

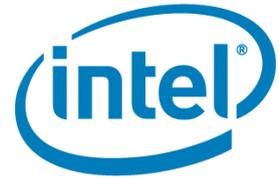


## INTRODUCTION

- 1 Intel Corporation South Africa (Pty) Limited (“**Intel**”) welcomes the opportunity to provide written comments on the National Integrated ICT Policy Green Paper (“**the Green Paper**”). The public consultative process signifies the Honourable Minister’s clear intention in embarking on a comprehensive review of the overall policy posture of the ICT industry in South Africa. As part of the review exercise, the Green Paper amounts to a useful *diagnostic* reflection of the historic evolution of the ICT industry in South Africa, and the policy and regulatory dispensation that has largely influenced the current structure of the ICT industry, specifically the market structure for telecommunications and broadcasting services. The Green Paper raises important debates which are policy-centric and points to the necessity of making some trade-offs which will ultimately inform the overall policy trajectory for the ICT industry for the foreseeable future.
  
- 2 As alluded at various junctures in the Green Paper, the *National Development Plan 2030: Our Future – make it work* (“**the National Development Plan**”) is the backdrop for this diagnostic exercise<sup>1</sup>. Having identified the urgent need to embark upon a review of the current policy dispensation in the ICT industry, the National Planning Commission (“**NPC**”) also identified the importance of ICT as a catalyst for economic growth and devoted considerable effort in articulating the importance of having a thorough policy formulation process as the cornerstone to the development of a coherent national agenda for economic growth.

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<sup>1</sup> National Planning Commission: The Presidency of the Republic of South Africa, *National Development Plan 2030: Our future – make it work* (2012).



- 3 Overall, the observations made by the NPC regarding the policy posture for the ICT industry are unflattering and point to a need for a comprehensive overhaul. As part of evaluating the steps and priorities for intervention as well as identifying the factors which have contributed to the current situation, the NPC make the following remarks:

*“The main constraining factors have been:*

...

*Little evidence of an effective strategy to ensure that connectivity in South Africa keeps up with its peers.*

*Policy constraints, weaknesses in institutional arrangements, conflicting policies, regulatory failure and limited competition.*

*The ability of the regulator, the Independent Communications Authority of South Africa, to enable a more open market. Its work has been hampered by legal bottlenecks, limited capacity and expertise, and policy direction being complicated by the constitutional guarantee of “independence”, which should only apply to broadcasting rather than to the technical areas of ICT, although this may need to be revised as broadcasting and ICT converge. The last comprehensive policy review was in 1996.”<sup>2</sup> (own emphasis)*

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<sup>2</sup> *Supra*, at 191



- 4 These factors have *inter alia* contributed to the current structure of the ICT industry. Further, the overall relative performance of the industry is a function of this structure. While it is important to measure the performance of the ICT industry against specific targets and comparatively with other countries, it is the identification of the structural features which inhibit the industry from performing optimally and meeting specific socio-economic outcomes that is equally important. Here, the *structural binding constraints* ought to be the focal point for immediate and targeted policy intervention.

*Structure of the Intel written representation*

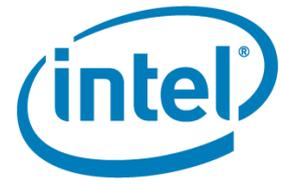
- 5 **Chapter 3** and **Chapter 5** have located the essence of the debate concerning the structural features of the ICT industry and identifies these as apt for some policy intervention. Given the complexities involved in any policy review exercise, the NPC pointedly recommends that this exercise be undertaken in a phased manner. In this regard, the Green Paper may be described as an immediate response to the recommendation from the NPC as the following recommendation prescribes the following:

***“Phasing***

*Phasing of priorities to create an enabling ICT reality by 2030 is discussed below.*

*Short term: 2012 – 2015*

*There is a clear and urgent need for a full policy review, which has not been done in the ICT sector since 1995. In the next five years, South Africa needs to develop a more comprehensive and integrated e-*



*strategy that reflects the cross-cutting nature of the ICT sector. This should link policy objectives to specific strategies.*<sup>3</sup> (own emphasis)

- 6 Further, the NPC makes several observations regarding the overall sub-optimal performance of regulatory agencies and this being derived from *inter alia* institutional design, poor human capital capabilities, confusion over roles and responsibilities and lack of transparency and accountability in decision-making. In this regard the following observation is particularly instructive:

*“The institutional arrangements and design of network regulators is being reconsidered. Regulation works best where there is sufficient political will to support it; where regulators are legally independent, public accountable and their decision-making is transparent, and where the regulator is backed by adequate institutional, and human capacity. South Africa faces challenges in all these areas. As a result, it makes sense to initially restrain the regulatory agencies’ decision-making discretion while their institutional design is reviewed, their roles and accountabilities are clarified and the related legislation and subsidiary regulations are updated.”*<sup>4</sup>

- 7 The theme of the appropriate institutional design for regulatory authorities within the ICT industry permeates throughout most of the recommendations made by the NPC. This is clearly an important aspect of the manner in which the administrative function of regulation aspires to seamlessly translate policy prescriptions into regulatory outcomes. Further, in a democratic dispensation, principles of transparency, accountability, proportionality and rational administrative action are important pillars for the exercise of public power and

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<sup>3</sup> *Supra*, at 194

<sup>4</sup> *Supra*, at 162



it is perhaps unsurprising that the NPC has devoted an entire chapter to address the need for the reform of regulatory authorities in general, and more specifically infrastructure and economic regulators.

8 In this regard, the NPC has recommended the following:

*“The following is proposed for the immediate future:*

*Institute a far-reaching review of current infrastructure regulators to clarify roles, strengthen accountability, update legislation and regulations and reform institutional design.*

*Explore the possibility of further consolidation of regulators.*

*Establish a monitoring and evaluation unit in the Presidency to undertake periodic regulatory impact reviews and provide advice and support to regulatory authorities.”<sup>5</sup> (own emphasis)*

9 These recommendations are relevant to the ICT industry, and the Green Paper has devoted **Chapter 12** to elicit some debates in this regard. Intel shall address some of the interesting discussions which have emanated from similar aspirations of reforming regulatory agencies undertaken by other Governments.

10 While focusing on the role of regulatory authorities and the need to have clear policy objectives for the ICT industry, there is a palpable admission regarding the state at which the telecommunications sector finds itself in relation to the

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<sup>5</sup> *Supra*, at 163



levels of investment that have been committed in the sector. In this regard, the NPC has made the following observation:

*“In the telecommunications field, policy and regulatory uncertainty and lack of capability remain barriers to infrastructure investment and to achieving quality services, especially for the poor.”<sup>6</sup>*

- 11 The Green Paper has also made some observations regarding the levels of investment in fixed and wireless communications, of which the growth in the former has been exponential, and yet at the same time concludes that there remains significant proportions of the Republic of South Africa without meaningful access to electronic communications services, including broadcasting services. This points to the fact that perhaps more investment ought to have been made, thus alleviating the *infrastructure deficit* which is reflected through sub-optimal coverage and penetration. This has invariably lead to the low levels at which broadband usages is being observed, the accessibility of communications services and their relative affordability. These matters are inherently interlinked and require a coordinated effort. However, Intel’s contribution to the Green Paper shall be focused on giving specific treatment to matters concerning universal access and service in **Chapter 9**.
- 12 Crucial to the development of a knowledge-based society is the development of the skills necessary for citizens to participate more meaningfully in a technology-centric society. Here, access to e-government services, e-health services and e-education applications is premised on citizens being empowered with the capability to fully engage with technology at a relatively

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<sup>6</sup> *Supra*, at 160



rudimentary level. Intel shall address these matters in response to the questions posed in **Chapter 11** of the Green Paper.

- 13 The creation of a technology-centric society also requires a safe and secure electronic transacting environment which enables trade and commerce to take place and this leading to the reduction of transaction costs. An important feature of this ecosystem is the existence of heightened confidence and sufficient reliability in the technology infrastructure which support e-commerce. In this regard, commonly accepted principles relating to an overarching regulatory framework for cybersecurity policy shall be discussed in relation to **Chapter 6** of the Green Paper while Intel has made some recommendations, albeit narrowly considering the scope of **Chapter 8** in relation to broadcasting matters.
  
- 14 Lastly, Intel believes that the treatment of the radio frequency spectrum in a holistic manner is important within the context of a policy review exercise. In particular, the manner in which spectrum is managed and administered, and the transition from the traditional 'command-and-control' mechanism to a more market-orientated approach has become an important consideration for spectrum reform. This transition occurs at a crucial time in South Africa where the migration from analogue to digital broadcasting will avail further opportunities for spectrum to be used for non-broadcasting services, particularly mobile services. The co-existence of multiple services requires astute spectrum management and appropriate planning which is reinforced by robust enforcement. These challenges and opportunities shall be discussed in relation to **Chapter 5**.



## *Summary*

- 15 Intel believes that although the Green Paper posits some interesting and challenging debates regarding various policy positions pitted against each other, it is important that at the culmination of the Green Paper consultative process a clearer sense of the desired policy direction emerges. This then ought to result in a more focused framing of the policy principles in the envisaged Discussion Paper concerning the manner in which these policy principles may be given effect to and implemented. There exists a clear danger of the Discussion Paper being merely a repetitive iteration of the Green Paper with no clear sense of the emerging policy trajectory serving to inform the future policy direction.
  
- 16 Overall, Intel is fully committed to participating in the entire sequence of public consultative processes and looks forward to having meaningful engagements with the Department of Communications and other stakeholders.



## CHAPTER 5: ENABLING ENVIRONMENT FOR ELECTRONIC COMMUNICATIONS

### Introduction

- 17 The electronic communications sector in South Africa has largely developed amidst the absence of explicit and deliberate policy initiatives in critical areas. With the exception of infrastructure licensing initiatives which resulted in the inception of Vodacom, MTN, and later Cell C, very little in the form of significant market transformation may be directly attributed to deliberate policy intervention.<sup>7</sup>
- 18 The pervasive availability of voice services and broadband services (and broadcasting services) at affordable prices for all remains a policy area within which very little progress has been made. The absence of significant downward pressure on both wholesale and retail prices for voice services and broadband services is both a function of the prevailing competitive pressures and market structure, and minimalist regulatory intervention. Further, the expeditious assignment of the radio frequency spectrum, which is critical for the introduction of more competition has moved at a rather pedestrian pace.
- 19 Although the adoption of a market-orientated mechanism for the valuation of the radio frequency spectrum and the imposition of price controls for wholesale call termination services have been the most recent fundamental regulatory interventions, there remains other areas which require more committed intervention. Intel believes that there are three critical policy areas which require deliberate policy intervention which is explicit:

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<sup>7</sup> Rather, the full liberalization of the South African electronic communications market may largely be attributed to the *Altech* High Court decision. See further *Altech Autopage Cellular (Pty) Ltd v Chairperson of the Council of the Independent Communications Authority of South Africa* [2008] ZAGPHC 268.



- The pervasive availability of affordable broadband services;
- The nature of competition which is required for the optimal performance of the broader electronic communications sector; and
- The significant reform of the administration, management and planning of the radio frequency spectrum.

20 Intel is of the view that reform initiatives in these three critical policy areas is vital and may amount to the transformative catalyst needed for the sector to perform more optimally. As such, each shall be addressed below, with explicit recommendations for policy intervention.

### **The pervasive availability of affordable broadband services**

#### *Bridging the economic and social digital divide*

21 It is Intel's mission to make affordable and high-quality global broadband deployment a reality, allowing us to bridge the economic and social digital divide. The revolutionary convergence of computing and communications industries brings significant social and economic benefits to consumers worldwide. Currently, the majority of computing devices communicate and increasingly all communications devices will compute. Essential for this convergence is the availability of affordable and high-quality broadband communication, both wired and wireless. Broadband enables many benefits and enhances active participation in society: e-health, distance learning, government services and communication between people rely on high speed



internet access.<sup>8</sup> However, there are still obstacles in the path to delivering affordable and high-quality broadband to all.

*Broadband for all policy: bridging the economic and social digital divide*

22 Making high quality, affordable broadband communications service universally available is an essential societal goal. A significant part of Intel's strategy involves utilising our manufacturing and technology leadership to bridge the digital divide around the world. Intel's World Ahead program<sup>9</sup> has spent years working to accelerate PC ownership and enable an incremental one billion people to access the Internet. To realise a "broadband for all" vision, Governments need to further develop policies to encourage competitive provision of broadband services coupled with broadband ubiquity policies to address the digital divide.

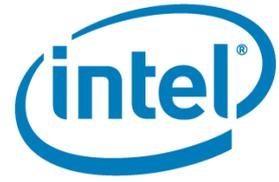
23 We believe that a fundamental discussion should take place on how to use universal service provisions as a complementary tool to address a digital divide between those with access to high speed broadband and those without.

24 Further, continued attention and investment is needed in local / regional initiatives which combine public and private funding aimed at deploying

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<sup>8</sup> Widespread deployment of broadband could contribute up to an extra \$500 billion annually to the US GDP (Crandall and Jackson 2001). By 2015, the productivity benefits of broadband could be as much as 2.5% resulting in an annual increase to the UK Gross Domestic Product of £21.9 billion CEGR (2003).

<sup>9</sup> The Intel World Ahead Program aims to enhance lives by accelerating access to uncompromised technology for everyone, everywhere. Focused on developing communities, it integrates and extends our efforts to use technology to help people improve their lives, societies, and economies. For more information, see further [www.intel.com/intel/worldahead/](http://www.intel.com/intel/worldahead/)



broadband infrastructure with the most cost-effective technology adapted to the needs of each concerned geographical area.

- 25 Lastly, access to broadband should be coupled with sufficient focus on increasing PC penetration and enhancing e-Skills through demand stimulation measures such as training for students, low skilled groups, professionals and subsidizing equipment/installation/subscription costs.



**Competition for the optimal performance of the electronic communications sector:  
facilities-based competition or services-based competition**

*Facilities-based competition and services-based competition*

26 The choice of regulatory and policy instruments relating to the nature of competition is greatly dependent on the type of market outcomes that are anticipated and the relative effectiveness of various policy instruments in facilitating the attainment of those market outcomes. Further, such market outcomes must be conceived within the context of clearly defined policy objectives. In turn, the policy objectives must necessarily be premised on the prevailing market conditions and the relative pace and trajectory of market developments. Ultimately, such policy objectives *must*, in a tangible manner seek to put in place measures which promote the attainment of the market outcomes that are envisaged to be desirable.

27 The election of the manner in which market outcomes may be attained, either through *facilities-based competition* or *service-based competition* is also dependent upon the appropriateness of the incentives created by a policy-maker to encourage firms to participate in the telecommunications services market. Further, the nature of the incentives availed necessarily determines the level of capital investment which firms wish to commit as a demonstration of their level of market participation. The existence of either *facilities-based competition* or *services-based competition*, and the intensity thereof of either form of competition is also reflective of firms' appreciation of investment risks and the anticipated rates of return based upon the *shape* and *orientation* of policy development and regulatory focus. Therefore, the propensity of infrastructure investment is directly dependent upon the broader intentions of



policy objectives being sought to be attained and whether or not the policy-maker has explicitly expressed a preference of the manner in which those policy objectives ought to be attained.

28 The choice between *facilities-based competition* and *service-based competition* occurs within the context of a policy-maker having explicitly elected to undertake the liberalisation of the telecommunications services market. Within this context, market liberalisation ought to be understood as being ultimately concerned with the introduction of effective competition where market outcomes are reflective of and result from the competitive process. Of course, the role of regulation is critically important and greatly determines the extent to which previously uncompetitive markets may eventually tend towards competition. To this end, the *role* of regulation ought to be perceived as being predominantly concerned with the elimination of the *binding constraints* which serve to substantially retard and hinder the competitive process from operating optimally. Here, the focus of regulation must also be understood to be concerned with the alleviation and active correction of market failures which may be detrimental towards the ultimate attainment of competitive outcomes.

29 Experiences throughout several Organisation for Economic Co-operation and Development (OECD) countries have demonstrated the importance of clearly stated and communicated policy rationale and objectives, and the development of a regulatory framework orientated towards the attainment of those policy objectives.

30 Broadly, policy-makers have typically stated the following broad policy objectives being sought to be attained:

- Broadband penetration, uptake and usage;



- Lower user charges for both voice and broadband services;
- Universal access and services for both voice and broadband services (and terrestrial broadcasting);
- Improved quality of services (including network reliability and security); and
- Constant innovation and dynamic competition.

31 The *rationale* for these policy objectives are invariably rooted in *efficiency* and *equity* considerations and the overall improvement in aggregate consumer welfare, increased societal participation and broader objectives related to economic growth. In this sense, a mutually reinforcing relationship must necessarily exist between the explicit policy objectives, the stated rationale for such policy objectives and the policy instruments conceived to be the most appropriate and effective in facilitating the attainment of the policy objectives. The setting in motion of the manner in which these policy objectives are to be attained largely depends upon whether, within the context of market liberalisation, the policy-maker perceives *facilities-based competition* or *service-based competition* as the most appropriate form of the competitive process which is necessary to conjure the desired market outcomes. Of course, such market outcomes must necessarily be reflective of the desired policy objectives since there exists a *a priori* position that the choice of market liberalisation as the policy outcome would amount to the most appropriate and expedient form of policy intervention in seeking to attain the explicit policy objectives.

32 In relation to the policy objectives, the policy-maker must clearly set-out the means by which the relative successes and failures of attaining the stated



policy objectives is to be discerned. That is to say, that the process of monitoring and evaluating the extent to which policy instruments adopted to attain the policy objectives have proved to be successful or not is equally important.

33 There are several empirical analyses of market outcomes which materialize when a policy-maker pursues facilities-based competition or services-based competition. These analyses present measurable proxies as a means of discerning the effectiveness of either mode of competition in the attainment of specific policy objectives. Generally, these proxies amount to *price* (and changes therein over a defined period) and *penetration* as directly measurable proxies for competition and the degree of innovation.

34 The observations made by Kittl, Lundborg and Ruhle regarding the proxies of price and penetration and the relative performance of facilities-based competition or services-based competition are particularly instructive and read as follows:

*“...countries with predominantly infrastructure-based competition have lower overall prices and higher penetration rates and thereby more innovation....analysis of penetration rates tends to indicate that infrastructure-based policies foster higher penetration rates. With regards to price levels in 2004, these are lower in countries with infrastructure-based policies...”<sup>10</sup>*

35 Overall, the conclusions drawn from these analyses are that there exists more statistically and economically significances in the market outcomes conjured

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<sup>10</sup> Jörg Kittl, Martin Lundborg and Ernst-Olav Ruhle, *Infrastructure-based versus service-based competition in telecommunications* Communications & Strategies (2006) 64(4), 67 – 87.



by either *facilities-based competition* or *service-based competition* within the policy domains that are critical, such as overall decrease in prices and increase in broadband penetration.

*Correlation between facilities-based competition and the marginal propensity of investment*

36 As stated above, firms may be expected to respond positively to the incentives availed to them serving to encourage capital investment in electronic communications networks. The European Commission Communications Networks, Content and Technology Directorate noted that throughout European Union, firms tended to invest in electronic communications networks where clear policy prescriptions existed in relation to the nature and type of competition that had been elected as the basis upon which certain policy objectives may be attained. In this regard, and in relation to the stated policy objective of increasing broadband services penetration and its universal availability, the European Commission had explicitly stated its desire to promote infrastructure investment.

37 Further, the European Commission held the view that adopting policy objectives which were biased towards fostering increased investment in electronic communications networks by new entrants and incumbents would be a critical aspect of the policy objectives of increased broadband services penetration.

38 In this regard, the European Commission stated the following:

*“Competition is a crucial driver of European investment and innovation. For the electronic communications industries, investing in new technologies, infrastructures and services is vital to cut costs and seize opportunities created by the convergence of digital networks, devices*



*and content. European investment in this sector in recent years has been as high as, if not higher than, those made in the US and Asia.*

...

*One of the framework's key aims is to stimulate competition and create opportunities for innovative companies. Companies that invest generally do so in response to competitive threats and to take advantage of competitive opportunities. The framework facilitates market entry and encourages investment by ensuring a level playing field for new companies, while providing users with basic services at affordable prices. New entrants and incumbents are responding to competition by investing to extend and upgrade fixed and wireless network infrastructure in order to cut costs and provide innovative services. Relative to their turnover, new entrants are even investing more than incumbents.”*

- 39 The European Commission’s views regarding the intricate relationship between *facilities-based competition* and investment in electronic communications networks have been affirmed in other analyses. It is in further appreciating the interaction and relative responsiveness of incumbents’ and new entrants’ strategic intent and investment incentives, and the orientation and complexion of policy and regulatory intervention initiatives that the appropriateness of policy instruments may be discerned. The structure of these investment incentives is also dependent upon the relative stability of the regulatory environment, the intensity of regulatory intervention and the effects thereof on the anticipated rate of return on investment for all firms, including new entrants.



40 The pursuit of facilities-based competition is also disposed to result in other positive externalities which are aligned to inducing economic growth. In this regard, Fourie has undertaken an extensive analysis on the impact of infrastructure investment in an attempt to discern the overall impact of such investments on the relative performance of the economy at an aggregate level.<sup>11</sup> The proxies used to measure the relative performance of the economy were:

- Impact of infrastructure investment on efficiency;
- Impact of infrastructure investment on equity;
- Impact of infrastructure investment on employment creation; and
- Impact of infrastructure investment on the environment.

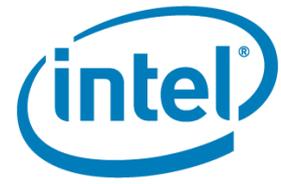
41 With the exception of the latter factor, Fourie discerned a positive correlation between infrastructure investment and the positive impact on the general levels of economic growth as measured by the above proxies.<sup>12</sup> The positive impact which these proxies have are revealed in the form of output elasticities and rate of return which result from infrastructure investment.

42 Overall, Intel believes that it is doubtful that services-based competition presents a useful means by which policy objectives relating to universal service and universal access, increased broadband penetration which tend to better affordability may be attained. This is more so in instances where there exists

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<sup>11</sup> J Fourie, *Economic infrastructure: A review of definitions, theory and empirics* South African Journal of Economics (2006) 74(3), 530 – 556.

<sup>12</sup> *Supra*



significant infrastructure deficit and investment in electronic communications networks is required so as to eliminate this deficit. Further, where penetration levels are relatively low, particularly in relation to fixed-line voice and data services, it is doubtful whether services-based competition would be effective in availing sufficiently strong incentives for firms to increase the penetration levels. Finally, the overall positive effect which infrastructure investment has on the aggregate performance of the economy reveal stronger correlations with increased efficiency, employment creation, and better equity outcomes. In the circumstances, Intel is of the view that facilities-based competition represents a more rational aspiration in pursuit of policy objectives.

## **Spectrum reform: administration, planning, management and assignment**

### **Spectrum administration and planning**

#### *A market-orientated and forward-looking approach*

- 43 Intel believes that at the heart of adopting a market-orientated mechanism for the administration of the radio frequency spectrum is the inherent flexibility that such mechanism offers, as well as its propensity to be more responsive to dynamic innovation. This dynamic innovation is a function of the constant research and exploration of other uses for the radio frequency spectrum which are welfare enhancing and bring about the development of more efficient and dynamic uses for spectrum which leads to the inception of new services.
- 44 A market-orientated mechanism for spectrum administration is also more sensitive in responding to stated and revealed preferences for both access to spectrum and the extent of its usage. Further, these preferences reflect the



incentives which firms have in relation to spectrum usage, and this is a function of their respective valuation of the spectrum. All in all, a market-orientated mechanism is inherently more responsive to these factors and fosters the conditions for optimal and efficient use of spectrum. This is welfare enhancing and avoids the artificial shortage of spectrum which ensues where there may be administrative inefficiencies in the management and planning of the radio frequency spectrum.

- 45 An important attribute of the market-orientated mechanism is that it is forward-looking in its treatment of the prospective usage of spectrum. This is crucial for its relative flexibility and responsiveness to technological development. A forward-looking approach also means that regulatory authorities must have the administrative agility to be proactive in determining the appropriate regulatory framework which adequately accommodates rapid technological innovation. This means that adequate research capability within the Authority concerning prospective uses of spectrum, the active monitoring of technological trends and active participation in international standardisation and technology-orientated industry associations. These activities ought to then serve to inform the Authority's position in relation to appropriate spectrum administration and planning, while taking into account the evolving trends for spectrum usage. Without such a proactive approach, the Authority risks being predominantly reactive in its administration and planning exercises.

*Flexibility in the designation of spectrum usage: licensable and licence-exempt spectrum*

- 46 The designation of spectrum as being licensable or licence-exempt is also an important function of spectrum administration and planning. The emergence and increased proliferation of Bluetooth, Zigbee, radio frequency identification technologies and Wi-Fi in the recent past has demonstrated the importance of



spectrum planning being responsive to technological innovation and administrators having the necessary flexibility to be responsive and adaptive to these developments. These technologies predominantly require spectrum to be made available on a licence-exempt basis, subject to appropriately defined technical parameters which support mutual co-existence of these technologies in the same band ranges helping to minimise causing harmful interference to other in-band services. The designation of certain portions of spectrum as licence-exempt has been recognised by Ofcom as being increasingly important for the supply of wireless data capacity to accommodate innovative technologies which complement non licence-exempt uses of spectrum.<sup>13</sup>

47 Flexibility in spectrum administration and planning also enables the Authority to be in a better position to respond to the need to harmonise and coordinate spectrum usage on a regional basis and in accordance with global harmonisation initiatives under the ITU. In this regard, the benefits of regulatory harmonisation are:

- Harmonisation enables the creation of greater economies of scale for manufacturers, thus substantially reducing the unit cost of production for electronic communications equipment (which generally translates to lower costs for consumers); and
- Harmonisation allows for the seamless development of interoperability between multiple equipment which conform to common standards and protocols.

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<sup>13</sup> Ofcom, *Consultation on the Future Role of Spectrum Sharing for Mobile and Wireless Data Services*, available at [http://stakeholders.ofcom.org.uk/binaries/consultations/spectrum-sharing/summary/Spectrum\\_Sharing.pdf](http://stakeholders.ofcom.org.uk/binaries/consultations/spectrum-sharing/summary/Spectrum_Sharing.pdf)



48 Given the constant evolution of technology and its influence on the manner in which spectrum usage manifests in more dynamic (and efficient) uses, regulatory authorities ought to retain the flexibility to be able to appropriately designate spectrum as either licensable (on an exclusive basis) or licence-exempt. Ultimately they must ensure a certain level of regulatory confidence and stability to ensure appropriate sustained investments while creating opportunities for returns on that investment. There are many factors which would influence the demarcation of spectrum based upon the extent of its usage, and whether for its optimal usage, it ought to be designated as either licensable or licence-exempt. Intel believes that the point at which this demarcation ought to be made and which would determine the appropriate designation of spectrum bands as either licensable or licence-exempt must necessarily be informed by the relative transaction costs and opportunity costs (and administrative costs) for either designation. Further, the aggregate benefits which are contemplated to accrue to either designation is also a fundamental consideration in this equation. Although this exercise is inherently complex and requires various trade-offs to be made, some at the margins, it nonetheless provides more sophistication to an otherwise static designation of bands that is risks being largely driven by licensable property rights ideology or licence-exempt spectrum commons ideology.<sup>14</sup>

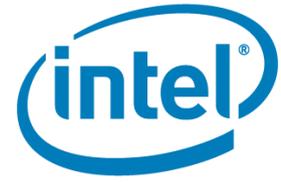
49 Intel advocates for new licensed and unlicensed spectrum allocations for broadband, but believes exclusive, flexible licenses assigned by auction generally achieve the highest value for consumers and society because they create the optimal investment and QoS incentives. Intel recommends in priority order:

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<sup>14</sup> For the relative merits in either ideology and the benefits which accrue, see further Yochai Benkler, *Some economics of wireless communications* Harvard Journal of Law and Technology (2002) 16(1), 25 – 83.



- 50     ***Clearing spectrum for use on an exclusive licensed basis.*** Wherever feasible, Governments ought to implement voluntary mechanisms to clear commercial and government spectrum for high-value uses and technologies (e.g. commercial mobile broadband) on an exclusive licensed basis. Commercial licensees should be granted service flexibility and technology neutrality.
- 51     ***Sharing spectrum on a Licensed Shared Access (LSA) basis.*** Where 1) is not feasible, Governments should look for sharing opportunities between government spectrum holders and commercial users on a Licensed Shared Access basis permitting operation on a geographic, frequency and / or time basis.
- 52     ***Permitting unlicensed allocations*** where they do not or will not foreclose or significantly interfere with licensed use on new or existing allocations, especially where the spectrum is suitable for high powered, wide area network use. For example, Intel has supported unlicensed use at 6.78 MHz and 900 MHz for ISM, 2.4 GHz, 5 GHz and 60 GHz bands for Wi-Fi and ultrawideband (UWB) above 6 GHz. Generally, we favour permitting unlicensed use where the opportunity cost of use is low, because the existing uses already foreclose other uses or technology can mitigate interference to the existing uses. Notably, certain “TVWS” proposals do not meet this “low opportunity cost” test. For example, proposed unlicensed use on the 600 MHz spectrum to be cleared by the United States Federal Communications Commission’s incentive auction process and TVWS trials on lightly used broadcast spectrum in certain African countries would foreclose valuable licensed wide area use, and therefore do not meet this test.



- 53 Intel believes that there is sufficient information available which supports the *complementary* co-existence of licensable and licence-exempt spectrum usage in those bands where both uses are technically possible through adequate sharing techniques which avoid harmful interference from ensuing.<sup>15</sup>

### **Spectrum management**

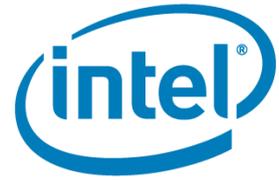
- 54 One of the biggest obstacles to affordable and high-quality global wireless broadband is the artificial scarcity created by outdated spectrum management in many countries. A move towards spectrum management built on the overarching principles of technology and, service neutrality and flexible tradability significantly improve the provision of wireless electronic communications services. Intel believes that the Authority has made significant progress in adopting a technology neutral approach towards spectrum management and that this needs to be sustained. Intel considers that this is indispensable to a spectrum management regime which promotes the efficient utilisation of spectrum and its assignment to firms that demonstrate a higher marginal valuation and utility for it.

- 55 Intel believes that policy and regulatory flexibility in spectrum management is as important as in the realm of spectrum administration and planning.<sup>16</sup> This flexibility ought to permit spectrum sharing amongst multiple users within the same band ranges. Although spectrum sharing is not an entirely unusual concept – static spectrum sharing for point-to-point services on a geographic, time and frequency basis already occurs – more sophisticated and innovative

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<sup>15</sup> The economic and technical rationale which supports this approach is further set-out by Thomas Hazlett and Sarah Oh. See further Thomas W. Hazlett and Sarah Oh, *Exactitude in defining rights: Radio spectrum and the “harmful interference” conundrum*, Berkley Technology Law Journal (2013) 28, 227 – 339.

<sup>16</sup> On the importance of flexibility in spectrum usage and technology neutrality in the assignment of spectrum, see further Robert J. Matheson, *Principles of flexible-use spectrum*, Journal of Communications and Networks (2006) 8(2), 144 – 150.



means of managing inter-band and intra-band interference have enabled the mutual co-existence of different users. With spectrum shortages envisaged in the medium to long term, shared spectrum usages will undoubtedly become more important as a vital spectrum management tool. Intel believes spectrum sharing needs to be considered carefully noting in the importance of the agenda items for the ITU World Radiocommunications Conferences which include provisions for additional dedicated and exclusive spectrum allocations for the Mobile Service.

#### *Licensed Shared Access (“LSA”)*

- 56 Licensed Shared Access (LSA) of spectrum is emerging as a possible mechanism enabling greater efficient usage and access to spectrum assignments. As distinct from licensed or individually authorised access to spectrum, LSA permits concurrent spectrum usage amongst a limited number of users in accordance with a pre-determined criteria which amounts to the conditions for co-existence. These conditions may be statically determined based on a criteria whereupon usage is precluded i.e. geographic exclusion zones or time-sensitive exclusions, or dynamically determined based upon the authorised licensees’ demand for usage. Recent advances in cognitive radio technologies and innovative techniques including the use of databases have presented opportunities for LSA to be used in some, initially, limited opportunities e.g. 2.3-2.4 GHz frequency band. The European Conference of Postal and Telecommunications Administrations (“**CEPT**”) aptly quotes the European Commission definition of LSA as follows:

*“A regulatory approach aiming to facilitate the introduction of radiocommunication system operated by a limited number of licensees*



*under an individual licensing regime in a frequency band already assigned or expected to be assigned to one or more incumbent users. Under the Licensed Access (LSA) approach, the additional users are authorised to use the spectrum (or part of the spectrum) in accordance with sharing rules included in their rights of use of spectrum, thereby allowing all the authorised users, including incumbents, to provide a certain Quality of Service (QoS).<sup>17</sup>*

- 57 Further, as distinct from unlicensed or licence-exempt frameworks, licensed shared access allows users to operate with heightened confidence which permits the offering of quality of services guarantees to end-users. This is derived from the uncontested nature and the predictability availed to the sharing licensee regarding the extent of spectrum availability and the usage terms thereof. In certain circumstances where there is market demand to access otherwise unavailable spectrum i.e. in bands where military wish to retain access while the Administration sees opportunities for commercial deployments, Intel supports LSA as another innovative means of spectrum management which allows for more efficient spectrum usage and increased access to new bands.

### *Spectrum trading*

- 58 The creation of secondary markets which enables licensees to sub-let their residual unused assigned spectrum ought to be viewed as complementary to LSA. For a considerable period spectrum trading has been recognised as a market-oriented mechanism intended to induce more efficient spectrum usage by creating secondary markets within which firms may trade a proportion of

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<sup>17</sup> CEPT Report 205: Licensed Shared Access, (February 2014), at 8.



their assigned spectrum, subject to technical parameters which would enable sensible frequency coordination. While the creation of secondary markets is intended to induce more efficient spectrum use, spectrum trading enables more firms to have access to spectrum and this results in enhanced competition. In addition, spectrum trading is an explicit departure from the “command-and-control” mechanism for spectrum management and attempts to correct for the administrative inefficiencies associated with the latter mechanism.

- 59 The flexibility which spectrum trading allows in advancing more efficient spectrum utilisation is also a significant advantage. In this regard, the ability for spectrum users to adapt and respond to dynamic changes in the patterns of demand for spectrum usage through a trading mechanism ensures that spectrum occupancy closely approximates the optimal extent of spectrum usage at all times.<sup>18</sup> This reform initiative ought to be seen as complementary to other market-orientated mechanism which have as their ultimate aim the efficient use of spectrum.

### **Spectrum assignment**

- 60 Intel believes that similar to market-orientated mechanisms for spectrum administration and management discussed above, spectrum assignment ought to embrace the efficiency considerations discussed above. That is, market-orientated mechanisms are inclined to induce a user to reveal their real preferences in the use and value of spectrum. Consequently, in spectrum assignment, auction processes and the many variants which materialise from auction design are inclined to explicitly reveal actual preferences (and consequently their valuation) for the spectrum. Although price may be the

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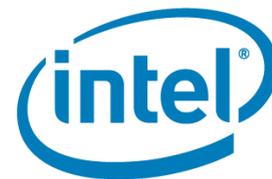
<sup>18</sup> See further Patrick Xavier and Dimitri Ypsilanti, *Policy issues in spectrum trading*, (2006) info 8(2), 34 – 61.



predominant measure of the extent to which actual preferences are revealed (and therefore it being a function of spectrum assignment), the emergence of reverse auctions and other innovative auction designs reflect a more balanced and equitable valuation for spectrum.

61 Not only do spectrum auctions amount to a more efficient means of spectrum assignment (as compared to comparative evaluation processes, or *beauty contests*), given that price and commitment are the predominant functions for assignment, auctions are welfare-enhancing and more accurately align the regulatory authorities' policy objectives and the commercial aspirations of market participants. Here, regulatory authorities have a strong preference for the assigned spectrum to attain some pre-determined policy objective i.e. universal broadband penetration, and enforcement mechanisms must necessarily be in place so as to punish default in the attainment of the commitment. Similarly, market participants wish to extract the maximum utility from the assigned spectrum through commercial exploitation, and the value to be realised is reflected in their willingness to pay for the spectrum. Appropriate auction design, which must necessarily avoid collusive bidding and *the winner's curse* from materialising, ought to ideally align these two objectives to ensure that the outcomes of the auction process are welfare enhancing.

62 In the circumstances, Intel is supportive of market-orientated mechanisms for spectrum assignment. These have a higher propensity for revealing firms' real valuation (and consequently their utility) for accessing spectrum, and Intel believes that firms are more likely to use spectrum more efficiently in the event that they have incurred a market-related price for the valuation of spectrum.



## *Summary*

- 63 Overall, Intel is broadly supportive of market-orientated mechanisms for the broader reform of the electronic communications industry. The policy of managed liberalisation has aptly demonstrated its deficiency in being responsive to technological innovation which has constantly surpassed the ability of regulation to effectively adapt to numerous structural changes in the sector. Indeed, several policy pronouncements in the recent past have signalled Government's preference for market-led reform which encourages firms to competition on the merits. Intel believes that long-run welfare enhancing competition is better attained through the explicit promotion of facilities-based competition and the discussion above ably reflects the numerous experiences which support this contention. More importantly, Intel is of the view that the attainment of universal broadband adoption which tends towards such services being affordable is fundamentally premised on competition on the merits where a multitude of platforms offer innovation and network-based service differentiation.
- 64 Equally, a critical area of policy which urgently requires reform is the overall administration of spectrum. The command-and-control mechanism for spectrum administration has also been inept at being sufficiently responsive to the innovative means in which spectrum usage has been driven by advances in technology. Agility, flexibility and adaptability in spectrum administration has become the cornerstone of extracting more efficient spectrum usage. Further, appropriate spectrum reform initiatives that are premised on embracing market-orientated mechanisms are inherently efficiency-orientated and more prone to facilitating the attainment of Government's overall policy objectives.



## POLICY QUESTIONS

1. **Should policy promote either a facilities-based or service-based competition environment? Alternatively is there a case for a hybrid competition environment in which both these modes exist?**

Intel believes facilities-based competition would best benefit South Africa and her citizens. Allowing operators to compete at the facilities level will best stimulate broadband adoption and encourage more affordable prices and service for the consumers. Studies show positive effects of facilities competition on penetration, cost investment and access. To correct for low penetration, policy intervention should prioritise universal service and access rather than a choice between the two modes of competition. Universal service instruments for broadband adoption include universal service funds, grants, and the elimination of taxes on subscriptions and devices, supported with Public Private Partnerships amongst stakeholders to stimulate service and demand.

**Figure 1** below reflects research findings using proxies to determine the relative strength of both competition modalities and their respective propensity for certain market outcomes:



**Figure 1: Econometric analysis on correlation of market outcomes and competition modalities**

Measurement	Services-based competition	Facilities-based competition	Analysis
<b>Access</b>	No correlation	Statistical significance	Kittl, Lundborg and Ruhle (2006), Sidak and Hausman (2007)
<b>Price</b>	No correlation	Strong statistical significance	Kittl, Lundborg and Ruhle (2006), Sidak and Hausman (2007)
<b>Penetration</b>	Weak statistical significance	Statistical significance	Kittl, Lundborg and Ruhle (2006), Sidak and Hausman (2007), Bourreau, Dogan and Manant (2010)
<b>Investment</b>	No correlation	Strong statistical significance	Crandall, Ingraham and Singer (2004), Hazlett and Bazelon (2005), Hausman and Sidak (2007), Crandall and Sidak (2007), Grajek and Roller (2009), Bouckaert, van Dijk and Verboven (2010)

**2. What mechanisms are required to ensure effective co-ordination of broadband infrastructure planning and roll-out?**

See discussion above on universal broadband.

**3. Notwithstanding current policy interventions to promote availability and access in the under-served areas, the local loop remains a great challenge. Should LLU policy be advanced, and if so, what are the principles which should underpin LLU policy?**

No comment.



**4. What other policy interventions can reduce the Significant Market Power (SMP) of the oligopolies in the South African communications sector?**

Intel believes that a deliberate promotion of facilities-based competition and the adoption of market-orientated policies which liberate the electronic communications market ought to be complemented by the Authority's commitment to implementing *ex ante* regulatory interventions where there exists enduring market failure.

**5. What considerations should inform the new policy and regulatory regime concerning the spectrum management taking into account the anticipated revision of the frequency spectrum regime? Is there a need for a separate agency to regulate spectrum?**

The command-and-control mechanism for spectrum administration has also been inept at being sufficiently responsive to the innovative means in which spectrum usage has been driven by advances in technology. Agility, flexibility and adaptability in spectrum administration has become the cornerstone of extracting more efficient spectrum usage. Further, appropriate spectrum reform initiatives that are premised on embracing market-orientated mechanisms are inherently efficiency-orientated and more prone to facilitating the attainment of Government's overall policy objectives.



## **CHAPTER 6: DIGITAL INFORMATION AGE: E-SERVICES AND CYBERSECURITY**

### **Introduction**

- 65 The comments which Intel shall advance in relation to this chapter of the Green Paper are narrowly confined to setting-out the guiding principles and appropriate policy stance for cybersecurity. Intel believes that this is a critical focal area for ensuring confidence and security in critical infrastructure used for accessing the internet and further using it for conducting commerce, transacting and communicating. Further, a robust enforcement mechanism which safeguards a common appreciation of privacy as a lawful entitlement which should be afforded to private citizens and corporations is indispensable. Data protection principles which also safeguard the integrity of communication form part of the broader concern for securing the transmission of data and information throughout the internet. Therefore, the guiding principles for cybersecurity policy become important in combating the dynamic threats posed to the integrity of the critical infrastructure constituting the internet.
- 66 Intel believes that the broad guiding principles set-out below ought to constitute the essence of any cybersecurity policy which promotes privacy and data protection rights. The key tenets to these guiding principles is the need for cybersecurity to be responsive to the constant evolution and significance of threats, to be forward-looking in anticipating future threats and risks and be governed by common principles which are not static but proactively managed by stakeholders, particularly the market.



## Cybersecurity policy guiding principles

- 67 ***Cybersecurity regulation and policy should be technology neutral and not prescriptive.***

Building on the approach outlined above, the cybersecurity policy should not mandate the acquisition or deployment of particular technologies, technical solutions or tools, nor should it mandate how such technologies are designed or built, or favour one technology or business model over another. Focusing on normative, business process, and risk management processes rather than prescriptive technology solutions will preserve the flexibility owner/operators need to deploy, and update innovative security measures tailored to the specific and evolving threats they face.

- 68 ***Dynamic cybersecurity risks call for flexible and agile risk management based solutions.***

Cyber security risk is dynamic – we face a constantly evolving threat landscape, and we must develop best practices to help mitigate those shifting risks. Policy should enable companies to prioritize and focus on the most serious threats to their most critical assets, systems, and processes based on their particular industries and businesses; there is no “one size fits all” approach or “checklist” model that will work for everyone in all circumstances.

- 69 ***Cybersecurity policy should leverage existing global cybersecurity standards and best practices.***

This entails that further developments ought to be premised on existing voluntary cybersecurity standards and best practices which have been developed through consensus. There is no shortage of such existing standards and best practices. Policy should foster broad dissemination of foundational security standards and best practices.



70 ***International alignment and harmonization.***

Cybersecurity policy should align with global standards and best practices, and one of our collective goals should be to develop a regulatory framework based on common guiding principles that is replicable and capable of being used globally, adopted by global commercial providers, as well as in other countries.

71 ***Security is an evolutionary normative notion, not a static concept.***

Cybersecurity policy must support delivery of the business capability of organizational security, allowing businesses to dynamically assess and apply security measures and solutions as appropriate so as to address risks. Focusing on desired security outcomes affords critical infrastructure owners/operators the requisite flexibility to prioritize and manage risks to achieve a baseline level of security.

72 ***Continuous improvement of best practices.***

The policy should have sufficient flexibility which permits a constant appraisal allowing for updating so as to continuously adapt the best practices and keep pace with evolving and accelerating threats.

73 ***Cybersecurity policy should be sensitive to common privacy and data protection principles.***

The policy must necessarily be guided by a common appreciation of the fundamental tenets of the right to privacy and data protection, including the internationally recognized Fair Information Practice Principles rather than a single jurisprudential conception of privacy or data protection.



74 ***Cross-sector harmonization and application of a common regulatory framework.***

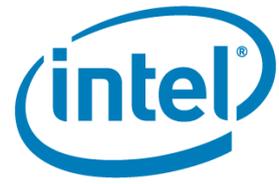
Identifying commonalities in the various risk management frameworks across different sectors is challenging, but attempting to harmonize these standards and best practices at a baseline level can help produce a security responsive framework to improve cybersecurity across the critical infrastructure.

75 ***Cybersecurity policy should be designed to harness innovation and avoid imposing overly-prescriptive mandates; over-prescription would retard technology innovation required for greater security.***

Cybersecurity solutions must reflect the fact that emerging threats and the technology needed to deter them must often change faster than the regulatory process can keep up. Organizations must be positioned to respond to fast changing threats using the most current, effective solutions. Cybersecurity policies must be designed to encourage the innovation necessary to respond to changing threats and to enable organizations to avail themselves of those solutions.

76 ***Any cybersecurity regulatory framework should focus on the most critical facilities such as vital cyber-physical systems that control core critical infrastructure and whose failure could result in mass casualties, a significant national security incident, or a catastrophic halt of economic markets.***

In doing so, government and industry resources – money, time and cyber-expertise – can be focused where they are most needed and ensure minimal conflicts with other regulatory regimes. An overly broad scope could capture many unnecessary elements of the Internet economy and its customers, spread resources too thin, and defer or delay other investment decisions related to security. The Internet, information services, the IT industry and



software and hardware products – even if hacked -- cannot likely cause a mass casualty event, lead to catastrophic physical destruction. These entities would best be governed by **voluntary codes of conduct**, ideally developed by interested stakeholders. Codes of conduct will best be designed to be consistent with global norms and practices to ensure they work globally.

- 77 ***Where needed, standards should not be dictated by government but rather developed collaboratively between the public and private sectors.***

Doing so will bring the best, most current thinking to bear in resolving issues and developing standards and result in the least burdensome tools to achieve security goals. Such an approach also will foster the dual goals of protecting safety and promoting economic growth, innovation, competitiveness and job creation.

- 78 ***Cybersecurity is a shared responsibility, but industry should lead.***

Private industry is already involved in significant efforts around best practices via consortia and other arrangements. By capitalizing on the private sectors deep familiarity risks, solutions, and impacts on systems, government/private sector partnership can be most productive and effective, enhancing security while creating an environment where innovation can flourish.



## **POLICY QUESTIONS**

- 1. Are the regulatory mechanisms adequate to protect consumers in the e-commerce environment?**

No comment.

- 2. What kind of effective institutional arrangements should be in place to build a robust e-commerce environment in South Africa?**

No comment.

- 3. Are the current legal measures adequate to deal with cybercrime in South Africa?**

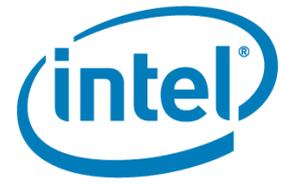
No comment.

- 4. What institutional arrangement (s) are required to deal with cybercrime both nationally and regionally?**

No comment.

- 5. What are the best tools for fighting cybercrime, in terms of policy, regulations and institutions? What other issues should be considered in dealing with cybercrime in South Africa?**

See discussion above regarding the guiding principles for an appropriate cybersecurity policy.



## CHAPTER 8: BROADCASTING

1. **What new regulatory approaches should be adopted to support innovation, access to affordable services and the creation and promotion of a diverse range of high-quality South African public interest programming to all audiences?**

***Near-term regulatory approaches should focus on accelerating the analogue-to-digital terrestrial broadcast transition and on fostering the availability of cost-efficient high-bandwidth broadband services to all South African citizens***

Intel believes that, at the present point in time, the quoted interests would best be served by regulatory and policy approaches that focus, on the one hand, on accelerating the analogue-to-digital terrestrial broadcast transition and, on the other hand, on fostering cost-efficient high-bandwidth broadband access to all.

Experience in other countries has shown that a successful analogue-to-digital broadcast transition, including access for consumers to cost-efficient reception equipment, is fundamental for making a broad and diverse range of programming available to all audiences.

At the same time, the digitization of terrestrial broadcast infrastructures will offer the potential to free up spectrum for delivering additional, non-linear content services to consumers. It is likely that mobile Internet services will remain the winning formula for furnishing the country at large with access to Internet services – on mobile devices and, via dongles, for in-home devices. Boosting the availability of a broad and diverse range of Internet-delivered content services will require spectrum for sufficient bandwidth for the transport of video services. In the interest of the quoted policy goals, governmental policy can and should play a key role in fostering and stimulating broadband Internet access for all.



***Intel recommends a cautious regulatory approach to convergence. Ex-ante regulation is likely to stifle innovation and should be avoided.***

Intel believes that regulatory approaches towards tackling opportunities and possible risks associated with convergence would currently be premature and risks deflecting focus and resources from the prerequisite imperatives explained above.

But also on a wider time horizon, Intel would recommend a cautious regulatory approach to convergence: It is true that regulatory frameworks get challenged when TV services and Internet services get combined on the same device because, as in many other countries, those services have traditionally been governed by separate regulatory regimes. This will doubtlessly require adaptation of the regulatory framework over time. However, markets in the space of convergent services and devices are at best emerging or nascent at this point in time, so that any measures contemplated or introduced in the near term would represent ex-ante regulation. The introduction of ex-ante regulation is a significant intervention and would limit the market's ability to innovate. Worst-case, this would stifle the market's momentum towards providing novel, richer, more flexible and more diverse content offerings to South African consumers. Therefore, ex-ante regulation should only be contemplated when there is clear evidence that markets will otherwise not meet policy goals. Intel believes that there is currently no such evidence.

Convergence will doubtlessly re-shape the market, question established business models and bring novel business models to fruition but, fundamental as these changes may be, they will not necessarily result in market distortions. In Intel's experience, in particular measures directed towards protecting legacy business models generally have greater risk of causing, rather than avoiding market distortion. It is true that convergence will likely pose new challenges to some established players because they have to compete in a broadened environment. Such challenges,



however, will lead the overall eco-system to innovate, and that will ultimately benefit consumer choice. In the circumstances, Intel therefore believes that it would be premature to design regulation for the emerging market for convergent content services at the present stage.

***In the short-run, new service providers may require regulatory protection to gain competitive access to highly popular South African and general public interest content***

With regards to South African and public interest content, Intel notes that the Green Paper lays out that the program offering from all tiers of television services (public, commercial and subscription) already includes a vast array of South African content, and where applicable, quota for South African content are exceeded. We believe that this goes to show a significant consumer pull for local content. One could hence well imagine that the regulatory regime on quota for broadcast services could be relaxed over time. Instead, to the extent that certain public-interest content may well become a “must-have” for service providers to compete, measures could be needed to ensure that new providers of broadband and convergent services are able to gain access to this content.

**2. Is there a need to review the definition of broadcasting services, given the changing environment, in order to ensure that identified public interest objectives for the sector are met? If so, how?**

Intel believes that there is currently no need to review the definition of broadcasting services. As the Green Paper points out, the prevailing statutory dispensation has established a technology neutral definition of broadcast services. Intel believes that this is important and adequate and makes the current definition future-proof.

The differentiation between linear and non-linear services that the definition implies will continue to make sense in view of identified public interest objectives, even in a



fully converged environment, since the level of control of the consumer will remain fundamentally different between linear and non-linear services.

- 3. How should policy ensure that there is a diversity of services and content and that audiences have access to international, national, provincial and local news, information and other programming of relevance to them given that new services will not be limited to specific license areas?**

As the paper rightfully lays out, convergence will lead to an increasing abundance of services offered to audiences, especially when new services are not limited to specific license areas. Policy should foster and encourage innovation in services and in the manner in which they are delivered and presented to the audience. We refer to our response on question 1 for further detail.

- 4. What key issues should be considered in relation to spectrum allocation to ensure that the public interest, cultural, social and economic objectives linked to audio-visual and audio content services are met?**

Intel has extensively addressed matters pertaining to spectrum reform under Chapter 5 of the Green Paper.

- 5. What objectives should the SABC prioritise? How should the mandate of the SABC, as described, be funded? Are the current funding arrangements adequate to fulfil all the requirements placed on the SABC in law? What should be the role of government as the shareholder of the SABC on behalf of the public be?**

No comment.



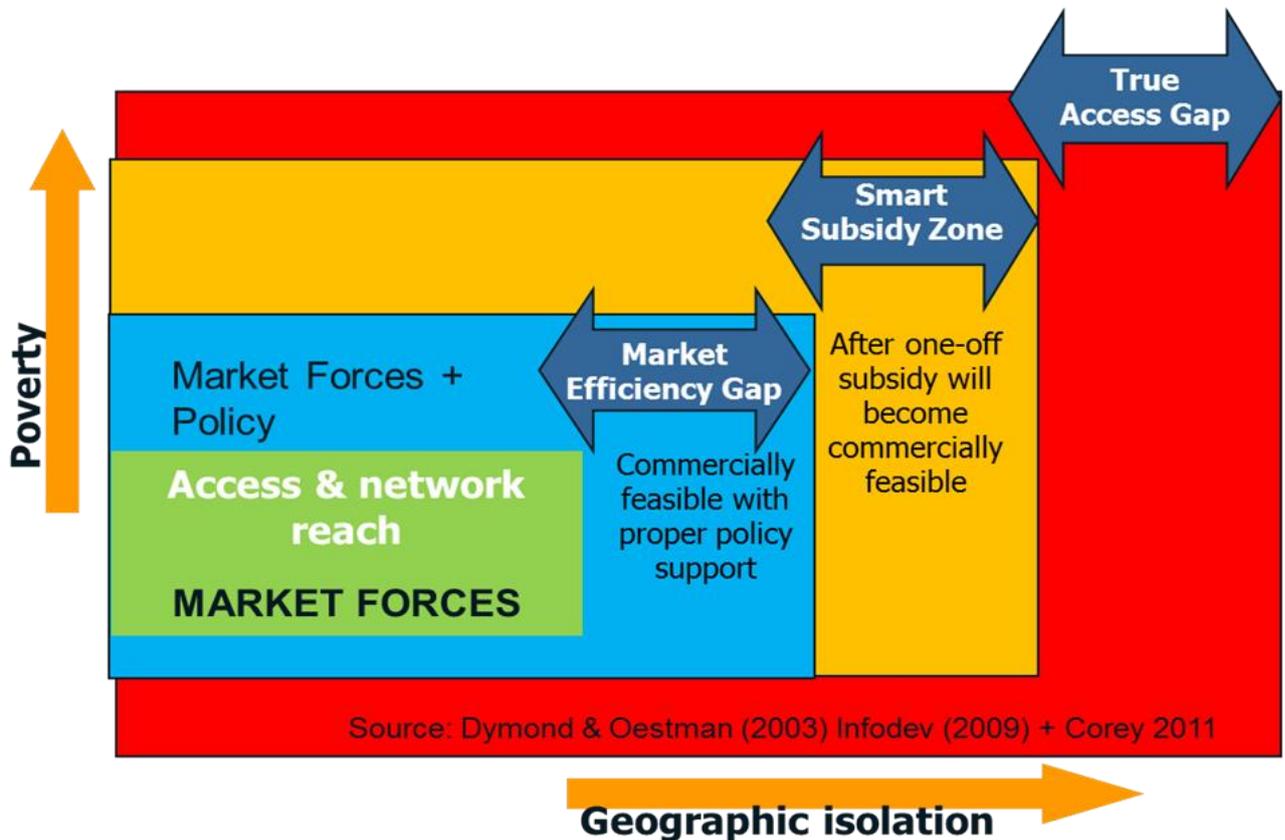
## CHAPTER 9: UNIVERSAL ACCESS AND SERVICE

### Introduction

- 79 When market forces are not sufficient to create adequate broadband coverage, typically a problem in remote areas, USFs and other subsidies are required to facilitate the availability of broadband services. Many USFs have been transitioned from traditional telecommunications infrastructure to support broadband adoption. Funding programs that include content, devices, training, and service, in addition to infrastructure are required to enable all of the elements needed to unlock the benefits that broadband and ICT provide.
- 80 Universal Service is an important tool to subsidize telecommunications connectivity for underserved and/or high cost areas. Many countries – both mature and emerging – have established a universal service fund to support these subsidies, yet research shows that a majority of the funds are extremely underutilized, especially in developing countries. Intel supports the development and reform of universal service fund programs around the globe to help expand benefits to consumers. Intel seeks to have Governments establish or expand the pool for universal fund distributions beyond traditional telecommunications to include broadband.
- 81 Below is a graphic illustration of Intel’s reflection regarding the drivers for the existence of *access gaps* and an illustration of the causes for the market failure.



Figure 1: Causes and drivers for access gaps



82 Further, **Figure 1** reflects the market efficiency gap, where market forces need a stimulus in the form of either a specific market gap program, or a one-time subsidy so as to initiate traction. In the second case, a true access or service gap may exist, typically in very remote areas, where a more elaborate and longer running subsidy program may be required.

*Interaction between demand-side and supply-side programs for broadband take-up*

83 A combination of demand-side programs utilizing USFs, tax reductions, or other subsidies may be used to subsidise the initial uptake for broadband services so as to make them more affordable while supply-side programs



aimed at expanding electronic communications networks and services to the wider population in the shortest possible time is equally important. These programs ought to be viewed as being complementary and mutually reinforcing. From a demand-side perspective, Intel has been particularly active in extensively involved in the following initiatives:

- ICT skills development and digital literacy programs;
- E-Commerce promotion to increase broadband adoption by businesses;
- E-Learning programs targeting underserved groups (elderly, disabled, etc.);
- Creation of locally relevant and localized digital content; and
- Implementation of National 21st century education programs utilizing broadband and ICT.

### *Summary*

84 The principles set-out below are the principles which Intel views as indispensable for increasing universal access and service, particularly for broadband services.

85 **Intel advocates establishing a universal service fund for broadband service and equipment and the immediate transition of existing universal service distributions from basic telephony to broadband.**



Ideally, Intel supports universal service programs be funded by general taxation revenue. In the event that funding from general taxation revenue is undesirable, as a second-best preference, **Intel supports raising universal service funds from a comprehensive, fixed charge on end users** (as opposed to distortive usage-based charges).

86 **Intel supports the use of universal service funds for broadband deployment and operations**, particularly in remote regions where build-out has been cost-prohibitive.

87 **Intel also supports the use of universal service to advance demand-side goals** (*i.e.*, increase broadband adoption). To this end, we support the use of universal service funds to help fund broadband service and equipment (*e.g.*, PCs and other consumer broadband devices).

88 **Intel supports market-based mechanisms, such as reverse auctions, to award universal service funding** on a technology-neutral and competitively-neutral basis (as opposed to inefficient, market-distorting distribution mechanisms).

## **POLICY QUESTIONS**

1. **What strategies for increasing the affordability of access to ICTs, particularly for low-income users, should be adopted and how should the cost of providing services to needy communities and government institutions, particularly schools and clinics be reduced?**

Broadly, USFs should be used as targeted and time-bound instruments to incentivize private sector investment in identified service gap areas, managed in a transparent manner, and reviewed annually. Further, USFs should be deployed in a



competitively and technically neutral way in consultation with industry and civil society. Recently countries have been utilizing USF's to connect and equip students with Broadband, devices, and content. In Malaysia over 1.5 million low income students were provided broadband subscriptions and devices, and Turkey is utilizing USF and other subsidies for a national education transformation program, including curricula, content, and equipment, along with broadband for the schools.

With regards to subsidies for schools and clinics, Intel believes that the current dispensation regarding e-Rate as set-out in the Electronic Communications Act, 2005 ought to be reviewed and further expanded. The current e-Rate program is significantly limited in its scope and effectiveness in addressing infrastructure availability for potential beneficiaries of the scheme. Intel is of the view that while the only category of potential beneficiaries are limited to schools, this ought to be significantly broader and include other public institutions which require broadband services for their core function such as public libraries, clinics, hospitals, correctional facilities and police stations. Intel believes that the expansion in the scope of the e-Rate scheme and the discount value which is attached to it would be a significant contributor to the overall reduction of costs for the provision of essential services and avail the benefits generally associated with broadband services to a much broader range of persons.

**2. How should government take responsibility for all types of UAS across the ICT sub-sector, telecommunications, broadcasting and postal services?**

No comment.

**3. Should the universal access and service obligations continue in their current format? Are they sufficient for addressing the universal access challenge in light of new technological and market realities in South Africa?**



No comment.

4. **In a converged environment, should there be differences in the treatment of operators in the different sub-sectors (broadcasting, telecommunications and postal) insofar as USAO and the USAF are concerned?**

No Comment.

5. **Are the roles of USAASA, MDDA and ICASA still relevant given developments in the sector?**

See further Intel's views regarding institutional reform and design in Chapter 12.



## CHAPTER 11: SKILLS DEVELOPMENT FOR THE FUTURE

### Introduction

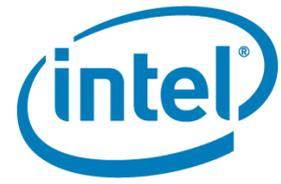
89 Intel believes that critical to the advancement of a knowledge-based economy which is premised upon ubiquitous availability of broadband services is the capacitating of citizens with the necessary digital literacy skills to take advantage of the vast benefits offered by technology. The many possibilities availed by the optimal usage of broadband services lies in users being sufficiently equipped with the necessary skills.

### *Digital Literacy*

90 Many Governments through their IT policy call out for the need of inclusive growth in multiple instances. Inclusive growth however cannot materialize without Equal Access and the build out of the information Infrastructure in South Africa which will need strong participation from government and the industry.

91 The policy framework should encourage scalable investments in broadband deployment and make technology readily accessible, while industry needs to understand the consumer needs, identify existing gaps and build projects and solutions to bridge these gaps. Unprecedented collaboration amongst the government, industry, academia and society is required to build out South Africa and Africa in general, information infrastructure urgently in order to boost national competitiveness.

92 As we go down the socio-economic and demographic pyramid, the single most important driver for faster adoption of the internet will be how internet usage



can boost productivity and impact livelihoods. For instance, showing a farmer how the internet can provide relevant details like weather, market pricing and elimination of the middleman to sell his crop directly will trigger faster adoption.

- 93 Digital Literacy will play a critical part in creating this awareness. Digital Literacy does not imply knowing complex computer skills but refers to how technology can help citizens improve job skills, access better education or healthcare and government services and use technology in a way that can impact their livelihood and personal growth.
- 94 The government and industry must redesign skill training focused on relevant areas like education, financial transactions, agriculture, health care and government services to demonstrate speedy action. There is an urgent need for the collective creation and dissemination of relevant programs to improve Digital Literacy and empower citizens to use technology for personal growth, which will ultimately lead to growth of communities and help in nation building. The government and industry must work together to enable the skills training focused on relevant areas like education, financial transactions, agriculture, health care and government services.
- 95 In one example, the India government through their ICT policy plans to have at least one person in every household to be digitally literate, Intel, working with NGOs, companies, and the government established the national digital literacy mission, a public private initiative to get more citizens online. The effort involves many from the private and public sector contributing time and resources to train citizens in remote areas on the effective use of broadband



and ICT. Further, Intel possesses digital literacy tools which may be of assistance in attaining the Government's digital literacy objectives.<sup>19</sup>

- 96 With that in mind we recommend the creation of a national Digital literacy focus and program which can model what was done in India. The India National Digital Literacy Mission Programme is a dynamic and integrated platform of digital literacy awareness, education and capacity programmes that will help rural communities to take lead in the global digital economy and help them in maintaining the competitiveness and to shape a technologically empowered society.<sup>20</sup> This could be a public private partnership that Intel can help facilitate with the ecosystem of NGO's and industry.

## **POLICY QUESTIONS**

- 1. How can South Africa maximise its human e-Skills capital to take advantage of new technologies to become a more effective part of the Knowledge Society?**

No comment.

- 2. What strategies can be put in place to meet the sector's human resources needs?**

No comment.

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<sup>19</sup> <http://www.intel.com/content/www/us/en/education/intel-easy-steps.html>

<sup>20</sup> See further <http://defindia.net/national-digital-literacy-mission/>



## CHAPTER 12: INSTITUTIONAL ARRANGEMENTS

### Introduction

- 97 The optimal functioning of regulatory institutions within a constitutional democracy is premised on the design of such institutions so as to guarantee that they operate in an accountable manner and that their decision-making functions reflect institutional credibility. This institutional credibility reflects the non-existence of institutional capture and further reveals the institution's entrenched independence. In some instances, as in South Africa, the institutional independence of regulatory agencies is constitutional guaranteed. While there is a general apprehension against the institutional capture of regulatory agencies by regulated firms, the political capture of regulatory agencies equally serves to undermine institutional independence. A manifestation of political capture is the politicization of institutional leadership appointments and the absence of financial independence from the Executive. So, the contemplated reform of regulatory institutions, in general, ought to initially identify the relative strengths and weaknesses of institutions from an operational efficacy perspective. Recommendations and proposals for reform must then necessarily aim to enhance institutional credibility, secure institutional independence and negate regulatory capture whilst ensuring that the institutional leadership also have credibility and the necessary experience to discharge their functions.
- 98 An important function of regulation is ensuring that there is certainty and predictability of regulatory outcomes to the market. This is an important feature of regulatory credibility since regulated firms form medium to long-term expectations and financial commitments based upon regulatory commitments



to certain policy outcomes. Where there is regulatory uncertainty and unpredictability, particularly in network industries, underinvestment in network infrastructure materialized, which leads to a long-run infrastructure deficit which may take years for policy intervention to correct.

- 99 Another important feature of regulation which any reform initiative ought to bear cognizance of is that regulation is inherently static. Further compounding this are policy implementation lags, while technological evolution, particularly within the ICT industry pressures the ability of regulatory intervention to remain relevant at all times. While constant review of regulatory frameworks and policy objectives in the face of rapid technological evolution may countenance the static nature of regulation, it is equally important that regulatory institutions are conferred with considerable discretion in their decision-making ability. This discretion enables regulatory institutions to be flexible and adapt to the changing market dynamics which are driven by technological innovation.
- 100 The means by which this discretion may be conferred upon regulatory institutions, particularly within constitutional democracies, is through *parliamentary delegation*. It is common cause that the exercise of administrative power by a regulatory institution is conferred through powers delegated by Parliament which allow decisions made by regulatory institutions to be accountable before the judiciary as a result of them being made in accordance with the exercise of public power.
- 101 However, the conferment of this discretion is perhaps more important so as for regulatory institutions to have the necessary flexibility to respond to unforeseen contingencies brought upon by technological innovation. This in itself is intended to mitigate against policy implementation lags and regulatory intervention which has been overtaken by rapid technological innovation. This discretion also serves another important function: the avoidance of regulatory



institutions engaging in time-inconsistent decision-making, which creates regulatory uncertainty and unpredictability.

102 There are various institutional design models for regulatory institutions and it is beyond the scope of Intel's submission to discuss these exhaustively.<sup>21</sup> However, at the heart of discussions concerning the reform of institutions so as to secure optimal performance are the trade-offs between the degree of institutional autonomy and the extent to which there exists accountability, the composition of the institutional leadership and executive structure and the features of the enforcement mandate.<sup>22</sup> Furthermore, a clear allocation of roles and responsibilities enables a more systematic evaluation of institutional efficacy in the discharge of mandates. Kovacic has made the following observations regarding the necessity of allocating roles and responsibilities clearly where there are multiple regulatory agencies required to operate in a coordinated manner:

*"...uncertainties in the allocation of matters (especially where the agencies contest the right to review a matter); the subdivision between the DOJ and the FTC of enforcement activity in certain sectors given the danger that both agencies lack the cumulative experience to advance as fast down the learning curve as they would if a single body examined all relevant matters; inconsistencies that may arise when the agencies apply dissimilar standards to review business conduct; and the loss of policy coherence and squandering of resources that occur*

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<sup>21</sup> See further William Blumenthal, *Models for merging the US antitrust agencies*, Journal of Antitrust Enforcement (2012), 1 – 28. See also Peter Freeman, *The Competition and Markets Authority: can the whole be greater than the sum of its parts?* (2012) Journal of Antitrust Enforcement, 1 – 20.

<sup>22</sup> See further William E. Kovacic and David A. Hyman, *Competition agency design: What's on the menu?* George Washington university Law School Legal Studies Research Paper No. 2012-135



*when the agencies wrestle for control of specific matters or the larger policy agenda.*<sup>23</sup>

103 However, the evaluation of the overall performance of administrative bodies is inherently a complex exercise. Within the context of assessing the relative effectiveness of administrative bodies, Wright and Diveley have observed that:

*“Very little has been done to measure the performance of administrative agencies. Evaluations have been conducted both qualitatively and quantitatively. Richard Posner, in a 1969 article, argued that FTC (Federal Trade Commission) hearing examiners were less efficient than federal district court judges in part due to a misconception about virtues and vices of federal regulation. Kovacic has argued that appointed FTC commissioners have systematically failed to meet the qualifications Congress expected when establishing the FTC. Such failure has contributed to the perception that the FTC is underqualified when it comes to specialised antitrust decision-making.”*<sup>24</sup>

104 These are real and significant considerations that require extensive deliberation so as for the allocation of enforcement responsibilities to be determined by an informed appreciation of the costs and benefits of adopting any particular model.

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<sup>23</sup> William E. Kovacic, *The Institutions of Antitrust Law: How Structure Shapes Substance*, 110 Michigan Law Review (2012) 1019, at 1034.

<sup>24</sup> Joshua D. Wright and Angela M. Diveley, *Do expert agencies outperform generalist judges? Some preliminary evidence from the Federal Trade Commission*, Journal of Antitrust Enforcement (2012) 1 – 22, at 6 – 7.



*Institutional comity and multi-agency enforcement*

105 Where institutional reform entails the devolution and consequential distribution of administrative, enforcement, adjudicative functions amongst several complementary agencies, an important principle which ought to be born in mind is *institutional comity*. This amounts to the equilibrium which exists between two or more agencies which operate collaboratively and whose functions and statutory mandates are complementary and mutually reinforcing. In some instances, though not all, these agencies may have concurrent enforcement jurisdictions. It has become a common practice for sector-specific regulatory institutions to assume some *ex ante* competition law or antitrust enforcement competency in conjunction with the *de facto* antitrust regulatory agency. In these instances, concurrent jurisdiction arises and the manner in which the enforcement mandates for both institutions are carried out greatly depends on mutual collaboration and a great deal of administrative deference that each agency affords to each other in the discharge of their functions. All of this typifies institutional deference. Kovacic describes the delicate exercise of sustaining institutional comity where there are institutional reform proposals:

*“Changes in one aspect of the antitrust system tend not take place in isolated, watertight compartments. Instead, they tend to influence the operation of other features of enforcement and policymaking. These “spillovers” can have profound systemwide effects that may not be immediately apparent in contemplating a single change to a single variable of the existing regime.*

...

*To consider possible adjustments to an existing antitrust system, the analyst must understand the intricate, elaborate, and often-hidden*



*circuitry that connects the entire enforcement framework. By a process of what Professor Stephen Calkins calls “equilibration”, adjustments in one element of the antitrust system can be accentuated or offset by changes in another element. A measure intended to alter variable A may affect variables B and C in ways that negate or diminish the adjustment anticipated in A.”<sup>25</sup>*

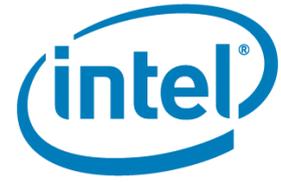
### *Summary*

106 The issues raised above form an integral part of the overall assessment which is necessary for well-informed institutional reform. Further, a cost-benefit analysis is indispensable in appreciating the overall desirability of adopting a specific institutional model. This allows the decision-maker to fully appreciate the approximate costs and benefits which a particular institutional model would yield, and undertake a relative comparison with other model prior to making an election of a model.<sup>26</sup> Given the complexities involved in such an exercise, it ideally ought not to be undertaken in haste and driven by unrealistic timelines.

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<sup>25</sup> *Supra*, at 1026.

<sup>26</sup> For a more elaborative discussion on this issue with particular reference to recent Spain’s regulatory reform, see further Francesc Trillas, *The institutional architecture of regulation and competition: Spain’s 2012 reform*, PPSRC-IESE working paper WP-1067-E, April 2013.



## POLICY QUESTIONS

- 1. How can the provisions of ministerial policy directives be improved without undermining the independence of ICASA? What changes would safeguard the regulator's independence and at the same time ensure transparent interaction between ICASA and government? What other mechanisms could be used to ensure alignment between policy and regulation?**

Intel does not believe that there are any significant deficiencies in the structural relationship between the Minister and the Authority in as far as each branch of government interacts with each other. In this regard, the Electronic Communications Act, 2005 adequately delineates the respective competencies of the Minister and the Authority. The Electronic Communications Act, 2005 further places a positive obligation on the Authority, when exercising its powers and discharging its duties, to consider ministerial policy directives. Although this obligation ought to suffice in constraining the Authority's discretion in the exercise of its powers, the obligation may be further strengthened and the Authority's exercise of its discretion may be amplified where this trade-off is mutually reinforcing. That is, the Authority ought to retain the broad discretion which enables it to consolidate its institutional independence and avert institutional capture, while at the same time being accountable for the translation of policy objectives (expressed as ministerial directives) into regulatory outcomes.

Of course, the ministerial policy directives ought not to be incapable of translation into regulatory outcomes, or be incapable of implementation and subsequently be unlawful. Further, ministerial policy directives may be capable of finding expression into regulatory outcomes in various ways and the flexibility and broad discretion of the Authority in this regard becomes vitally important. So, at the very least, the Authority ought to lawfully elect not to give effect to a ministerial policy directive where doing so would be *ultra vires* and violate the rule of law. In these instances, Intel believes that the positive obligation placed on the Authority to consider ministerial policy directives ought to extend to it providing reasons for its election not to give effect to



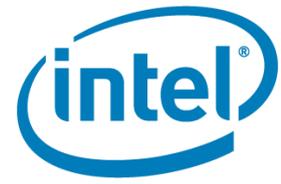
same. Further, the obligation to provide reasons ought to be similarly extended to cover instances where the Authority elects to exercise its powers in a manner which is not wholeheartedly consistent with the ministerial policy directive.

Intel believes that this proposal adequately strikes the balance between on the one hand maintaining the Authority's institutional independence with the concomitant broad discretion necessary to be flexible, while on the other hand creates conditions which foster enhanced accountability for giving effect to policy objectives. This, Intel believes, may be achieved through appropriate legislative formulation.

**2. Is the existing structure of ICASA appropriate to regulate the converged environment? How should ICASA be funded?**

Intel believes that successive legislative reformulations have in fact operated to create *institutional convergence* which is a necessary response to *technological convergence*. In turn, *statutory convergence* has embodied the manner in which the complementary enforcement and decision-making functions of erstwhile fragmented regulatory institutions are derived from a single statute. In this regard, the convergence of the Independent Broadcasting Authority and the South African Telecommunications Regulatory Authority so as to create the Authority in 2000 and the subsequent incorporation of the Postal Regulator into the Authority in 2008 reflects institutional convergence. This convergence reflects the consolidation of enforcement and decision-making functions which are capable of application in complementary sectors such as the broadcasting industry, telecommunications industry and postal services industry.

With regards to the appropriate funding model for the Authority, Intel believes that any such model ought to strengthen, rather than weaken institutional independence and entail some form of financial independence so as to avoid the possibility of political capture. Further, it ought to be sufficiently flexible and enable the Authority to operate in a dynamic manner while being responsive to the rapidly changing environment



which it regulates. This would entail *inter alia* having the ability to be responsive to the compensation and remuneration trends observable in the labour market so as to retain and attract skilled personnel, and having sufficient capital to meet the technical requirements for modern software and hardware which has increasingly become indispensable in the market-orientated management of the radio frequency spectrum.

**3. The provisions dealing with universal service and access are contained in all the communication laws and policies. Is the institutional arrangement between the decision-makers adequate to fulfill the universal service and access provisions?**

Intel strongly believes that there is insufficient institutional comity between the Authority and the Universal Service and Access Agency of South Africa (“**the Agency**”) regarding the desired complementarity which would result in better coordination of policy mandates. In fact, upon a cursory perusal of the governing statutes, the Agency does not possess a clearly defined purpose and has not been conferred (through Parliamentary delegation) any substantive regulatory decision-making powers. Further, while there exists the ICASA Act which clearly articulates the functions, duties and powers delegated to the Authority, and its functional structure and overall regulatory responsibilities, no such founding statute exists for the Agency. Instead, a mere chapter in the Electronic Communications Act is all that exists concerning the operational existence of the Agency and any mandate that it has.

Prior to the implementation of any reform initiative intended to correct the current situation, it is important that such an exercise be preceded by a thorough examination of the effectiveness of the Agency and the Authority. Allied to this, a reconsideration of the desirability of having more than one agency responsible for the same subject-matter of regulation would be critical. Lastly, an evaluation of the transaction costs inherent in regulation, and the costs and benefits of either having a devolved institutional arrangement or a single regulatory institution ought to be an important



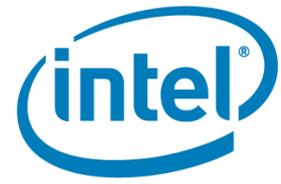
consideration in the final choice concerning institutional arrangements. Intel believe that this exercise ought to be undertaken urgently, the outcomes of which ought to serve as concrete proposals in the contemplated Discussion Paper.

4. **The provisions of the Electronic Communications Act on Universal Service Fund separate the management of the Fund from the determination of under-serviced areas. The definition of needy persons is also separated from the management of the Fund. Is this the best mechanism to promote effective use of the Fund? What measures can be developed to foster cooperation?**

See answer to question 3 above.

5. **The domain names are taking on increasing importance as their commercial value rises, and as global internet and e-commerce increase. Cyber-squatting took on global proportions until regulatory regimes dealt with the registration of names by persons not entitled to them. Should South African names that are intrinsically of national importance of relevance be treated differently from corporate of brand names for reasons of public interest.**

No comment.



## **CONCLUSION**

107 Intel wishes to commend the Honourable Minister for the robustness displayed in the overall endeavours relating to the review of the national ICT policy in South Africa. More importantly, Intel believes that the Honourable Minister's perspective regarding the integrated nature of ICT and the interrelatedness of various aspects of policy is instructive and demonstrates a sound appreciation of the overall complexity of this ICT industry. Intel is hopeful that its contributions to the consultative process shall be well received and looks forward to continuing being a part of the process in the foreseeable future.

**END**