Roundtable on Telecommunications
and the Knowledge Society
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REPORT OF THE ROUNDTABLE ON TELECOMMUNICATIONS AND THE KNOWLEDGE SOCIETY

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Introduction

The Roundtable on Telecommunications and the Knowledge Society was held on 26 May 2006 at the ECLAC Subregional Headquarters for the Caribbean in Port-of-Spain.

The Government of Trinidad and Tobago has articulated a 15-year national development plan which, among other things, has set as a target the attainment of "Developed-Nation Status". The plan, "Vision 2020", not only acknowledges the fundamental role that the application and development of Information and Communications Technologies (ICT) will play, but more importantly, recognizes the critical need to transform Trinidad and Tobago into a Knowledge Society. Additionally, as a signatory to several international agreements, including the General Agreement of Trade-in-Services (GATS), the government also acknowledges its commitments, including, the full liberalization of the telecommunications sector.

The Roundtable was convened against this backdrop. Targeted to telecommunications decision- and policy-makers from government, industry and academia, the forum provided an opportunity to engage technical and expert dialogue on the issue of telecommunications regulation; to facilitate the exchange of views on the regulatory issues which challenge the full liberalization of the sector; and, using the experiences of other jurisdictions, stimulate appropriate analysis and rethink. To facilitate the debate, the Roundtable was divided into four substantive sessions.

Session 1: Transforming Trinidad and Tobago into a Knowledge Society

In differentiating a Knowledge Society from an Information Society, Dr. Kim Mallalieu posited that a knowledge society was one which placed value on knowledge as the means of realizing economic and social well-being. There was the recognition that in such a society, citizens had greater choice and opportunity, deeper social integration and longer life expectancy. Inquiry, research, creativity, the use of modern technology and entrepreneurial leadership were shown to be of great importance. As a result, the critical skills which must be harnessed include literacy, collaboration, innovation, communication, diversity and flexibility. In contrast, information-based innovations were featured as tools for productivity and entertainment in an Information Society, with little or no concern for assimilation, integration nor the application of understanding to innovations.

In the context of Trinidad and Tobago's Vision 2020 plan, Dr. Mallalieu contended that many of the prerequisites of a knowledge society were included. She argued that the Draft National Strategic Plan provided for adequate infrastructure, a vibrant and productive business sector, an absence of traditional obstacles to access, meaningful and appropriate services, and purpose-driven innovations.

Acknowledging that abundant and affordable Internet access, computers in schools and community access to eGovernment services did not make a Knowledge Society, the panelist countered the need for the provision of innovative opportunities for engagement of individuals at all levels of society. Connectivity to people was seen to be as equally important as connectivity to the Internet and knowledge sources. That was identified as being crucial to government's quest to transform Trinidad and Tobago into a Knowledge Society.

In response to the presentation, several issues were discussed. Among them, was the challenge of how to value and market knowledge. It was recognized that while information could be codified, knowledge could not, since it was expressed in the presence of information, thought and cognizance. To establish value for knowledge, one, therefore, had to recognize diversities, capabilities of interest and inclinations. Ultimately, giving citizens purpose and opportunities for personal engagement was suggested as the way to attach value.

It was acknowledged that the creation of a knowledge society did not equate to human development. The typical diffusion of ICT in developing countries was not seen to be getting to the heart of the issue. In particular, models which incorporated initiatives such as the provision of computers within primary schools, and tax concessions on computer purchases, brought citizens into a space that was not always relevant to them.

Further, tacit knowledge was viewed as being of particular importance in human development. Knowledge was viewed as a protected resource that was capable of providing a competitive advantage. It was, therefore recognized that a challenge existed where a culture shift needed to occur within the society, from one of hording to one of knowledge sharing.

Session 2: Spectrum Management in Small Island Developing States (SIDS)

Within the past two decades, there has been a significant increase in the demand for frequency spectrum. Among the primary drivers of the increased demand were the growth in mobile communications and other telecommunications innovations, including terrestrial and satellite-based digital broadcasting, new defense capabilities, and new safety of life applications.[1] As a result, spectrum was viewed as a finite national resource which had to be effectively managed.

It had also been widely accepted that the resource had tremendous value to the national economy. Evidence of that was the experience of the United Kingdom in their 2000 auction of spectrum for the provision of 3G services.[2] The auctioned spectrum was awarded to five licensees, and raised approximately GBP 23 billion, in the first instance.

Within that context, Mr. Selby Wilson shared with participants the evolution which had occurred in wireless technologies since their introduction at the turn of the twentieth century, particularly the minimized interference and increased levels of usage efficiency which now existed. As a result, radio frequency spectrum is used to provide a myriad of services in defense,

[1] Cave, Martin. 2005. Spectrum Management – Case Study on the United Kingdom. ITU
[2] Also known as Universal Mobile Telecommunications System or "UMTS".

industrial, commercial and consumer sectors. Unfortunately, he noted that the legislative and regulatory structures within the Caribbean were largely based on obsolete technologies and did not facilitate the new spectrum needs. As a result, impractical and inefficient methods of spectrum management were typically deployed.

In that context, he identified several challenges which the SIDS of the Caribbean were particularly vulnerable to. Among them were the inadequate institutional arrangements for dealing with evolving spectrum issues, which were as a direct result of the proliferation of wireless technologies; insufficient information on appropriate best practices; and a lack of coordination of spectrum management within the Caribbean. Altogether, a case was made from the harmonization of policies and techniques for spectrum management in the Caribbean.

The Caribbean Telecommunications Union (CTU) had in fact recommended such a framework as part of its response to a mandate from the Caribbean Ministers of Telecommunications, which called for the establishment of a Spectrum Management Task Force. The Framework will provide regional regulatory and policy consistency, and was expected to facilitate an enabling environment, which would eliminate barriers to the smooth functioning of the CSME. Costs and other obstacles which limit the introduction of new entrants into the telecommunications market would be eliminated, thereby encouraging increased private sector investment, as regional markets become more liberalized.

In conclusion, he noted several advantages which were anticipated from the harmonized approach:

1. Minimized inter-service interference among jurisdictions;
2. Ensured compatibility of services among countries;
3. Reduced cost of terminal equipment due to economies of scale;
4. Greater consumer satisfaction and flexibility in the use of terminal equipment;
5. Simplified type approval and equipment certification processes;
6. Unified Caribbean voice at international forums, such as the World Radio Conference.

There was support for the establishment of the Framework from participants, who noted that although the region fell within Region 2 of the International Telecommunication Union (ITU) Table of Frequency Allocation, most jurisdictions were in fact in violation of that allocation. Further, it was noted that while most of the Caribbean was defined in Region 2, the French island territories operated in Region 1, further adding to the challenges of interference, including spillover signals effects from neighbouring jurisdictions. These factors impacted on equipment purchases.

Session 3: The regulatory role of the Telecommunications Authority of Trinidad and Tobago: Issues and challenges

The Telecommunications Authority of Trinidad and Tobago (TATT) was established as an independent regulator in July 2004, with one of its key objectives being the liberalization of the telecommunications sector. Dr. John Prince noted that the established legal and regulatory framework provided that TATT was responsible for granting licenses, while the **Minister** was responsible for making policy and granting concessions.

One of the challenges the Authority faced at the assumption of duties was the need to draft appropriate regulatory instruments. That need was probably best highlighted by the negative effects of not having a spectrum management policy. He noted that spectrum, as a national resource, had an economic function and value. There had been inconsistencies in the pricing policy, with many investors not required to pay for its use.

The Authority was, therefore, in the process of developing several regulatory instruments, including:

1. Consumer rights and obligations policy and regulations;
2. Quality of service policy and regulations;
3. Competition policy and regulations;
4. Pricing policy and regulations;
5. Enforcement, compliance and dispute resolution framework;
6. Universality framework;
7. Number portability.

In the liberalized environment in which Trinidad and Tobago had been operating, he noted that the Authority faced several other challenges. One of them was an insufficient human resources pool and the need to devise ways of making optimum use of the telecommunications talents in the country. He also recognized the need for the Authority to maintain its independence, particularly noting that the institution had to be blind in terms of race, colour, class and creed.

On the issue of liberalization and competition, there was discussion on the implications of allowing the market to determine the economic value of spectrum. It was felt that as a result of the high cost of spectrum, local companies were especially disadvantaged. In response, Dr. Prince noted that one of the implications of globalization was that if one was to maintain competitive relevance, increased levels of efficiency by service providers would be required.

There was also discussion on the number of competitors which Trinidad and Tobago could support. In the area of mobile communications, for example, given its smallness, the question was asked as to whether liberalization had been truly successful. It was suggested that the competitive forces at play were largely instigated out of a fear of the aggressiveness of only one new entrant into the market. Unanswered, was the question of whether real competition could occur within a market of primarily two players.

Taking into consideration ICT for Development, it was recognized that the measure of success for the Authority, in response to the infrastructure which it provided, was the societal changes as measured against the Human Development Index. In that regard, while universal access was attainable, the Authority's emphasis was rather on the delivery of universal service, where the combination of knowledge and infrastructure facilitated a better way of living.

Session 4: The implications of OFCOM's strategic review of telecommunications

Professor Martin Fransman reviewed the British experience with the liberalization of its telecommunications industry. Prior to 1984, when competition was introduced, there was a widely-held view that telecommunications would best be provided on a monopolistic basis.

The new regulator, the Office of Communications (OFCOM), was of the view that competition had not been adequately working in the United Kingdom. The incumbent operator continued to exercise significant market power which resulted in conflicts with its competitors. By introducing the concept of equivalence to the regulatory equation, OFCOM had been able to resolve those conflicts to the satisfaction of all parties. In particular, the incumbent's wholesale products were offered to competitors and the retail division of the incumbent at the same terms and conditions. That new regulatory framework leveled the playing field, and facilitated access to the incumbent's bottleneck access network.

In that context, Professor Fransman highlighted several of the relevant regulatory principles which informed OFCOM's approach. They included:

1. Promoting competition at the deepest levels of infrastructure, that is, as close to the final user as possible;
2. Delivering equality of access, particularly at points of bottleneck;
3. Withdrawing regulation where there was sufficient competition;
4. Promoting a favourable climate for efficiency, timely investment, and technological innovation, through consistent and transparent regulation;
5. Varying the regulatory solution as required, for example, adopting a "light touch economic regulation" based on competition law and the promotion of interoperability.

There was a query regarding the measures which could be taken by SIDS to ensure that a truly competitive environment develops. In response, Professor Fransman noted that the issues of high fixed costs and economies of scale typically arose in small markets. However, Japan and Korea were doing well because of the tough competition which existed with their respective incumbents. With reference to the minimum number of market players, he further suggested that three local service providers may not be enough to foster true competition.

In conclusion, Professor Fransman noted that OFCOM's strategic review highlighted the importance for regulators to be completely clear on what they were trying to accomplish, and the manner in which players were to be judged. He questioned whether competition was an end in

itself or a means to an end. In the context of desiring competition to realize lower prices, he posited that it was both, where competition provided the incentive to innovate.

Conclusion

This Roundtable provided an opportunity to examine the role of telecommunications regulation, and in particular spectrum management, in the liberalization thrust. It contextualized the discussion in terms of the attainment of a Knowledge Society for Trinidad and Tobago. The experiences of OFCOM with regard to the issue of equivalence were instructive. The quality of the debate underscored the timeliness of this Roundtable, and suggested the need to embark on similar national experiences in other member States.

Annex I

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Annex II

Programme

09.00 - 09.05	Welcome and Introduction of Panelists – Mr. Dale Alexander, Moderator
09.05 - 09.10	Opening Remarks - Mr. Neil Pierre, Director
09.10 - 09.40	Session 1 - Transforming Trinidad and Tobago into a Knowledge Society - Dr. Kim Mallalieu
09.40 - 09.50	Questions and Answers
09.50 - 10.20	Session 2 - Spectrum Management in Small Island Developing States - Mr. Selby Wilson
10.20 - 10.30	Questions and Answers
10.30 - 10.45	Break
10.45 - 11.15	Session 3 - The regulatory role of the Telecommunications Authority of Trinidad and Tobago: Issues and Challenges - Dr. John Prince
11.15 - 11.25	Questions and Answers
11.25 - 11.55	Session 4 - The Implications of OFCOM's Strategic Review of Telecommunications - Professor Martin Fransman
11.55 - 12.05	Questions and Answers
12.05 - 12.15	Wrap up and Closing Session – Ms. Sandra John

Annex III

Presentations

Transforming Trinidad and Tobago into a Knowledge Society

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ECLAC Telecommunications Round Table

Port of Spain
26 May 2006

A pleasant good morning to all and many thanks to ECLAC for the invitation to participate in this morning's round table. I have been asked to share my thoughts on Transforming Trinidad and Tobago into a knowledge society - a particularly onerous task as the topic is as broad as it is deep and also because many of its avenues are littered with platitudes, clichés and fluff. Nevertheless, the topic is an important one and here I am.

My explorations will surround the following questions:

- What is a knowledge society?
- What are the prerequisites for transformation to a knowledge society?
- What is Trinidad and Tobago's vision for itself as a knowledge society?
- What are Trinidad and Tobago's realities?

What is a Knowledge Society?

A knowledge society is one which places an explicit and principal value on knowledge as the means to achieve economic and social well being. It is one which features knowledge prominently among the basic needs of all of its citizens and wills all citizens to engage productively with knowledge. In such a society, knowledge represents a **core national value**: the means through which the citizens achieve (i) greater choice and opportunity (ii) deeper social integration and (iii) longer life expectancy, each across very many dimensions.

A knowledge society is quite different from an information society, only in part reflecting the distinction between the fundamental entities of information (that is, ***raw content***) and knowledge (that is, the ***assimilation, integration*** and ***understanding*** of various information sources for ***re-use***). Whereas an information society is one which happens to strongly feature information-based innovations as tools for productivity and entertainment, a knowledge society is one which additionally counts these tools among the basic needs of all citizens. A knowledge society sits at the pinnacle of the developmental food chain: above agricultural, industrial and information societies respectively.

The notion of a knowledge society occupies a prominent space in the global development discourse yet it has been fashioned by a number of converging, and in part conflicting, phenomena. The enabling **technology dynamic** pivots around staggering innovations that have yielded unbelievable capabilities to find, navigate, retrieve, organize, repurpose, simulate, create, process, apply, preserve, manage secure and most importantly, communicate information.

These capabilities have naturally spawned a level of intellectual imperialism that recalls Drucker's prediction that the "acquisition and distribution of formal knowledge" could occupy the place which "acquisition and distribution of property and income" had occupied for centuries. Of course, today comprehensive policy, legal and regulatory instruments are necessary to manage **intellectual** real estate; and social capital is globally recognized as hard core currency. These assets of intellectual property and social capital

are together recognized as key enablers of competitiveness: competitiveness at the organizational, national and global levels.

Yet at the same time, these very technological innovations have enabled new collaborative methodologies while organizational and educational theorists have promoted the gains of collaborative work. Quite naturally, then, communities of interest have emerged which collaborate for competitiveness using ICTs.

As the interesting technological and intellectual dynamics have converged at this very time in history, they have been accompanied by an even more interesting **societal dynamic**. This one pivots around a largely shared global awakening to the impact of poverty on political sustainability, economic stability and moral conscience. This awakening has motivated the articulation of the MDGs and occupied the attention of a great many developmental theorists and practitioners. It has given deeper significance to concepts such as equity: equity not only with regard to economic parameters such as raw income but also access to health care, sanitation, clean drinking water, information, education, etc etc. Its hallmarks are community and commons which, for many countries around the world, is less familiar than competition and competitiveness.

And out of this melee, the notion of the knowledge society has been born: a notion built on knowledge as capital on the one hand and knowledge as a public good on the other; competitiveness on the one hand and community on the other, all fundamental parameters of a knowledge society. An intellectual schizophrenia if there ever was one.

So what is the nature of this baby beast known as the knowledge society? It is an intensely networked organism comprising multidimensional virtual and physical connections between human beings over massively networked infrastructures. It is one which places a premium on inquiry, research, creativity, the use of high technology and entrepreneurial leadership[1]. Its key skills are those of literacy, collaboration, innovation, communication, diversity and flexibility. Yet it is an entirely inclusive society in which traditional obstacles to participation and productivity are removed and which facilitates new forms of creativity and new diversities of expression.

These new forms of creativity and new diversities of expression are key to the realization of knowledge societies as they, in turn, represent the key to preserving the natural balance and mix of individual capacities and inclinations inherent to the human race.

What are the prerequisites for transformation to a knowledge society?

Taking account of the shop-worn portfolio of primary requisites for ICT-enabled development (price, physical and mental disability, basic and digital illiteracy, location, etc. etc.) and secondary requisites (regulation as appropriate, health care, physical

[1]Slater, Robert. Some Human and Social Capital Components That a Knowledge Society Requires. Second International Conference on Technology and Society. Hyderabad, India. 12 – 15 December 2005.

security etc etc.), we can lump the prerequisites for a knowledge society into the following categories:

- Adequate infrastructure
- Vibrant and productive business sector
- Absence of traditional obstacles to access
- Meaningful and appropriate services
- Purpose
- Purpose-driven innovations

Together these account for the technological, intellectual and social dynamics previously discussed.

The removal of traditional obstacles to access and the development of vibrant business communities as well as the provision of adequate infrastructure and meaningful and appropriate ICT services have shared centre stage with policy and regulatory reform for over a decade. Purpose and purpose-driven innovations have attracted far less attention but are equally critical success factors for the transformation to knowledge societies.

Indeed, the transformation to a knowledge society from an information society is far more demanding than the transformation to any previous society. This is so because it is accompanied not only by phenomenal disruptions of a technological nature but also by fundamental philosophical reorientations. These philosophical reorientations derive from a commitment to realize productivity from a diverse set of citizens in traditionally unfamiliar lifestyles using unfamiliar tools: a far more complex and challenging proposition than dispensing food and mosquito nets.

The purpose that is prerequisite to a knowledge society is the expression of possibilities that traditional non-participants perceive as interesting, meaningful and satisfying. These possibilities must enable different, and new, types of engagement in order to appeal, for example, to individuals who would otherwise be engaged in purely non-intellectual tasks or those who would not be engaged in productive tasks at all. Purpose-driven innovations are those that take specific account of the nature of traditionally excluded citizens, and the diversity of nature found in clusters of such individuals, as well as their physical, social and cultural circumstances.

The scope of purpose and purpose-driven innovations must of course also relate to a full spectrum of regular activities surrounding leisure, health care, etc etc.

What is Trinidad and Tobago's vision for itself as a knowledge society?
The notion of knowledge society does not figure explicitly in the country's Vision2020[2] which reads:

[2]GoRTT Vision2020 Vision: http://www.vision2020.gov.tt/process/vision.aspx?id=2137

By the year 2020, Trinidad and Tobago will be a united, resilient, productive, innovative and prosperous nation; with a disciplined, caring, fun-loving society; comprising healthy, happy and well-educated people and built on the enduring attributes of self-reliance, respect, tolerance, equity and integrity;
in which:

- *Every citizen has equal opportunities to achieve his fullest potential;*
- *All citizens enjoy a high quality of life, where quality healthcare is available to all and where safe, peaceful, environmentally-friendly communities are maintained;*
- *All citizens are assured of a sound, relevant education system tailored to meet the human resource needs of a modern, progressive, technologically advancing nation;*
- *Optimum use is made of all the resources of the nation;*
- *The family as the foundation of the society contributes to its growth, development and stability;*
- *There is respect for the rule of law and human rights and the promotion of the principles of democracy;*
- *The diversity and creativity of all its people are valued and nurtured.*

However the Vision does capture many of the prerequisite parameters of a knowledge society, certainly those that relate to human development. The Draft National Strategic Plan[3] maps the vision into specific objectives developed around twenty eight key sectors[4], organized according to six clusters:

- Business and Productive Sectors
- Human Resource Development
- Technology and Innovation
- Health and Environment
- Public Institutions, Public Infrastructure and Housing
- Social Framework

It recognizes five developmental priorities:

- Developing innovative people
- Nurturing a caring society
- Governing effectively

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[3] GoRTT Vision2020: http://www.vision2020.gov.tt/plans/National_Plan.pdf

[4] *Macroeconomy and Finance; Energy; Agriculture; Industry and Entrepreneurship; Financial Services; Tourism; National Security and Public Safety; Infrastructure; Pre-primary, Primary and Secondary Education; Tertiary Education; Skills Development and Training; Health; Housing; Culture and Attitudes; Environment; Poverty Alleviation and Social Services; Governance and Institutional Structures for Development; Science, Technology and Innovation; HIV/AIDS; Population; Regional Development and Sustainable Communities; International Relations, Regional Co-operation and Trade; Labour and Social Security; Youth, Sport and Recreation; Gender and Development; Administration of Justice; Law Administration and Legal Affairs; Public Utilities*

- Enabling competitive businesses
- Investing in sound infrastructure and environment

Strategies for the enabling of the National Connectivity Agenda, including legal, institutional and policy initiatives, are embodied in the National Information and Communications Technology Plan, Fastforward.

What are Trinidad and Tobago's realities?

According to many criteria which matter, Trinidad and Tobago presents little by way of unusual challenge for a developing country ultimately transforming to a knowledge society. Its land area accounts for approximately 0.004% of the world's total[5] and its population accounts for roughly 0.02% of world total[6]. The country is blessed with a forgiving climate with minimal threat from major natural disasters. The urban/rural split of households is roughly 76%/24%[7]. Roughly 92% of all households have electricity[8], 87% have tvs[5], 84% have refrigerators and radios[5], 70% have piped water supply[5] and water borne toilet facilities[5], 35% have motor vehicles, 17% have cable service[5] and there is roughly a 12% Internet penetration rate[9]. (Interestingly enough, 42% of our households have sewing machines.)

Trinidad and Tobago enjoys relatively low inflation rates and a trade surplus. At the most recent count, its Gini index was 40.3[10] and it ranked 57 of 177 countries in HDI[11] (2003/2005). At the most recent count it fell in the Upper Access group in DAI[12] (2002). The employment profile[13] is dominated by elementary occupations; followed by a close tie of clerical, shop sales and service workers. Thereafter, the profile narrows from technicians and associate professionals to legislators, senior officials and managers. There are then roughly equal numbers of professionals as there are craft and related workers. Holding up the rear are agricultural, forestry and fishery workers along with plant and machine operators and assemblers. Reported unemployment rates are in the single digits[14] and the reported literacy rate exceeds 99%[15].

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[5] 5,128 km^2 of a total of 130490000 km^2

[6] Taken as at 2000 using figures from the T&T 2000 Census (http://www.cso.gov.tt/statistics/cssp/census2000/Total_Population_by_Sex_%20Sex_Ratio_and_Area_2000.pdf) and ibiblio's 2000 figures (http://www.ibiblio.org/lunarbin/worldpop)

[7] UNICEF: http://www.unicef.org/infobycountry/trinidad_tobago_statistics.html

[8] GoRTT CSO: http://cso.gov.tt/statistics/pdf/Table17_HBS.pdf

[9] Nov 30 2005 figure from Internet World Stats, http://www.internetworldstats.com/list4.htm

[10] Gini index for income inequality takes on values ranging from 0 (representing an equal distribution of income) and 100 (representing all income earned by a single individual.) Figure taken from the Human Development Report 2005. International cooperation at a crossroad: Aid, trade and security in an unequal world. UNDP 2005.

[11] The Human Development Index is a summary measure of quality of life ("human development") which takes account of life expectancy at birth, a mix of literacy and enrollment metrics and GDP per capita. UNDP 2005 figures based on 2003 figures: http://hdr.undp.org/reports/global/2005/pdf/HDR05_complete.pdf

[12] The Digital Access Index is a summary measure of ICT access which takes account of infrastructure, knowledge, affordability, quality and Internet usage. DAI classifications are High, Upper, Medium and Low. ITU: http://www.itu.int/newsarchive/press_releases/2003/30.html

[13] GoRTT CSO: http://cso.gov.tt/files/cms/Labour%20Force%204th%20Qrt%20Bulletin%202005.pdf

[14] GoRTT CSO: http://www.cso.gov.tt/

Pressing social issues in Trinidad and Tobago include crime, inadequate care for the poor; domestic violence; a less than mediocre health care system; and inadequate educational systems at the primary level and secondary levels. The greatest single concern of the average citizen is crime as the country ranks sixth in the world for homicide with a per capita rate in 2004 of 20 (260 murders) and in 2005 of 29.69 (386 murders)[16].

Key Transformational Imperatives for Trinidad and Tobago

The Draft National Strategic Plan with its accompanying Frameworks for Action together with the Fastforward programme and an apparent focus on crime fighting fairly cover the basic prerequisites for a knowledge society in Trinidad and Tobago, namely the provision of adequate infrastructure, a vibrant and productive business sector; absence of traditional obstacles to access and meaningful and appropriate services.

Deeper consideration, however, could perhaps be given to ***purpose*** for traditionally excluded citizens in the implementation of Vision2020, certainly if part of the evolving vision is that of a knowledge society. Abundant and affordable Internet access, computers in schools and community access to egovernment services (key aspects of Fastforward) do not make a knowledge society. These are surely important elements of the backdrop but they must be accompanied by personally motivating opportunities for engagement: sports: cricket, football, music, carnival, humour, bacchanal, drama, the oral tradition, craft, peekong, all deeply rooted in Trinidad and Tobago culture.

A **people-centred vision of a knowledge society** contemplates what individual people are doing and the extent to which their nature is accommodated and expressed while interacting with new and different tools. New forms of creativity and new diversities of expression require purpose-driven innovations which will preserve the natural balance and mix of individual capacities and inclinations inherent in our people. The development of these types of innovations, in turn, should figure strongly in the priorities for national research and development.

To transform Trinidad and Tobago to a knowledge society, the educational system from preschool to tertiary levels would also require major fundamental and operational revisions. And the health of the informal educational sector is as important as that of the formal educational sector to the evolution to a knowledge society. A society with a rich entrepreneurial culture will derive most benefit from the information age, transforming information into knowledge and knowledge into wealth. Such a culture may be stimulated in many ways, starting in the toddler years. Much of the stimulation will naturally fall to the informal education sector (family, entertainment, play). In this regard, direct interventions on the part of government include the facilitation of wholesome

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[15] Globalis: http://globalis.gvu.unu.edu/indicator_detail.cfm?Country=TT&IndicatorID=41

[16] Darryl Heeralal. T&T among top 6 homicidal nations. Trinidad and Tobago Express. Monday, April 10th 2006

locally-developed edutainment products and family-support systems that encourage early childhood learning and exploration, the latter incorporated into Vision2020.

Technology and small business hobbyist groups represent another important government-assisted stimulant of an entrepreneurial culture which lies at the heart of a knowledge society. Within universities and outside of universities, this is where much of the innovation in society originates. At the centre of the knowledge society is the entrepreneur who produces maximally valuable applications and services and makes these available to society at minimum cost.

Connectivity is also an integral part of the whole picture: connectivity to the Internet yes, connectivity to knowledge sources yes, but more importantly, connectivity to people. So a crucial aspect of government's role in transforming Trinidad and Tobago into a knowledge society is to facilitate these social connections, also in new and innovative ways.

Conclusion

While knowledge societies have and will continue to evolve naturally around communities of interest whose shared values relate to enquiry, entrepreneurship and creativity, they will not naturally evolve at the country-level without deliberate policy and operational interventions. The burden of the transformation will lie heavily on the shoulders of government. But this transformation can not rely on traditional methodologies or traditional tools. Like knowledge societies themselves, the transformation can only be effected through new and innovative means.

Knowledge societies, like their predecessors, are en route to other community life forms. Today's technologies, networks, services, business models, laws, regulations and societies are therefore inextricably bound in the same change path.

SPECTRUM MANAGEMENT IN SMALL ISLAND DEVELOPING STATES

AT

ECLAC'S ROUNDTABLE ON TELECOMMUNICATIONS AND THE KNOWLEDGE SOCIETY

MAY26, 2006

BY
SELBY WILSON
TELECOMMUNICATIONS STRATEGIST

CARIBBEAN TELECOMMUNICATIONS UNION

ABSTRACT

In September 2004 the Caribbean Ministers of Telecommunications, directed the Caribbean Telecommunications Union (CTU) to establish a Spectrum Management Task Force to examine and make recommendations on the following issues:

- Establishment of the infrastructure to manage the wireless environment
- Assessment of the free spectrum
- Un-licensing of specific frequency bands
- Determine the best practices for interference management and frequency monitoring
- Appropriate spectrum allocation and assignment approaches

This paper will discuss how the CTU proposes to implement this directive. It will also identify the objectives to be achieved by the adoption of a harmonised approach to spectrum management particularly in like of the establishment of the Caribbean Single Market and Economy and the ever increasing use of wireless technology in the provision of new services across the region as the telecommunication sector is liberalized and opened to competition. The paper will identify the need to revise spectrum management

policies to ensure the most efficient use of the spectrum, encourage investment and to satisfy the ever increasing consumer demands in this information age.

THE TECHNOLOGY FACTOR

When wireless telecommunications services were first introduced at the turn of the twentieth century, the assignment of radio frequencies was based essentially on eliminating interference. The then immature technology did not have the intelligence capabilities to discriminate between frequencies with precision. Existing spectrum management policies have been based on the capabilities of the early wireless technologies and have remained unchanged for almost a century.

Over the last decade there has been rapid technological innovation in the wireless industry which has produced intelligent wireless devices that utilize spectrum in fundamentally new ways, largely minimising the interference concerns and enabling greater use of radio frequencies.

Over the last two decades the only use made of radio in the use of ICT was for point-to-point connections to connect network facilities operated by telecom companies. Such use went unnoticed by consumers. However today, radio is widely used to provide a variety of services directly to the consumer. These services include wireless LANs and WANs, mobile phones and accessories such as wireless mice, loudspeakers, headsets, wireless access to motor cars, gates and barriers.

The pace of policy development and attendant legislative and regulatory reform in the Caribbean has not kept in step with the rapid evolution in wireless technologies. As a result, the traditional methods for spectrum management have become impractical and

inefficient in the context of new technologies and could be a barrier to entry for prospective investors.

THE CARIBBEAN CHALLENGE

The Caribbean covers an area of approximately 2million km^2, with island and continental states, democracies and colonial dependencies; countries ranging in size from 261 km^2 to 110, 000 km^2 Populations range from less than 50, 000 to 8 million across the region. GDP per Capita ranges from US$1,600 in the poorest nations to US$16,000 in wealthier nations. English, French, Spanish and Dutch are spoken along with several hundred dialects.

This diversity of the nations in the Caribbean gives rise to a number of constraints and points to some critical needs as regards spectrum management. These constraints are:

1. Limited financial and human resources for effective regional spectrum management
2. Insufficient experienced persons trained in spectrum management
3. Inadequate institutional arrangements to deal with the evolving spectrum issues resulting from the proliferation of wireless technologies
4. Insufficient information on spectrum management best practices
5. Lack of central coordination of spectrum management in the Caribbean
6. Small island economies and markets
7. Independently evolving regulatory practices

MEETING THE CHALLENGES

The following summarises the technological, regulatory and economic issues enumerated above which all point to an urgent need for training, review, reform and harmonization of policies and techniques for spectrum management in the Caribbean:

- Today's wireless technologies are more sophisticated and efficient in their use of spectrum and traditional spectrum management policies in use in the region

are limiting the speed of proliferation and access to the benefits of these technologies e.g. new services, increased accessibility

- The rapidly evolving innovations challenge both regulators and administrators in their ability to understand and be informed on the technological developments and best practices
- The use of radio frequency spectrum does not respect national or regional boundaries. Consequently, there is a need for Caribbean nations to cooperate in the methodologies to be employed in managing spectrum usage.
- The diverse regulatory structures and institutions for spectrum management in the region limit opportunities for regulators in individual countries to benefit from regional cooperation and practical experience as markets are progressively liberalised
- Existing outmoded spectrum policies and practices are delaying response to the increasing demand for spectrum-based services and devices
- Existing spectrum management policies and practices could prove to be barriers to the smooth functioning of the CSME as they pose challenges to the cost effective entry of new players into the telecommunications market and obstacles to the timely provision of new services to the market

Policy makers, regulators, technicians must first be educated in the technologies and best practices for all aspects of spectrum management. This will equip them with the understanding to enable them to devise a new harmonized policy environment which reflects the increasingly dynamic and innovative wireless technologies and eliminates regulatory barriers to increased spectrum use. Once implemented, the new policies will facilitate the creation of an enabling environment for private sector investment.

EXECUTING THE MANDATE

The CTU advocates the development of a harmonized Spectrum Management Policy Framework for the Caribbean in order to establish an environment of regulatory certainty that would encourage private sector participation and investment in the telecommunication sector and the use of innovative technologies in the provision of advanced services in the region.

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The execution of the project will result in:

- **Greater levels of Expertise**
  The project will increase awareness about spectrum management issues and will produce a group of practitioners who are trained in the discipline of spectrum management who are able to execute the necessary functions within their administrations in compliance with international standards.

- **Caribbean Frequency Assignment Database.**
  Following the fieldwork, a comprehensive database of frequency allocations will be established

- **Caribbean Policy Framework**
  The project will result in a document that presents a harmonised Caribbean Policy Framework for spectrum management, licensing and assignment and best practices and approaches to be adopted by the region.

- **Caribbean Spectrum Management Task Force**
  Through the Consultation sessions, a Caribbean Spectrum Management Task Force will be established which will facilitate the formulation of the Policy document during the project. Thereafter, the Task force will address on-going spectrum management issues for the region and develop Caribbean positions on spectrum issues and represent the Caribbean at international fora.

- **An enabling Environment**
  The project will foster an environment of regulatory certainty that would encourage private sector participation and investment in the telecommunication sector.

STATUS

The current status of the work undertaken by the CTU is as follows:

- We have conducted two workshops. One for technocrats in October 2004 and the other a Policy Consultation and Workshop in March 2006. This Consultation was also webcast and attracted an additional one hundred online participants in addition to the thirty actually attending the event in Antigua
- Online training modules for technician are currently being developed for deliver online targeted to begin by the end of July 2006
- We are currently evaluating bids for the conduct of spectrum field audits in a minimum of eight countries across the region
- Funding for these activities is being provided by ProInvest and CIDA.
- Establishing the Steering Committee and Spectrum Task Force

CONCLUSIONS

The advantages to be derived by harmonizing the approach to spectrum management regionally are:

- Minimizing inter-service interference between countries
- Ensuring compatibility of services between countries
- Reduced cost of terminal equipment due to the economies of scale
- Greater consumer satisfaction and flexibility in use of terminal equipment
- The potential for simplified type approval and equipment certification processes.
- Facilitating the concept of a seamless Caribbean capable of attracting investment in the sector.
- A unified Caribbean voice in the international arena such as the World Radio Conference.
- Improved investment climate.

UNITED NATIONS
ECONOMIC COMMISSION FOR LATIN AMERICA & THE CARIBBEAN
Subregional Headquarters for the Caribbean

Regulatory Role of the Telecommunications Authority of Trinidad and Tobago: *Issues & Challenges*

ECLAC
26 May, 2006

Government Objectives

- Establishment of Legal and Regulatory Framework
- Establishment of an Independent Regulator
- Competition effectively introduced in all markets ('Flashcut') for the benefit of consumers
  - Reduced Prices
  - Improved Customer Service
  - Improved Quality and Wider Variety of Services
- Expansion of Network Infrastructure to effect an Increase in ICT Usage

Legal and Regulatory Framework

- Telecommunications Authority of Trinidad and Tobago (TATT)
  - Independent Regulator
  - Collegiate Body (11 Board Members & Executive)
  - Responsible for Granting Licences
  - Minister responsible for Policy and Granting Concessions

Legal and Regulatory Framework

- Most Critical Regulatory Instruments for Liberalisation identified
  - Authorisation Framework
  - Interconnection and Access to Facilities Policy & Regs.
  - Spectrum Management Policy
  - Radio Regulations
  - Fee Methodology and Regulations
  - Numbering Plan
  - Dispute Resolution Procedures
  - BWA
-

Legal and Regulatory Framework

- Regulatory Instruments to be developed over next 2 months
  - Consumer Rights & Obligations Policy and Regulations
  - Quality of Service Policy and Regulations
  - Competition Policy and Regulations
  - Pricing Policy and Regulations
  - Enforcement, Compliance and Dispute Resolution Framework
  - Universality Framework
  - Number Portability

Legal and Regulatory Framework

Technology Neutral Authorisations

- Concessions
  - Operation of Public Telecommunications Networks
  - Provision of Public Telecommunications Services
  - Provision of Broadcasting Services
- Licences
  - Installation, Operation or Use of Radiocommunication Equipment

Legal and Regulatory Framework

Concession Classifications
Type 1 : Network Only
Type 2 : Network and Telecom Services (Service Neutral)
Type 3 : Virtual Network and Telecom Services (Service Neutral)
Type 4 : Telecom Services Only (Specific Services)
Type 5 : Broadcasting Services Only

Fee Structure

- Concession Regulatory Charge
  - Administrative Charge (Activity-Based)
  - Operational Charge (Revenue-Based)
    (% Total Industry Revenue * TATT's Operating Costs)
- Licence Regulatory Charge
  - Administrative Charge (Activity-Based)
  - Spectrum Usage Charge
    - Economic Rent
    - Efficient Usage (Discount Factors)

Numbering Plan

- Concession Obligation
- Addresses HNI Issue
  - Only local HNIs allowed
- Numbering Fees
  - To encourage efficient usage of numbers

Number Type	Fee
Mobile	Twenty cents (20 ¢)
Fixed	Ten cents (10 ¢)
Special	Thirty Five cents (35 ¢)
Short Codes (e.g. N11, 999, 990)	No charge

Current Market Status

Market	Status
Domestic Mobile	Three operators
Domestic Fixed Voice	Two operators
International	8 licensed operators Approx. 115 Int'l Call Centre Operators
Cable TV	1 major territorial operator , 1 Minor territorial operator
	Approx. 7 Niche providers

Liberalisation of Domestic Mobile Market

Mobile Spectrum Plan

- Incumbent assigned un-paired mobile spectrum (800MHz/1800MHz)
- Inefficient utilization in 800 MHz band
- Non-contiguous assignments in 1800 MHz band
- Existing assignments in 900 MHz band for fixed services
- 800MHz/1900MHz band plan
- Migration Plan for Incumbent

Liberalisation of Domestic Fixed Market

- **Fixed Wired Cable TV Networks/ Services**
  - First-Come First-Served process
  - Recommendations made to Minister
    - 1 National Type 1,5 Concession
    - 1 National Type 2,5 Concession
    - 1 Niche Type 2,5 Concession
- **Fixed Wireless Access Networks/ Services**
  - Availability vs. Demand
  - Spectrum Planning
  - Competitive Selection Process to be determined

Liberalisation of International Market

- International Network and/ or Services
  - Competitive Selection Process: Comparative Evaluation
  - Recommendations made to Minister
    - 2 Type 1 Concessions (Network Only)
    - 3 Type 2 Concessions (Network and Services)
- International Services only
  - Regularisation of International Call Centres
  - Comparative Evaluation Process

Challenges

- Insufficient Transitional Provisions in the Act
  - TATT expected to perform from Day 1 after promulgation
  - Limited EX ANTE REGULATORY POWERS
  - CONSTRAINT IN EXERCISE OF DEVELOPMENTAL FUNCTION
  - SLOW LEGISLATIVE PROCESS

Challenges

- INSUFFICIENT HUMAN RESOURCES
- REGULATORY INDEPENDENCE
- DEVISING A WAY TO MAKE OPTIMUM USE OF TELECOMMUNICATIONS TALENTS IN THE COUNTRY

THANK YOU

HOW SUCCESSFUL HAVE THE WORLD'S LEADING COUNTRIES BEEN IN THEIR 25-YEAR EXPERIMENT WITH THE LIBERALISATION OF TELECOMS?: THE CASE OF THE UNITED KINGDOM

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Introduction: The UK's Strategic Review of Telecommunications

In 2005 the UK's new telecoms regulator, Ofcom, published its Strategic Review of Telecommunications, a fundamental review of the country's 25-year experiment with the liberalisation of telecommunications. This review is being eagerly digested in countries around the world.

This experiment began in 1984 with the privatisation of the former monopolist incumbent, BT, and the introduction of competition in the services market. Simultaneously, both Japan and the US also liberalised their telecoms markets, thus stimulating a global wave of telecoms liberalisation that would change the face of the global Telecoms Industry. But how successful has this experiment been? This question will be examined in this paper with respect to the UK.

A Historical Compromise: Ofcom's "New Regulatory Approach" for fixed communications

On the 23rd June 2005 Ofcom, the UK telecoms regulator, announced a historical "new regulatory approach" to fixed communications in the country, ending a period of about eighteen months of soul-searching, analysis, consultation and negotiation involving the major stakeholders with an interest in the UK telecoms industry. This approach represents a historical compromise with consensus being achieved amongst the regulator, the incumbent (BT), the main competitors to BT, and groups of what Ofcom called 'citizen-consumers'. The announcement received broad support from these stakeholders, a rare achievement in an industry notable for its significant conflicts of interest.

The announcement marked the culmination of a fundamental "strategic review" undertaken by Ofcom, the second crucial review of the industry since the liberalisation of telecoms (and the privatisation of BT) in1984. As a result of both the depth and the rigour of the review, Ofcom's moves have been closely watched by other countries and their regulators who also confront similar circumstances and problems to those encountered in the UK.

Ofcom's achievement is rare precisely because of the conflicts of interest that characterise the telecoms industry, not only in the UK but in virtually all countries. In almost all countries the provision of telecoms services was until the 1980s and 1990s the responsibility of a national monopoly (often referred to, for analytical reasons, as

a natural monopoly). However, from the 1980s and 1990s – after the liberalisation of telecoms in Japan, the US and UK in the mid-1980s – the conventional wisdom changed. Henceforth, governments and their regulators introduced competition into the industry in the belief that this would result in a more efficient industrial outcome.

However, for a number of reasons, despite the existence of competition, the incumbent telecoms operators continued to exercise what regulators called 'significant market power' in several important markets (referred to as 'bottlenecks'). In these areas in particular conflicts between the incumbents and their competitive rivals continued despite the efforts of regulators to ensure the establishment of competitive markets. These conflicts were triangular, involving regulator and incumbent, incumbent and competitors, and competitors and regulator.

But the prevalence of this conflict raises an important puzzle: How was Ofcom able to achieve a historical compromise between the conflicting parties given the fundamental nature of the conflicts? A key further question is whether other countries such as Japan might be able to achieve a similar historical compromise.

In the following subsection this puzzle is answered. An understanding of the answer is necessary background in order to make sense of the processes that led to the achievement of the historical compromise.

How was Ofcom able to achieve its 'Historical Compromise'?[1]

The key point to understand is that Ofcom assumed its regulatory powers from January 2004 at a time of crisis (crisis is not too strong a word) for the UK Telecoms Industry. Indeed, the demise of the former regulator, Oftel, and its replacement by the 'super-regulator' Ofcom was largely a response to this crisis.

The reason for the crisis was two-fold. First, it was clear that competition was not working in this industry. Although it was hoped that new competitors – sometimes called the alternative network operators or altnets – would enter the industry and would compete successfully with the incumbent, BT, the Telecoms Bust from March 2000 put paid to this hope. The ensuing lack of finance for the new competitors and their resulting financial woes reduced the competitive pressure on BT.

Furthermore, there was widespread agreement by the new competitors that where they needed access to BT's network, or where they depended on BT's wholesale products, they were not being given the same access that BT Retail was getting from its parent. In the language that Ofcom subsequently adopted, there was not 'equivalent' access.

In part this was due to regulatory failure, that is a failure on the part of Oftel to take a sufficiently tough line with BT. This failure was admitted by the then head of Oftel, David Edmonds. In a remarkably frank interview with the *Financial Times*, David Edmonds, Oftel's Director General, admitted that he was himself responsible for some serious mistakes. In his own words:

[1] This section is based on my personal interviews with senior members of both Ofcom and BT.

> "If I knew then what I know now I would have handled local loop unbundling differently. I should have realised earlier that BT was playing a long game. My hope was that the industry would work it out for itself."[2] According to the *Financial Times*, "he said the lesson from these mistakes was to be more 'directive'".

The second dimension to the crisis was that it was becoming clear to the stakeholders in the UK Telecoms Industry that Britain was not performing as well as its peers. This was true not only in comparison to the European leaders but even more so compared to the global leaders. For example, in the field of broadband, that had become a politically sensitive indicator of the success of government and regulatory policy, although the UK was performing reasonably well in terms of retail prices, its comparative global performance in terms of speed was relatively poor. Furthermore, the UK was falling behind the global leaders in terms of the diffusion of superior technologies, particularly FTTH, and new services.

As a result of this crisis there was a general feeling amongst the stakeholders that 'something needs to be done'. BT too was aware of this feeling and realised that it would have to compromise. To continue along the previous road was impossible. Ofcom had made it clear, from even before it officially assumed power, that it would not allow BT a 'continue as before' option. It was these circumstances that created the conditions for the emergence of a new regulatory regime in the UK.

But other factors also helped to make a new regulatory regime possible. Of these, two factors were particularly important. The first was the emergence of a new regulatory organisation – Ofcom – with new leaders. This created a sense that fundamental issues could be examined afresh and new solutions explored. Ofcom added significantly to this feeling with its immediate announcement that it would embark on a 'Strategic Review' of the telecoms industry, the most important since the Duopoly Review in 1991, itself the first major review since the privatisation of BT and the liberalisation of the telecoms sector. A consensus quickly emerged that the time had come to 'stand back and take stock'.

Personality factors also played a role, the second factor shaping things to come. Ofcom managed to recruit extremely talented leaders. In particular, Ofcom recruited Stephen Carter as its CEO and Lord David Currie as its Chairman. Stephen Carter was very knowledgeable about the converging telecoms and broadcasting industries, having been CEO of one of the UK's two cable TV companies, ntl (which had just been through a major financial crisis in the wake of the Telecoms Bust from 2000). As in industry leader, Carter was able to see things not only from a bureaucratic-regulatory point of view but also from a business perspective. David Currie was a distinguished academic economist who had played a prominent role in the analysis and discussion of economic issues in the UK and who had occupied prominent positions at the London Business School and City University. He had a sophisticated understanding both of industry and regulatory issues. Talented people such as these were willing to join the new super-regulator largely because they sensed that with convergence extremely important changes were occurring in the communications and

[2] *Financial Times*, August 11, 2003.

broadcasting and related industries and they were keen to play an important role in shaping future developments. The attractive salaries offered by the new regulator added to their incentive.

BT too had undergone leadership changes. The fallout from the Telecoms Bust after 2000 led to the ousting of the two BT leaders who had taken the company through the Telecoms Boom, namely Sir Peter Bonfield who was CEO and Sir Iain Vallence, the Chairman. On February 1, 2002 Ben Verwaayen, a Dutchman, formerly vice chairman of the US telecoms equipment company, Lucent Technologies, took over as CEO of BT. Being both pragmatic and forceful, Verwaayen quickly realised, not only that BT would have to compromise, but even more importantly that with reasonable people on the other side of the negotiating table a window of opportunity had been created which could leave BT in an advantageous position.

The main carrot that Ofcom was holding out – a carrot that Verwaayen wanted to taste – was the twin prospects of the removal of regulation in BT's non-SMP (significant market power) markets and greater regulatory certainty in its SMP markets. Furthermore, Ofcom was also acknowledging that BT was entitled to a 'reasonable rate of return' on its new investments in next generation networks, including a risk-adjusted cost of capital in determining its network charges.

Very soon a trust-based relationship developed between Carter and Currie from Ofcom and Verwaayen from BT. The new regulators, relatively clear about what they wanted from BT (and helped by the experience of David Edmonds, the former head of Oftel who remained with Ofcom), quickly came to the conclusion that it was better to negotiate with BT rather than attempt to rule it by arm's-length directives. Verwaayen's pragmatism and willingness to compromise undoubtedly helped to make the negotiation option (rather than threat) viable. My interviews in both Ofcom and BT made it clear that a good trust-based relationship soon developed between these people.

Although some of BT's competitors were initially suspicious about the closeness between Ofcom and BT (as my interviews with some of their leaders revealed), they soon came to realise and appreciate that this relationship did not amount to 'regulatory capture' by BT. Clearly, Ofcom was taking a tough line with BT – notably threatening the incumbent with referral under the Enterprise Act and the possibility of break-up – and it was genuinely committed to ensuring that as much competition took place in the evolving UK Telecoms Industry as possible.

Furthermore, the process adopted by Ofcom also encouraged trust on the part of BT's competitors. This process was clear and transparent. First, Ofcom made clear the fundamental principles on which its regulation would be based. Secondly, it made explicit the problems that it had identified as needing remedies. Thirdly, it clarified the options that it felt it had. Fourthly – and this was crucial in terms of winning and retaining the trust of the competitors – it consulted widely with both BT's competitors and other stakeholders including consumer-citizens. They were all given the opportunity to respond to Ofcom's consultation documents. Crucially, the stakeholders felt that Ofcom was genuinely open to their views.

The result of these circumstances was that when on 23rd June 2005 Ofcom finally officially announced the details of its new regulatory regime for the UK telecoms industry – including the 'undertakings' that BT had offered as part of this new regime – there was almost universal support for its proposals.

Ofcom's 'Strategic Review' of telecoms, 2004/5

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Significance of Ofcom Review

- Most important review of telecoms since BT was privatised in 1984.
- Since the dilemmas faced in UK are common to rich countries, the Ofcom review has been closely watched in other countries.

The Problems Identified by Ofcom

- Competition has not been working adequately in the UK.
- The need to develop globally competitive all-IP Next-Generation Networks (defined as networks that go beyond the capabilities of existing copper, cable, and wireless networks).

Why has Competition not been Working?

- Cable competitors to telcos have been fragmented and financially weak (cf US).
- Altnets have not sufficiently challenged BT. (Reasons: BT's vertical integration advantages and economies of scale and scope; financial markets un-enthusiastic about altnets since 2000; BT has got smarter and more efficient; generally, high fixed costs and low marginal costs.)
- BT has dragged its feet and failed to provide 'equivalence' (i.e. equal access to BT Retail and its competitors).
- **Therefore Ofcom concluded: Current UK Telecoms Market is Unsustainable.**

Oftel's Frank Admission

In a remarkably frank interview with the *Financial Times*, **David Edmonds, Oftel's Director General**, admitted that he was himself responsible for some serious mistakes. In his own words:

"If I knew then what I know now I would have handled local loop unbundling differently. I should have realised earlier that BT was playing a long game. My hope was that the industry would work it out for itself."[1]

According to the *Financial Times*, "he said **the lesson from these mistakes was to be more 'directive**"".

[1] *Financial Times*, August 11, 2003.

Ofcom's 7 Key Regulatory Principles

- 1. "promote **competition at the deepest levels of infrastructure** where it will be effective and sustainable;
- 2. focus regulation to deliver **equality of access beyond those levels**;
- 3. as soon as competitive conditions allow, **withdraw from regulation at other levels**;
- 4. promote a **favourable climate for efficient and timely investment and stimulate innovation**, in particular by ensuring a consistent and transparent regulatory approach;

Ofcom's 7 Key Regulatory Principles

- 5. accommodate **varying regulatory solutions** for different products and, where appropriate, different geographies;
- 6. create scope for **market entry** that could, over time, remove economic bottlenecks; and
- 7. in the wider communications value chain, unless there are enduring economic bottlenecks, adopt **light-touch economic regulation** based on competition law and the promotion of interoperability."

Ofcom Identified 3 Options

- Complete de-regulation.
- Reference of BT under the Enterprise Act.
- Require BT to provide full 'functional equivalence' to competitors (in terms of wholesale products, prices, and processes).

After consultation with stakeholders, Option 3 was chosen.

A Historical Compromise: Ofcom's "New Regulatory Framework" for the UK

- BT will create a new business unit, Access Services Division (Openreach), that will provide access to BT's SMP/bottleneck access network (i.e. not replicable in the medium-term).
- Openreach will be separated physically and organisationally from BT Group, and its governance and incentives will be aligned to the objective of providing equivalence.

A Historical Compromise: Ofcom's "New Regulatory Framework" for the UK

- BT will offer legally binding "Undertakings" in line with Ofcom's Regulatory Principles.
- In return, Ofcom has offered de-regulation in competitive markets, contingent on BT's delivery (e.g. leased lines, large business market).

Why was Ofcom able to achieve a Historical Compromise?

- Sense of crisis in UK telecoms around 2002-4; e.g. UK performing relatively poorly in broadband.
- Consensus that 'something has to be done'.
- Relative failure of Oftel (Ofcom's predecessor).
- BT knew action would be taken, therefore it was willing to compromise; new BT leadership.
- Ofcom was a new regulator (from 2004) with new leadership (from business and academia).

The Problem of Next-Generation Networks (NGNs)

- Incentivising investment in NGNs by incumbents. (**Regulatory contradiction**: the greater the competition using incumbent's NGN, the lower the incentive to invest.)
- Allowing incumbent a 'reasonable rate of return'.
- Ensuring that the design of NGN by the incumbent does not foreclose on competition.
- Special problem of developing FTTH.

Ofcom's Solutions to NGN Problems

- Calculating the 'risk-adjusted cost of capital' (using 'equity beta' from CAPM) and allowing a reasonable margin over it.
- Insisting that BT develop its NGN in accordance with Ofcom's 7 Regulatory Principles.
- Insisting that BT consult in designing and implementing its NGN.

Ofcom's Solutions to NGN Problems

- Ofcom considering options such as 'forbearance with contestability'.
- Further strategic review that will consider the NGN ***access*** network (including the possible transition to FTTH).
- Including the role of non-telcos in the development of NGN access network.

Conclusions

- UK experience shows that two decades after the liberalisation of telecoms the authorities have still not got it right!
- US lag in broadband leads to the same conclusion!
- While performance in Asia (Japan and Korea) is much better, their firms are suffering!
- For more details see Fransman, M. *Global Broadband Battles: Why Asia Leads while the US and Europe Lag* (Stanford University Press, 2006)!!

MY QUESTIONS ARISING

1. Should the regulator be required to specify the **conditions that must be met for regulation to be reduced or withdrawn**?
2. Should the regulator ensure that firms earn a **'reasonable rate of return' in regulated markets** and, if so, how should this be defined and calculated?
3. Should the regulator **use the carrot (i.e. incentives)** as well as the stick (i.e. imposition) in regulating firms with significant market power (SMP)?