk in this instance is mainly associated with implementation and vendor management and as such is difficult to distinguish from the business risk facing telecom firms in the current environment.

In contrast it can be argued that the investment decision for NGA deployment is driven by the revenue opportunities from offering new and innovative services such as IP-TV. In this instance there is a disruptive change to existing services and business models. Here the investment risk differs from that affecting the business generally given the relative uncertainty of consumers' willingness to pay for these new and untested services.

The OUR believes these differences are material and to not make this distinction risks distorting incentives and encouraging inefficient levels of investment. Accordingly, the OUR considers that where access to NGN infrastructure is mandated, the asset owner should be rewarded commensurate to the degree of risk faced at the time the investment was made. By appropriately reflecting the associated investment risks in the regulated access price, the OUR believes that regulation can best ensure that the incentives for investment are not distorted, while ensuring competitive access and preventing any abuse of market power.

7.5. Product withdrawal process

It is inevitable that the introduction of NGNs will change the economics of the telecoms industry and in particular affect the existing portfolio of wholesale products

offered by the incumbent operator. As the technological capabilities of OLOs develop and cost structures change, it may become reasonable and efficient to facilitate the withdrawal of certain wholesale product obligations. Given that NGNs in Guernsey are likely to be implemented over a number of years, it is unlikely that these product changes will be *en bloc* and a number of product withdrawal scenarios are possible, for example:

(i) the withdrawal of certain regulated products completely,
(ii) the withdrawal of features of certain regulated products; and/or
(iii) the withdrawal of products from certain sites or locations.

In the case of scenario (i), the withdrawal of such an obligation can only occur following a finding of effective competition in the relevant market. As such, the OUR would need to conclude that the relevant market was effectively competitive and provide reasonable notice to any parties likely to be affected by a withdrawal before it could withdraw an obligation completely.

In the case of scenarios (ii) and (iii), the OUR may consider it proportionate and justified to facilitate withdrawal of these elements. For example, if it was no longer cost-effective to continue to support certain legacy product features in an NGN environment, or alternatively if a more efficient network architecture could be implemented through the relocation of certain sites, then the OUR would consider the case for facilitating such requests subject to the following criteria being met:

(i) sufficient advance notice was provided and discussions held within appropriate industry fora with the OLOs affected to discuss and agree product evolution options prior to withdrawal;
(ii) there is no adequate customer base to create a reasonable level of demand, thereby making ongoing service provision uneconomic and disproportionate;
(iii) where appropriate, a functionally and economically equivalent alternative to that being withdrawn is available and a seamless migration is provided;
(iv) the majority of end-users have migrated from the legacy solution and a clear timetable has been provided for the withdrawal of the remaining users.

The OUR considers that these criteria should be applied on a case-by-case basis taking into account the particular situation of each case, the importance of relevant product in the relevant market, and the degree of consensus amongst industry players for such withdrawal. The OUR believes that the application of these criteria and in particular the provision of appropriate advance notice on product withdrawals can help substantially mitigate the potential for stranded assets. Such safeguards are necessary to enable competing operators to make commercial decisions with a relative degree of confidence.

However the OUR also recognises that in the migration to NGN these safeguards may not completely eliminate the risk of some stranding of OLO assets – particularly those with economic lives that extend beyond normal industry technology lifecycles. In those instances, where withdrawal of a regulated product follows and meets the criteria outlined above to the OUR's satisfaction and the prospect of significant stranded assets still remain, the dominant operator should discuss and agree relevant

compensatory principles with the parties affected. The OUR believes these discussions should be on a nondiscriminatory basis.

8. Next Steps

The OUR is inviting general comments on this paper to help further clarify what regulatory issues should be prioritized in order to allow Guernsey consumers to benefit from any deployment of NGN. As part of this work, the OUR will be establishing an industry forum to initially allow C&WG to better inform OLOs on the nature of its proposed upgrade and the timing of any key changes. The timing of the first meeting of the NGN Industry Forum will be arranged with operators to enable any discussions at the initial meeting to be considered during the period for comment on this paper. The Industry Forum approach has been used in a number of other countries, most notably the UK and the DG believes it is a sensible starting point for the examination of this important issue in Guernsey. Following the period for comment, the OUR will consider further what steps are required to facilitate the introduction of NGN in Guernsey.

ENDS