
**EASTERN CARIBBEAN TELECOMMUNICATIONS AUTHORITY**

**TECHNICAL SERVICES DEPARTMENT**

# *Social Bandwidth for the Caribbean*

## *"The Regulatory Challenge"*

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## Abstract

*There is a paucity of bandwidth for social interchange in the Caribbean that is affecting regions ability to develop its social institutions, foster cultural exchanges and is limiting the development of relevant information data bases. This in turn hinders the creation of knowledge based societies in the Caribbean. This expression of the digital divide is seen through the absence of a regional learning and research network for the interchange of ideas, reasearch and development, allother regions of the world have one! The Caribbean Knowledge and Learning Network is striving to address this shortcoming through the development of CaribNet.*

*The major challenge to establishing a such networks is the high cost of building the supporting physical infrastructure. Building a single network across such a diverse regulatory environment requires radically different approaches.*

*The paper focuses on what is required for social bandwidth provision, the infrastructure requirements and the regulatory challenges. Recommendations are made to the regulators of the region; ways and means of facilitating the various initatives that are addressing this digital gap are identified. The paper concludes by proposing solutions to regulators as to how they can actively assist in the creation of bandwidth for social interchange in the Caribbean.*

## 1.0 Introduction

Sir Francis Bacon, English author, courtier and philosopher stated a self evident truth in 1597 when he said that "Knowledge is Power" a saying that is even truer today. Equally important as recognizing the power of knowledge is the need to realize that there is a knowledge chain. T.S. Elliot the poet, back in 1934 highlighted in his poem "The Rock" the clear hierarchical relationship between knowledge and wisdom. This was further expanded by Al Gore in his Digital Earth in 1998 (Gore, 1998) where the concept was expanded to showing the relationship between data and its analysis leading to information that in time could lead to knowledge and provide the basis for wisdom, this Data, Information, Knowledge, Wisdom hierarchy concept was crystallized by Sharma (2004).

In the Caribbean there is the social divide between the have and the have-nots and one expression of this is the digital divide. Wikipedia (2006) the online encyclopedia, defines this as the gap between those with regular, effective access to digital technologies and those without, in other words, those who are able to use technology to their own benefit and those who are not. It is further stated that the digital divide is related to social inclusion and equality of opportunity. It is seen as a social/political problem and has become increasingly relevant as the industrialized nations have become more dependent on digital technologies in their democratic and economic processes. The digital divide results from the socio-economic differences between communities that in turn affects their access to digital information mainly but not exclusively through the Internet.

This paper recognizes that in addressing the digital divide in the Caribbean the specific socio-economic issues must be confronted and in so doing **social bandwidth**[1] must be provided. Social bandwidth would be provided using Information and Communications Technology (ICT) as the technology required for information processing. Wikipedia (2006) defines ICT as the use of electronic computers and computer software to convert, store, protect, process, transmit, and retrieve information from anywhere, anytime. Information processing is critical for increasing knowledge.

## 2.0 Social bandwidth

The concept of social bandwidth means different things to different audiences but the interpretation of Ken Sylvester[2], CEO of CKLN is what will be addressed here. Mr. Sylvester defines social bandwidth as high speed bandwidth to facilitate the work of institutions and organizations involved in social development activities. Social activities can include therapeutic, educational, cultural enrichment, recreational, and social activities on site or in the community in a planned program to meet the social needs and interests of the individual. In defining our concept of social bandwidth we must be careful not to fall into the trap of only considering "not for profit" entities. It is not bandwidth for non-profit organisations but rather broadband provision for the business of social transformation that of necessity must include all of civil society and non-profit organisations.

[1] Term coined is to include high bandwidth to organizations in social transformation activities.
[2] Conversations on October 25th 2006 between Sylvester and author on the topic "social bandwidth"

There is a digital gap in the Caribbean for our social networks. The physical connection for social networks between Belize in the North-West to Suriname in the South-East is virtually non-existent or only available at cost that cannot be afforded by the countries. In the area of education all other regions of the world have networks connecting universities and centers of research. These networks have as their objectives the stimulation of regional cooperation, promotion of scientific and technological development and direct integration with the scientific communities of the world. ***There is none for the Caribbean!***

Caribbean leaders have recognized this deficiency and have embraced the idea that the Caribbean Knowledge and Learning Network (CKLN) and specifically CaribNet will be the vehicle for the provision social bandwidth. The 16th Inter-Sessional Conference of CARICOM Heads of Governments cited the significance of the Caribbean Knowledge and Learning Network (CKLN) as being expected to provide the mechanism for the flow of information, training through video conferencing, and generally enhancing learning through the use of the newer information technologies.[3] The vision of CKLN speaks to the provision of an opportunity for the free flow of high quality learning opportunities for the peoples of the Caribbean Region regardless of where they live. By delivering on this vision, the Caribbean Knowledge and Learning Network (CKLN) will contribute significantly to enhancing the competitiveness of Caribbean countries, by upgrading and diversifying the skills and knowledge of the human resources in the Region through greater regional collaboration and connectivity[4].

**3.0 The CKLN Initiative**

Launched by the Caribbean Community (CARICOM) and the Organization of Eastern Caribbean States (OECS) in 2004, the Caribbean Knowledge and Learning Network (CKLN) is a multilateral project, supported by the OAS, the World Bank, the European Union and the Canadian International Development Agency (CIDA).

The project is designed to enhance the competitiveness of Caribbean countries, using information and communication technologies to connect the Caribbean to the global pool of knowledge, developing human resources and facilitating greater regional integration. In keeping with these objectives, CKLN conducted a due diligence exercise meeting in April 2006 to determine the feasibility of building a Regional Telecommunications Network for the provision of Social Bandwidth and to do an assessment of Broadband Providers in the Region with a view of forming a strategic partnership with one or many of these Providers to provide "Aggregated Social Bandwidth" to the Region at prices the Region can afford.[5] The technological options for the provision of bandwidth in the CARICOM Member States[6] was conducted and

[3] The communiqué issued at the conclusion of the sixteenth inter-sessional meeting of the Conference of Heads of Government of the Caribbean Community, 16-17 February 2005, Paramaribo, Suriname
[4] PM Keith Mitchell at 1st Meeting of CKLN Governance Council, Grenada, June 2005
[5] Terms of Reference for CKLN Due Diligence Meeting
[6] http://www.caricom.org/jsp/community/member_states.jsp?menu=community

the options for international connectivity and the domestic distribution were reviewed. The options for international connectivity include (i) Fibre optic cable networks; (ii) Satellite systems; (iv) Domestic mobile systems; and (v) Microwave backhaul systems. The technological options for domestic distribution of service reviewed are: xDSL; Cable; Wireless Local Loop; WiFI; WiMax; Cellular; Power line distribution and Satellite.

It is the regulatory issues of implementing the most feasible options for the delivery of bandwidth that is the focus here.

**4.0 Infrastructure issues**

There are several options for broadband connectivity in the region and social bandwidth can be provided using various technologies. Most of the regulatory regimes in the region take a technology neutral policy position though in practice some licensing practices are technology specific. Connectivity needs to be considered from two aspects international connectivity; that is, linking the countries together and connecting to the outside world and the second aspect is domestic connectivity , how you establish national networks and link organisations to the national grid.

*Technological options for domestic connectivity are:*

1. XDSL serrvices
2. Cable.
3. Wireless Local Loop (WLL)
4. Wireless Fidelity (WiFi)
5. WiMax
6. Cellular
7. Power Line and
8. Satellite (DVB-RCS)

The XDSL family of HDSL, SDSL, ADSL and VDSL offers a workable solution in most countries and there is a high level of ADSL deployment in most Caribbean States.

Cable offers speeds up to 3Mbps with low rollout costs but its service area is limited to the coverage area of the cable service. WLL can deploy service to areas not covered by wire line technologies but generally have limited number of customers and the cost of equipment is still relatively high. WiFi on the other hand has relatively cheap equipment can be easily deployed but has limited range outdoors. WiMax in its various versions has high speed wide range with expensive equipment. Cellular has high mobility and is widely available some technologies can even offer broadband speeds over mobile though not yet widely dispersed. Power line transmission is not yet widely used in the region but there is growing interest as power companies seek to diversify their operations. Satellite (DVB-RCS) can offer broadband access to areas not having wire line communications but has inherent delay being satellite service.

## 5.0 The Regulatory Environment

Stern (2005) indicated that until very recently virtually all (basic, value-added including cellular mobile services and both domestic and international) telecommunication services were provided by monopoly operators in all but one country in the Caribbean.

Their ownership structure varies between 15 % in Barbados and 100% in The Bahamas and Haiti. In Antigua & Barbuda the domestic operator, APUA is 100 % government owned. Cable & Wireless (C&W), the predominant investor in the telecommunications sector in English-speaking Caribbean, owns between 49% and 100% of the telephone companies in these countries and territories, directly or through a fully owned subsidiary Cable & Wireless (West Indies), located in the Cayman Islands. The main competitor is now Digicel who has acquired several new licences in the Caribbean through the acquisition of AT&T Caribbean Holdings and now provide mobile telephony in most Caribbean States.

The telecommunications sector in Caribbean countries is being reformed and the laws revised. In the English-speaking countries, Jamaica, Barbados, and the five Organization of Eastern Caribbean States (OECS) states had implemented new legal and regulatory frameworks, which included the establishment of independent national regulators and, in the case of the OECS, also a regional regulator. (Stern 2005)

Anguilla and Cayman Islands passed new laws and have licensed competing operators. The Bahamas passed a new law in 1999 but in 2003 was unable to carry through with a planned privatization of the state-owned monopoly telephone company, Batelco. Guyana was developing a new policy for the sector. Suriname has once again indicated that it will be liberalizing the markets. Anguilla, Jamaica, Barbados, Trinidad and Tobago, The ECTEL States, the Cayman Islands and the Dominican Republic have functioning regulators. In Guyana only the PUC is operating.

The regulatory environment is further complicated by the existence of several different players who differ in composition and role in the different states. These players include Governments, Providers, Consumers, Regulators, International agencies, Investment agencies and donor agencies. There are regulators who operate in only one sector like ECTEL in telecommunications and others who have a mandate for all sectors like OUR in Jamaica. There are Fair Trade Agencies and those responsible for anti-competition practices.

## 6.0 Regulatory Challenges

The regulatory challenges are:

1. Providing coordination of the various regulators throughtout the region
2. Introducing regulation for competition in essential services;
3. Interconnection issues
4. Development of appropriate cost based methodologies to provide the basis for determining “reasonable” costs

5. Policy and regulatory provisions to permit site sharing and collocation for submarine cable systems

The regulatory environment in the various countries have several different models for regulation different players and no single coordinating entity exists that could provide a “one-stop-shop” for anyone wishing to deploy Caribbean wide systems.

If as proposed the provision of social bandwidth is effected through the used of leased capacity on submarine cable then that would require negotiations with at least four to five cable providers and interaction with up to twenty – one regulators from Belize to Suriname. The countries that would be connected, following a North-West to South-East trajectory are; Belize, Cayman Islands, Jamaica, Turks and Caicos Islands, Bahamas, Bermuda, Haiti, Dominican Republic, St. Croix, St. Kitts/Nevis, Antigua, Guadeloupe, Commonwealth of Dominica, Martinique, St. Lucia, Barbados, St. Vincent and the Grenadines, Grenada, Trinidad and Tobago, Guyana, Suriname.

The other issue would be the variation in cost for segments of the leased cable. We would have monopoly cost structures in countries where there is no competition, (nor regulation) in the particular service. The regulatory issues arising would be whether to allow competition in the provision of domestic and international backbone capacity; and where there is little or no competition to impact prices, regulate the monopoly’s or the dominant operators’ prices for such capacity.

The first of these requires a regulatory framework that allows and promotes domestic and international facilities-based competition and which will be permitted in Trinidad & Tobago and in Barbados and Anguilla. In the ECTEL States competition is being provided and in Antigua expected by early 2007. It will be then be possible in these countries and territories for new entrants to build, operate, and offer services on competing backbone infrastructure.

An important issue for backbone facilities is interconnection. Domestic competing backbone networks must be able to interconnect with the incumbent’s international facilities under non-discriminatory terms and conditions, in a timely fashion and with cost-oriented prices which are reasonable and transparent as required by the WTO commitments of countries such as Jamaica, Trinidad and Tobago, Barbados and Suriname Furthermore, to promote competition co-owners of international fiber optic cable systems must be allowed to interconnect with competing domestic providers of backbone capacity or alternatively they must have access to and use of the dominant operators backbone facilities on “reasonable and non-discriminatory terms and conditions” as required by the General Agreement in Trade in Services Telecommunications Annex .

The regulator also needs to develop a policy and regulatory provisions to permit site sharing and collocation so that co-owners of submarine cable systems can install their multiplexers and other terminal equipment in the cable stations of the incumbent.

In the second case, where there is no or little competition in the provision of leased circuit capacity, the regulator must ensure that conditions exist for users to obtain the bandwidth capacity they need under non-discriminatory, transparent conditions and at cost- base prices. In this respect in the chapter on recommended action we propose establishing specific measures for implementation on a Caribbean-wide basis to address the important issue of high leased circuit costs. These measures involve harmonization of conditions for leasing capacity and developing benchmarks along the lines of those presented here and should not present any particular difficulty to implement by mutual agreement of regulators and government officials in the region.

**7.0 A new paradigm**

We have established that social bandwidth is critical for the interchange of ideas between societies and that in the Caribbean there is a complete absence of this bandwidth. All however is not lost and the provision of bandwith through the Caribbean and Knowledge and learning Network the Heads of Government have decided that the mandate would be widened to include social bandwidth.

The issues still remains as to where we will get this band with at reasonable costs and it is here where we see the recent developments in submarine cable deployment providing the answer. The inititatives by the French Overseas departments to have broadband capacity in Guadeloupe and Martinique and now Cayene are providing new option for capacity at reasonable costs with The GCN submarine cable Network, Antilles Crossing in Barbados and st. Lucia and a number of new Cables in Jamaica will provide a new paradigm for social bandwidth provision.

A paradigm where there would be excess capacity, competition for the provision of service and stimulation of the demand side. In this new paradigm we now need to consider the regulatory challenges that are not limited the international connectivity side.New technologies are being deployed and technological and service provision convergence is upon us. Service providers will now be able to provide various siffferently licensed services on one physical platform and across different countries and the regulatory infrastructure must adapt and do so quickly.

Technological convergence, through the existence of digitization and the use of IP protocols, when matched with the competitive provision submarine cable capacity will lead to an explosion of social connectivity and it is the regulators responsibilty to make sure that we do not place hurdles in the way of this revolution by ignoring this responsibility.

**8.0 Recommendations**

In ensuring that barriers to investment for provision of social bandwidth are reduced, Stern (2005) recommended as a means to help reduce the regulatory barriers to investment and for promoting the development of the Information and Communications Technologies sector in the Caribbean the following initiatives;

- Establish a comprehensive regional program of resource sharing, training, and information exchange among regulators and policy makers;
- Facilitate interaction among the region's regulators to review, improve, revise, and harmonize policies, legal and regulatory frameworks, procedures and standards to diminish uncertainty and simplify procedures for investors;
- Support the newly established regulatory institutions in the region to become more effective and to assert their independence of political and other influences;
- Familiarize telecommunications regulators and government officials with the principles and best practices in dispute resolution and help develop a regional capacity to jointly deal with disputes;
- Familiarize regulators and government officials with business planning and finance practices by enhancing their understanding of the implications of their decisions on the flow of investment into the telecommunications sector; and
- Familiarize telecommunications policy makers, regulators, trade negotiators, other government officials and the private sector with the Doha Round (and other) trade negotiation issues, and to provide technical support they may require.

He also identified the need to establish a permanent framework for regional collaboration in ICT establish ongoing mechanisms through which government officials, regulators and others could address regulatory issues.

The development of social bandwidth and the facilitation of social networks would best be serviced through communities of interest being encouraged to come together in regional initiatives. The Caribbean knowledge and Learning Network CKLN and the UWI Master's Degree in Telecommunications Regulation and Policy (MRP)are examples of such initiatives to be encouraged and fostered.

Through coordinated and innovative regulation the knowledge chain (data-information-knowledge) will be supported and perhaps in the future the wisdom of our ways will be seen.

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