CANTO
STRATEGIC ALLIANCES
FOR SUSTAINABLE BROADBAND DEVELOPMENT

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Vele Landen... Een Stem
Plusieurs Nations... Une Seul Voix
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First Quarterly Magazine 2014
Volume 01/2014

CANCION

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To facilitate the development of ICT solutions for the benefit of members and other stakeholders in the Caribbean region.

Vision

To be the leading authority in shaping information and communication in the Caribbean.

Objectives of Cancion

To inform CANTO's membership of information and communication technologies and policy developments taking place in the member organizations of the association.

To reach policy makers of the Caribbean, sharpening their awareness of regulatory developments and technological progress as it affects the region.

To provide CANTO with a literary voice to reach others in the region and internationally, with news, information and analysis of information and communication technology developments in/or affecting the Caribbean.

If you or your organization are engaged in or informed about activities or developments which impact upon Caribbean information and communication technologies please write and let us know.

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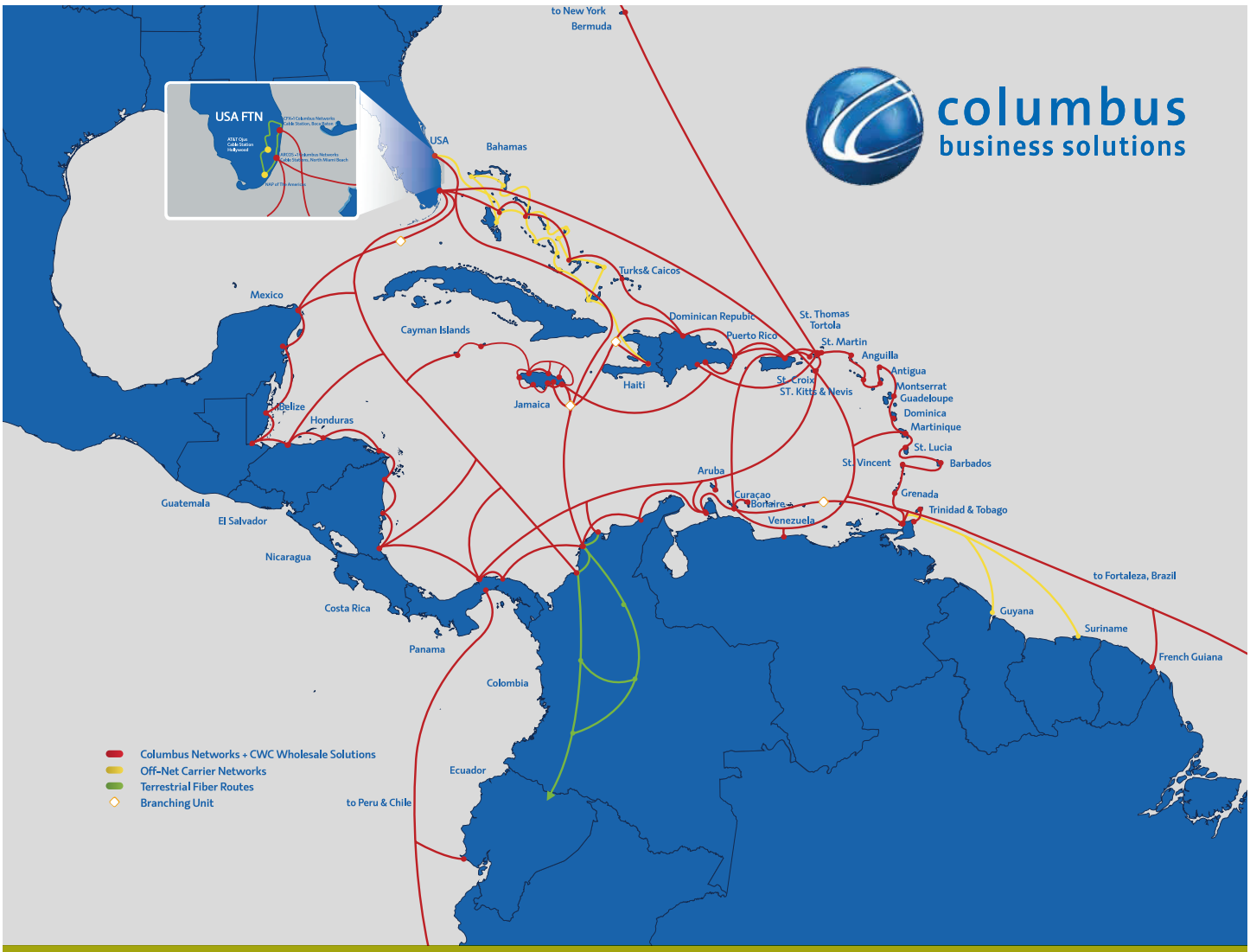

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Strategic Alliances for Broadband Development

Editorial (English)

CANTO kicked off its thirtieth year with the Annual General Meeting (AGM) under the theme -Strategic Alliances for Sustainable Broadband Development. Members assembled in Montego Bay, Jamaica from the 25th -28th January, 2014 to participate in the business sessions, and agree strategies and plans to take forward an ambitious 2014 agenda. As is customary, the Board of Directors and Working Committee meetings preceded the AGM. This year saw the addition of the Corporate Social Responsibility Committee. This committee was birth out of thrust to put added focus on the wider social issues related to ICT development. The session on e-waste was an output from this new working committee.

CANTO welcomed Columbus Communications Limited to the Board, as UTS, demitted this office. With Board representation from operators across the region -LIME, Digicel, Telecommunications Services of Trinidad and Tobago, Telesur, TELEM and Belize Telemedia Limited , CANTO, is uniquely placed to leverage its position in creating strategic relationships to deliver on the broadband goals of the region.

The Hon. Julian J. Robinson, Minister of State, Ministry of Science, Technology, Energy and Mining of Jamaica in his address to members during the Opening Ceremony spoke to the pivotal role that access to broadband will play in developing the economies of the region. The Minister spoke to the role of government in ensuring policies promote more competitive markets and affordable broadband access for all citizens. He noted that the most effective government policies and strategies are those that seek to harness the power of private sector investment to spur broadband growth.

Throughout the three days of meetings various speakers including members and invited speakers shared their perspectives on how to increase broadband penetration and usage across the Caribbean. Mr. Antonio Garcia Zaballos of the Inter-American Development Bank (IDB) gave the multilateral agency's viewpoint and provided valuable information on loan facilities that are available to the private and public sector for financing broadband projects. He encouraged delegates to make contact with the IDB with a view to discussing projects in areas such as broadband access, adoption and usage.

Mr. Jim Stegeman from CostQuest Associates gave a wide ranging overview of the approach to universal services in the United States. He addressed areas such as cost modelling approaches, with insights on rural and urban programmes for broadband rollout in the United States. This presentation underscored the need for policy decision in this area to be informed by objective and research based analysis.

One key emerging issue for the region as a whole is spectrum planning and management. Mobile technology is the primary platform for the provision of voice services. Given the levels of mobile penetration across the Caribbean, technology advancements (developments in 4G and 5G standards), and increased broadband speeds; makes the mobile broadband option attractive for the Caribbean region. In this scenario the availability of suitable spectrum will be a key factor in allowing operators to offer services to customers. Considering other market trends such as the digital switchover of terrestrial television services being planned in several

Caribbean countries, the efficient use of spectrum will become even more important.

It is against this background that CANTO is collaborating with the IDB and The Caribbean Telecommunications Union (CTU) on a project to harmonize spectrum planning and management across the Caribbean. The objective of this project is,*"to deepen the harmonization of spectrum planning and management policies and practices across the Caribbean region, including in areas such as white spaces and frequency re-utilization"*.

Work has commenced on this project. Members and operators such as LIME and Digicel are already very involved. The output of this project is expected to be available by January 2015. This will form part of the submission from the Inter-American Telecommunication Commission (CITEL) to the International Telecommunication Union (ITU) World Radiocommunication Conference in November 2015.

During the session on "Americas Spectrum Issues", input from CITEL was provided by vide conference. This provided participants with an informed glimpse into the technical and commercial issues around spectrum planning and allocation. The clear message from this session is the need for the region to work together to come up with a common position, and ensure that this is vigorously represented in the consolidated position of the Americas region and eventually to the World Radiocommunication Conference in November 2015. This is certainly an area where CANTO can and is adding value by ensuring that the region is represented at the table when key spectrum policy decisions are made at the global level.

"Pardon the e-Waste Interruption!" was a really eye opening session. Representatives from Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean region spoke on the topic "Creating an Enabling Environment for the Sound Management of e-Waste in the Caribbean region." They painted a picture of e-waste management globally and the Caribbean in particular, using case studies from Trinidad and Tobago. What is clear is that much more needs to be done to create awareness of the issues and develop and implement policies to facilitate sustainable e-Waste management strategies for the region.

Members were provided with an update on the Broadband Infrastructure Inventory and Public Awareness in the Caribbean Project (BIIPAC). This project is the centre piece of CANTO's efforts to support the development of broadband in the Caribbean. With funding from the IDB and CANTO as executing agency, the project aims to support governments in the eight beneficiary countries in designing national broadband strategies. The first component of the project will deliver broadband diagnosis and infrastructure development maps for the beneficiary countries. This work has been commissioned. The remaining three components, assessment of regulatory and institutional framework, awareness and capacity building programmes public policy recommendations will follow.

The final session of the AGM entitled - CANTO – A look into the future" provided an opportunity for the Board and members to look back at achievements over the past twenty nine years and to look ahead to ensure it remains

relevant, add increased value for members, and live out its vision To become the leading authority in shaping information and communication in the Caribbean.

The contribution and insights elicited during this very interactive session is testimony to how partnership and collaboration support the achievement of shared goals. The directorship and Secretariat listened attentively. You got the impression all were really engaged. There were suggestions to attract and sustain the interest of new members, increasing value to current members and making lasting contributions to the people we serve our customers and the people of the Caribbean region.

A mini exhibition was held alongside the AGM. This featured nine exhibits covering technology providers as well as service providers. Just a taste of what to expect in August at the 30th Annual Conference and Trade Exhibition in The Bahamas. See you there.

Alianzas Estratégicas Para el Desarrollo de Banda Ancha

Editorial (Español)

CANTO inició su trigésimo año con la Reunión General Anual (AGM), con la temática Alianzas Estratégicas para el Desarrollo de Banda Ancha Sostenible. Los miembros se reunieron en Montego Bay, Jamaica del 25 a 28 enero 2014 para participar en las sesiones de trabajo para llegar desarrollar planes a y acuerdos estratégicos para el cumplimiento de su ambiciosa agenda.

Como es habitual, el Buro de directores y de los Comités de Trabajo se reunió previo a la AGM. Este año vio la adición de la Comisión de Responsabilidad Social Corporativa. Este comité fue creado para apoyar las iniciativas de los miembros en esta área.

CANTO dio la bienvenida a Columbus Communications Limited a la Junta, en cuanto UTS, dejo esta oficina. Con la representación de otros operadores de toda la región, LIME, Digicel, Servicios de Telecomunicaciones de Trinidad y Tobago, Telesur, TELEM y BTL, CANTO, tiene un lugar unico para aprovechar su posición en la creación de relaciones estratégicas para cumplir con las aspiraciones de banda ancha de la región.

Estas aspiraciones fueron expresadas por el Honorable Julian J. Robinson, Ministros de Estado, Ministros de Ciencia, Tecnología, Energía y Minería de Jamaica, en su discurso a los miembros durante la Ceremonia de Apertura. El Ministro se refirió a la función de los gobiernos en crear mercados más competitivos y tratar de garantizar un acceso asequible para todos los ciudadanos. Señaló que las políticas y estrategias gubernamentales más eficaces son las que tratan de aprovechar el poder de la inversión del sector privado para estimular el crecimiento de banda ancha.

A lo largo de los tres días de reuniones diversos oradores, entre ellos los miembros y ponentes invitados compartieron sus puntos de vista sobre la manera de aumentar la penetración de la banda ancha y su uso en todo el Caribe. Sr. Antonio Garcia Zaballos del BID dio el punto de vista de la agencia multilateral y proporcionó información valiosa sobre servicios de préstamos que están disponibles para el sector privado y público para la financiación a proyectos de banda ancha. Alentó a los delegados a hacer contacto con el BID con el fin de discutir proyectos en áreas tales como el acceso de banda ancha, la adopción y el uso.

Sr. Jim Stegeman de CostQuest Associates dio una visión amplia del enfoque de los servicios universales en los Estados Unidos. Abordó temas como métodos de modelización costo con ideas sobre programas rurales y urbanos de banda ancha en los Estados Unidos. Esta presentación destacó la necesidad de una decisión política en este ámbito para ser informado por objetivos y la investigación basada en análisis.

Una cuestión clave para la región en su conjunto y que fue destacada es el espectro de gestión y dirección. La tecnología móvil es la principal plataforma para la prestación de servicios de voz. Teniendo en cuenta los niveles de penetración de telefonía móvil en todo el Caribe, y los avances en la tecnología y la evolución móvil 4G y 5G a largo plazo que permite una mayor velocidad de banda ancha, la opción móvil de banda ancha es un atractivo para la Región del Caribe. En este

escenario, la disponibilidad de espectro adecuado será un factor clave para permitir a los operadores ofrecer servicios a los clientes. Teniendo en cuenta otras iniciativas: como la conversión al sistema digital de servicios de televisión terrestre implementado en varios países del Caribe, el uso eficiente del espectro será cada vez más importante. Es en base a esto que CANTO esté colaborando con el BID y la Unión de Telecomunicaciones del Caribe (CTU) en un proyecto para programar y armonizar la gestión del espectro en todo el Caribe. El objetivo de este proyecto, "Profundizar en la armonización de las políticas de planificación y gestión del espectro y las prácticas en toda la región del Caribe, incluso en zonas tales como: espacios en blanco y la reutilización de frecuencias".

Ya se ha comenzado a trabajar en este proyecto. Los miembros y los operadores: como LIME y Digicel ya están muy involucrados. Se espera que el resultado de la asignación de espectro esté disponible en enero de 2015. Esto contribuirá de CITEL a la Conferencia Mundial de Radiocomunicaciones de la Unión Internacional de Telecomunicaciones (UIT), en noviembre de 2015.

Durante la sesión sobre "Problemas del espectro en las Américas", el aporte de la Comisión Interamericana de Telecomunicaciones () fue provista por videoconferencia. Esto proporcionó a los participantes una visión informativa en las cuestiones técnicas y comerciales en todo la asignación del espectro y la programación. Los mensajes claros de esta sesión fueron la necesidad de trabajar juntos en el área para llegar a una posición común, y asegurarse de que esto se representa con fuerza en la posición consolidada de la Región de las Américas y, finalmente, en la Conferencia Mundial de Radiocomunicaciones, en noviembre de 2015. Ciertamente, esta es un área en la que CANTO podrá agregar valor al asegurar que la Región está representada en la política del espectro cuando se toman las decisiones clave a nivel global.

Perdón por la interrupción e-Waste" fue una sesión que realmente nos abrió los ojos. Representantes del Centro Regional del Convenio de Basilea para la Capacitación y Transferencia de Tecnología para la Región del Caribe hablaron sobre el tema "Creación de un entorno propicio para la gestión racional de los desechos electrónicos en la región del Caribe." Pintaron un cuadro de gestión de residuos electrónicos a nivel mundial y el Caribe en particular, utilizando estudios de casos desde Trinidad y Tobago. Lo que está claro es lo mucho más que hay que hacer en esta área para crear conciencia de los problemas y elaborar y aplicar políticas que faciliten estrategias sostenibles de gestión de los desechos electrónicos para la zona.

Los miembros se les proporcionaron una actualización sobre el Inventario de Infraestructura de banda Ancha y Concienciación del Público en el Proyecto Caribe (BIIPAC). Este proyecto es la pieza central de los esfuerzos de CANTO en apoyar el desarrollo de la banda ancha en el Caribe. Con financiación del Banco Interamericano de Desarrollo (BID) y CANTO como organismo de ejecución del proyecto tiene como objetivo apoyar a los gobiernos en los ocho países beneficiarios en el diseño de estrategias nacionales de banda ancha. El primer componente del proyecto, entregará la

infraestructura de banda ancha de diagnóstico del desarrollo y los mapas de los países beneficiarios. Este trabajo ha sido encargado-, y se espera que el resultado esté disponible muy pronto. Los tres componentes restantes, la evaluación del marco normativo e institucional, los programas de sensibilización y fomento de la capacidad y las recomendaciones de política pública seguirán.

La última sesión de la Junta General Titulado - CANTO - Una mirada hacia el futuro “, una oportunidad para que los miembros de la Junta y para mirar hacia atrás en los logros de los últimos veinte nueve años y mirar hacia adelante para asegurar que siga siendo pertinente, agregue Aumento de valor para los miembros y vivir icts visión “para convertirse en la principal autoridad en la conformación de la información y la comunicación en el Caribe. La contribución e ideas aportadas en esta sesión muy interactiva es un testimonio de cómo la cooperación y la asociación ha aumentado.

El directorado y secretariado escucharon con atención. La impresión fue la de que todos estaban comprometidos. Hubo sugerencias de atraer y mantener el interés de los nuevos miembros, aumento de valor para los miembros actuales y hacer contribuciones duraderas a la gente que servimos, nuestros clientes y la gente de la zona del Caribe.

Un mini exposición se celebró junto a la Junta General. Este contó con nueve exposiciones que abarcan los proveedores de tecnología, así como los proveedores de servicios. Apenas una muestra de lo que puede esperar en agosto en la exposición 30 ª Conferencia Anual de Comercio y en las Bahamas. Nos vemos allí.

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10th Happy Anniversary

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Broadband, Spectrum, E-waste, Key Topics at CANTO's 30th AGM in Jamaica

Montego Bay, Jamaica was a melting pot of ICT activity when over 85 delegates consisting of members and invited guests from a membership of 134 companies based in 34 countries convened at the Half Moon Hotel. The three day event co-hosted by LIME Jamaica ran from the 25th -28th January, 2014 and was held under the theme: "Strategic Alliances for Sustainable Broadband Development".

The packed agenda was unleashed with the customary preambles such as the Board of Directors meeting on the Saturday followed by the working committees on Sunday morning. The official Opening Ceremony on Sunday evening featured Hon Julian J. Robinson, Minister of State, Ministry of Science, Technology, Energy and Mining. In his address, the minister spoke about the role of government in the development of broadband and stated that:
"Typically government's role in promoting the growth of broadband should be to:

- Make markets more competitive, efficient, accountable and transparent;
- Ensure equitable access for all…"

He further pointed out that "the most effective government strategies are those that seek to harness the power of private sector investment to spur broadband growth. No "one-size-fits-all" approach will guarantee greater broadband deployment and adoption as political and economic conditions vary".

Other speakers at the Opening Ceremony included; Dirk Currie (Chairman), Karen Bevans(Vice Chair), Ms. Regenie Fräser (Secretary General), of CANTO and Mr. Garfield Sinclair, (CEO of LIME Jamaica).

The 30th AGM saw the approval of the Secretariat report and financial statements for 2012/13 while including voting for Board of Directors positions, reports from the six working committees of the Board including the newly formed Corporate Social Responsibility committee and an update on the on-going BIIPAC project.

The election portion of the AGM proceedings yielded the following: Davidson Charles (LIME Antigua) was re-elected to the office of Treasurer. Julian Wilkins (Digicel Trinidad & Tobago), Lawrence McNaughton (LIME St. Lucia), E. Jay Saunders (Digicel Turks and Caicos) and Charles Carter (TSTT) were re-elected to the Board. CANTO also welcomed newly appointed board member John Reid (Columbus Communications) who replaced outgoing Lyrio Gomez of UTS. Continuing on the board are Dirk Currie (Telesur) - Chairman, Karen Bevans (BTL) - Vice Chair and Helma Etnel (TELEM), Director.

There were several sessions added to the agenda this year. The first session was the *"Financing-Broadband Infrastructure in the Caribbean"*. The objective of this session was to discuss innovative ways in which Broadband infrastructure can be financed within the Caribbean. From the multilateral agency viewpoint, Mr. Zaballos of IDB detailed that loans can be made available to the private and public sector for broadband financing projects, delegates were encouraged to make contact with the IDB with a view to discussing projects involving Access, Adoption and Usage, as

these are priority areas for the Bank. Mr. Stegeman from CostQuest Associates gave various examples of how broadband rollout has been costed in North America. Costing insight was detailed for rural and urban scenarios.

Jonelle Jones and Khaliqa Muhammed gave sterling presentations about the reality of e-Waste in the Caribbean, replete with a special Trinidad & Tobago case study, in a session entitled: *Creating an Enabling Environment for the Sound Management of e-Waste in the Caribbean region*. The Caribbean's primary method of treating with e-Waste still remains storage and so the need for greater awareness and policy creation, which would facilitate sustainable e-Waste management strategies for the region, were articulately underscored.

The session "Americas Spectrum Issues" zoomed in on the impact on Caribbean Operators and underlined the fact that these must get access to spectrum to provide Caribbean customers with the type of connectivity they desire. There were presentations delivered by Melesia Sutherland-Campbell of LIME, Jamaica and Andrew Gorton of Digicel, Jamaica.

In as far as representing the region in international spectrum, CITEL in partnership with the ITU will be the relevant bodies. As such, CANTO was urged to work with CTU to ascertain the spectrum allocation priorities from the region's governments, which would then be communicated to CITEL and the ITU.

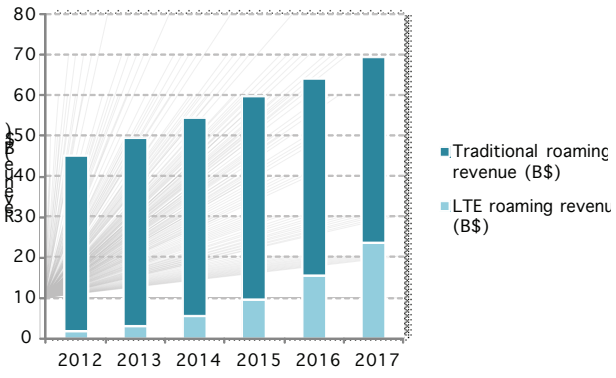
In its 30 year milestone, CANTO used the opportunity for introspection through its final session titled: CANTO – A look into the future" chaired by: Karen Bevans, Vice Chair and CANTO. Other panellist included Julian Wilkins, CANTO Director, Dirk Currie CANTO Chair and Secretary General, Regenie Fräser. Two key recommendations from the delegates were for continued focus to be spent on achieving the Association's objectives and for greater emphasis on value added services for the benefit of the CANTO membership.

CANTO's 30th AGM & Mini Expo was sponsored by LIME Jamaica, CISCO, Anritsu and Shields Environmental. For more information visit www.canto.org/agm

LTE Roaming Challenges and Opportunities

Ajay Joseph, iBasis CTO

The LTE era is well and truly upon us, with research from the Global Mobile Suppliers Association (GSA) showing 285 operators currently investing in LTE in 93 countries worldwide. According to 4G Americas, at the start of 2014 there are 32 LTE networks in 15 countries in Latin America and the Caribbean. LTE connections in the region is predicted to grow from 1 million in 2013 to 82 million connections in 2018, according to Informa.



As network operators embrace LTE, it is essential that they be able to provide mobile data roaming from the outset. Without this capability, mobile operators will be at a serious disadvantage in generating the revenues required to recoup their investment in LTE technologies. Yet a number of organisations have expressed concern over the lack of a standard solution to the problem of LTE data roaming.

The opportunity is not to be underestimated. The use of mobile data services while abroad is booming, and it is a market that operators need to nurture to ensure profitable future growth. Moreover, business roamers will generate an increasingly large proportion of the overall roaming revenues going forward.

A conversation with Ajay Joseph, iBasis CTO

Q: Why are the signaling protocols familiar to operators of circuit switched networks being replaced by a new generation of specifications for LTE roaming?

A: For 2G and 3G networks, signaling for roaming is based on SS7—a set of telephony protocols that have long been used to set up most of the world's PSTN telephone calls. As operators move to LTE, SS7 is being replaced by purely IP-based signaling interfaces, such as the Session Initiation Protocol (SIP)—a text-based protocol that incorporates many elements of HTTP and the Simple Mail Transfer Protocol (SMTP) familiar to traditional IT network engineers—and Diameter—an authentication, authorization

and accounting protocol for networks, which also supports mobile management in the all IP network.

Q: Why is Diameter so important in LTE networks?

A: Diameter is necessary because of the vast and unpredictable surge in data that comes with LTE. There are many new network elements to consider in an LTE environment, such as policy control enforcement, security and billing and charging. Diameter connects all of these elements. Operators need to support Diameter with software capable of routing and load-balancing traffic to ensure that each signaling message gets to the right place at the right time. So, if a message would normally be routed to one server but all of a sudden there is a surge of traffic and that server becomes overloaded, a Diameter-enabled router will send it to another server.

Q: Why can't LTE roaming be handled between individual operators as in 2G and 3G networks?

A: This method is fraught with complication and expense. When there are more than 300 different LTE networks in operation, the creation of bilateral connections will simply be too unwieldy a process. Each of these networks uses different vendors, and even from the same vendors there are going to be different versions of Diameter. Getting all of them to talk to each other is a significant challenge. I believe an exchange model offers the most efficient and effective solution.

Q: What impact will IPX have?

A: IPX is a must for LTE roaming and interconnect due to the IP nature of LTE and the required quality differentiation that LTE voice, signaling, data and messaging requires from the underlying IP infrastructure. Technically speaking it is possible, for example, to run Diameter traffic over the GRX on a small scale for trials or the first few roamers, but the GSMA IPX model is the right solution for meeting the varying Quality of Service (QoS) demands across voice, video, data, signaling and messaging. As the complexity of the network increases and roaming margins come under pressure, operators will benefit from an IPX partnership with a vendor that can evolve all services, risk-free, to the new IP infrastructure.

Q: Why is it taking operators that have already launched LTE so long to deploy LTE roaming?

A: In terms of technical hurdles that must be addressed and in addition to the frequency fragmentation issue that will be addressed by the handset community very soon, the

all-IP nature of LTE is forcing a change in signaling protocols from SS7 to Diameter and SIP.
That implies that the signaling interconnect infrastructure needs to be rebuilt, and physical interconnects between roaming partners need to be re-forged from scratch, using a relatively new protocol like Diameter. Also, the national Diameter infrastructure needs to be ready with the right Diameter Routing Agent (DRA) topology to support that interconnect. And it takes two to tango – the existing roaming agreements are only useable when both parties are technically ready for LTE roaming. Last but not least, if the two parties have different IPX providers, they need to establish an IPX peering interconnect, which brings the normal demands and challenges of a new interconnect. That is why iBasis focuses on an end-to-end IPX roaming solution for LTE with wide reach, open peering, valuable services like hosted DRAs and a comprehensive platform for multiple services, including VoLTE.

Q: What are the advantages of an LTE signaling exchange?

A: An LTE signaling exchange (LSX) acts as a single interconnect, reducing complexity and allowing mobile operators to connect to the hundreds of other operators downstream. The exchange looks inside the messages on an individual basis, depending on what theoperators need. It can normalize the messages going back and forth to enable interoperability on behalf of each roaming partner.

Q: When will we see widespread commercial agreements for LTE roaming?

A: The first LTE roaming corridors are being created last year, and this year we will begin to see the real take-up of commercial LTE roaming traffic as a critical mass of operators and their IPX carriers will be ready for LTE roaming. iBasis has been at the forefront, preparing our IPX for LTE roaming and peering. So, from the perspective of "the man-in-the-middle", iBasis is ready to support widespread commercial adoption of LTE roaming right now. In fact, our hub, or exchange model, which we call the LTE Signaling eXchange (LSX) will accelerate the spread of international LTE roaming by helping operators deliver that capability, as well as other new services, to their subscribers faster and more efficiently. We believe the pace will accelerate over the next 12 to 24 months as more operators complete their domestic deployments and home-country roaming agreements.

Ajay Joseph is responsible for the technical strategy and engineering of the iBasis global network and underlying systems. Ajay is also responsible for driving innovation within iBasis and is a member of parent-company KPN's innovation council. Ajay's blog posts can be found at lteroaming.info.

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Increased Competition in Latin America Puts Spotlight on Need for Improved Performance Management

By: Anand Gonuguntla, Co-Founder and CEO, Centina Systems

The explosion of innovation taking place in today's Latin American communications marketplace is both exciting and daunting. Today if you walk through downtown São Paulo, you may need to be reminded you are not in Silicon Valley.

Communications service providers (CSPs) and cable operators-both incumbent and competitive -are vying for an increasingly growing customer base. In order to meet the growing demands for quality services, pre- and post-paid models and x-play services, communications service providers are investing heavily in transformational software that will both enable the roll out of innovative new services, and assure the quality of the services. The demand for high quality of customer experience is forcing both old and new players to invest in telecom software assurance and network monitoring solutions that will help optimize the business and reduce potential for loss of service quality.

Where are CSPs and Cable Operators Investing? Given the increasingly competitive Latin American communications market, below are five key growing areas of service assurance investment:

1. Network Performance Management

A network performance management solution that provides real-time, historical and projected network performance analysis and visualization of the end-to-end performance of any type of network or cloud infrastructure is essential for CSPs. Supporting both established and emerging services with end-to-end visibility, enhanced SLA management, visual analytics and dynamic reporting, advanced analytics empower network operators to directly support their business requirements with smart visibility into the customer experience.

With this type of solution, service providers can improve the performance and availability of their network through early detection and proactive monitoring, as well as track key performance indicators (KPIs) and their impact on the business and contractual Service Level Agreements (SLAs).

2. Ethernet Performance and SLA Management

As service providers accelerate their rollouts of ethernet services to take advantage of the operational cost benefits, little attention is being paid to the unique management and monitoring imperatives of these new technologies. While ethernet services allow providers to offer much higher bandwidth at much lower operational costs and CapEx spend, throughput, availability and performance must be managed much more proactively to ensure customer experience and adherence to SLAs. Existing legacy monitoring tools are not up to the task given increased competition for market share.

As such, a proactive, end-to-end ethernet service performance management solution that provides actionable analytics, real-time service discovery and SLA conformance monitoring is needed to assure their ethernet services.

3. Cable DOCSIS Broadband Performance

Many Latin American cable MSOs are using homegrown, standalone systems to monitor the

performance of cable modems and MTAs that are not seamlessly integrated into their core network and performance management systems, making it difficult to identify the source of performance issues quickly. In addition, as networks and technologies evolve, MSOs are tasked with maintaining custom software but are not keeping up with the pace of change.

In order to assure the performance of cable services, cable broadband performance management solutions that can dramatically improve network performance and service quality for High Speed Data and VoIP networks are becoming an increasingly important investment. Cable broadband service assurance improves customer experience by delivering actionable, real-time analytics and network visualization to dramatically improve network performance and customer experience.

4. Enhanced SLA Management: Real-Time Tracking of Customer SLAs

Most operators offer contractual SLAs for voice and data services, where poor performance indicators can significantly impact the end-user's mission-critical communications, and, therefore, the very lifeblood of their business. With the appropriate monitoring and SLA tracking solution, service providers can use SLAs as a selling tool to prevent revenue erosion, differentiate their service and beat the competition. An enhanced approach to SLA management ensures that SLAs can be measured, monitored and conformed to in order to boost customer confidence and give them greater visibility into the network.
Enhanced SLA management can allow the provider to define SLAs on a customer-by-customer basis, view the real-time status of conformance, as well as conformance over the monitoring period, and define custom notifications and thresholds to prioritize responses based on customer. An enhanced SLA-management approach can also include the ability to visually map operational performance to customer services, to clearly show the impact of network degradation and process faults on the agreed SLAs.

5. Customer Portals: Monitoring and managing the customer experience

CSPs and cable MSOs are increasingly demanding visibility into the services they purchased to view status, health and SLA conformance. In order to meet this demand and decrease customer churn, service providers need a *Customer Assurance* solution that enables them to offer a configurable web portal to their customers that allows them to see the health and status of their purchased services as well as adherence to contractual SLAs.

A successful Customer Portal solution enables end-customer visibility to the services they purchased in real-time. With this type of solutions, the end-customers verify the status and performance of their service before making service calls to their provider. The business advantages of Customer Assurance include:

- Improved customer experience with added transparency in customer support
- Reduced customer supports calls
- Differentiated services from competition to increase revenue and decrease customer churn

Conclusion

As we progress through 2014 and beyond, we expect communications service providers to continue the trend of investing in these types of service assurance and network performance management solutions. By being proactive and implementing these solutions now, service providers will be well positioned to stake a claim and exponentially grow their customer base.

Improving Regulatory Policy Making Through Measurement

Authors: Andrew Gorton – Group Head of Regulatory Affairs, Digicel Group
Julian Wilkins – Director Telecoms Public Policy – Digicel Group

The Global System for Mobile Association (GSMA) states: 'Governments that enable mobile network investment and remove barriers to the deployment of network infrastructure will accelerate the provision of mobile services to their citizens.' The GSMA's statement highlights the fact that policy decisions by government and regulators can greatly impact network investment, innovation and the rollout of new and improved telecommunications services.

New policies are often implemented by governments and regulators but we question the extent to which there is a good understanding of the impact of those policy changes, both in the short and long term. Is the impact of policy changes measured? How do policies affect operator investment? Can policy changes be measured in a meaningful and effective manner? We think that it is possible for policy makers in the telecommunications sphere to use additional scientific methods to improve policy making, the process of learning from policy making, and therefore the outcomes for citizens.

We recommend that before implementing any new policy, governments and regulators should decide on how they will measure the results and publish details of the measurement approach to be utilised. This would provide all stakeholders with an appreciation of the impact of policy changes and would guide governments and regulators in future policy making. Before policy implementation, there needs to be
(a) an understanding of the current state of affairs
(b) a clear understanding of the changes that are requiredand by when, as a result of a new or revised policy.

1http://mph.gsma.com/publicpolicy/download-mobile-policy-handbook

Understanding the impact of previous policy changes will help to increase the chances of improved outcomes as a result of future changes. The possibility of negative effects or unforeseen outcomes from implementation will also be reduced.

Effective Regulation: Minimise, Prioritise and Measure

We advocate a legislative approach which ensures the minimisation and prioritisation of regulatory policy from the outset. We would recommend as a starting point:

1. Regulating only when it is seen to be absolutely necessary;
2. Withdrawing from regulation wherever possible;
3. Intervening only if the intervention would significantly pass a cost benefit test.

Measurement can be used to estimate benefits as a part of a cost benefit test. Alternatively, even where costs are ignored because a Regulator takes the position that something is a consumer right, the outcome of a policy should always be measured to determine the extent of any benefits, and to see if it would be possible to make improvements through adjustments, or to help with future policy implementations.

Avoiding unnecessary regulation and having a regulatory focus on only the matters of most consumer/commercial importance is standard practice in many jurisdictions (e.g. The United Kingdom(UK)) and is an effective way of avoiding the imposition of unnecessary and

unwarranted regulation. This is outlined in the **UK Communications Act 2003 – Sections 6 and 7 as follows:**

6. Duties to review regulatory burdens

(1) OFCOM must keep the carrying out of their functions under review with a view to securing that regulation by OFCOM does not involve -

(a) the imposition of burdens which are unnecessary; or

(b) the maintenance of burdens which have become unnecessary

7. Duty to carry out impact assessments

(1) This section applies where -

(a) OFCOM are proposing to do anything for the purposes of, or in connection with, the carrying out of their functions; and

(b) it appears to them that the proposal is important.

(3) Before implementing their proposal, OFCOM must either -

(a) carry out and publish an assessment of the likely impact of implementing the proposal; or

(b) publish a statement setting out their reasons for thinking that it is unnecessary for them to carry out an assessment.

In the UK there is a duty to review the regulatory burden and a duty to carry out impact assessments. This helps to ensure that the necessary level of thought lies behind the introduction of new policy and forces a measurement mechanism to be put in place for any new regulation.

Before Introducing Regulatory Policy

We recommend that before implementing any new policy, governments and regulators should decide on how they will measure the results and publish details of the measurement approach to be utilised. This would provide all stakeholders with an appreciation of the impact of policy changes and would guide governments and regulators in future policy setting.

If a policy is useful there will be measureable beneficial differences as a consequence of its implementation either immediately or in the future. The immediate benefits of a policy can be measured, and anticipated benefits can be estimated. Where benefits are estimated actual results should be compared with estimated results to judge the effectiveness of the policy making process and to improve future policy making.

We think that it is important to note that while one might occasionally hear the claim made that a benefit is “intangible” such claims are incorrect. They reflect generally either an imprecisely defined desired benefit, or a lack of knowledge of measurement techniques, or both.

Example of measuring before and after policy changes

Perhaps the best way to demonstrate the use of a measurement approach is to consider an application of it in the context of the introduction

of a policy for a Universal Service Fund (USF). The following process could be implemented to establish the outcomes from the introduction of a Universal Service Fund:

1. Establishing what the measures of success are (in terms of coverage and service delivery and to whom exactly);

2. Determining what the current state of affairs is in respect of those chosen measures. This will provide the starting point for each project. Ideally the results of that assessed starting point would be mapped online for all stakeholders to see;

3. Using the measures to determine what happened after each USF project was implemented.

It is possible to learn more effectively if we know the start point and what success is supposed to look like when each project commences. Consequently, the three stage measurement approach outlined above should be built in to regulation as a part of the steps to be followed in the case of, for example, the allocation of USF monies. This would constitute regulations as follows:

Prior to allocation of monies from the Fund the Authority shall:
a) Measure and publish the relevant metrics to be improved by application of the Fund;
b) State how and by when those metrics would need to change in respect of each chosen use of the Fund if application of the Fund is to be a success.

Following application of the Fund the Authority shall measure and publish the revised metrics required to determine whether the Fund has been applied successfully.

This process is an example of measuring policy in order to determine the outcomes which will result from implementation.

Conclusion

Clearly understanding the impact of past policy changes will improve the chances of better outcomes from future changes and reduce the possibility of negative effects or unforeseen outcomes from implementation.

We recommend that before implementing any new policy, governments and regulators should decide on how they will measure the results and publish details of the measurement approach to be utilised. This would provide all stakeholders with an appreciation of the impact of policy changes and would guide governments and regulators in future policy making. This approach would also illustrate that any new policy has been well thought out and considered prior to implementation.

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2014: The Year of Small Cell Deployment

Tony Tagliareni, Chief Sales & Marketing Officer - Clearksky

The number one complaint of mobile subscribers, and the number one issue faced by mobile operators, is poor coverage. Traditional macro cellular networks alone can no longer meet consumer demand for consistent, high-quality speed and coverage. To address this issue, the industry has turned to a technology that FierceWireless calls "indispensible for operators": Small cell. More than 50 percent of global and regional operators surveyed in the Small Cells New Order: A Global Status Report said they intend to deploy small cells in 2014, "the year of small cell deployment."

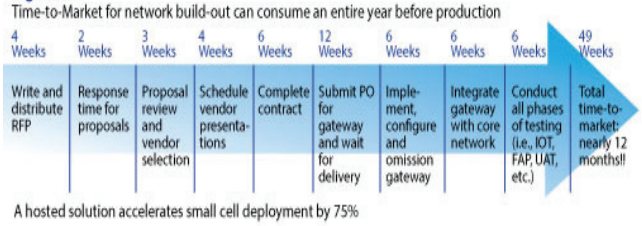
Some operators have adopted an aggressive approach to HetNet expansion. For example, AT&T has announced plans to deploy an additional 40,000 small cells in the U.S. But few operators have the same resources as AT&T. Most are struggling to resolve complex issues such as total cost of ownership, time-to-market, and backhaul. A hosted solution enables operators to maximize the value of small cell while minimizing these challenges. Let's take a closer look:

- **Total Cost of Ownership (TCO)**
  The purchase of a small cell gateway can cost a carrier upwards of $1 million, followed by numerous operational expenses. Annual maintenance typically costs 15% of the purchase price—$150,000 or more. Human resource expenses, with a minimum of three FTEs, can reach $100,000 each, per year. Operators can also expect to pay at least $5,000 per month on power, bandwidth, HVAC, networking, and floor space. Altogether, total annual operating expenses will likely exceed $500,000.

- An attractive alternative to purchasing and operating a small cell gateway is using a hosted service. In the hosted model, the capital investment has already been made by the hosting company, freeing the operator from the costs and burden of purchasing the infrastructure on their own. The operator will not incur any incremental charges for hardware or software upgrades; as new functionality arrives on the market, the hosted services provider seamlessly upgrades the service at no additional cost to the operator.

- **Time-to-Market**
  The process of purchasing a small cell gateway typically consumes 10-12 months before the infrastructure is in production and subscribers can realize the improvement in service. The timetable below outlines the various tasks facing operators that choose this approach.

Figure 1:
Time-to-Market for network build-out can consume an entire year before production



A hosted solution accelerates small cell deployment by 75%

A hosted solution dramatically accelerates small cell deployment so that subscribers benefit from better, faster service in as little as three months. Because the gateway is already in production, the time-to-market is reduced by 75 percent.

- **Backhaul**
  According to the FCC, 10,000 US citizens are currently unable to obtain any type of broadband service. Even after the purchase of a small cell gateway, so many operators fail to deliver adequate service to these un-served subscribers, as a small cell alone cannot improve coverage if there is not satisfactory backhaul.

By choosing a hosted solution that combines small cells with satellite broadband for backhaul, operators can provide high-speed data and five-bar coverage to markets where broadband is not currently available.

As the wireless industry continues to evolve, consumer expectations continue to change—but their number one demand is still to experience consistent, high-quality speed and coverage, wherever they are. Meeting this demand should be the highest priority of any operator, as it is essential to maintaining overall customer satisfaction and minimizing churn.

While the year of small cell deployment promises major progress in terms of speed and coverage, challenges including TCO, time-to-market, and backhaul continue to prevent many operators from leveraging this technology. A hosted solution maximizes the value of small cell for a fraction of the time and cost of network expansion, putting today's most advanced technology within reach for all operators and subscribers.

ClearSky Technologies' Small Cell as a service combines a hosted Small Cell Gateway with residential and enterprise femtocell access points, creating a cost-effective platform to address each of the above challenges. Unlike alternatives such as Wi-Fi offload, ClearSky improves network capacity and can even be deployed in areas lacking adequate broadband via satellite. For more information, visit www.clearskytechnologies.com

The Elephant in the Room

Atiba Phillips, Founder and Principal Consultant - ICT Ltd. (www.ict.co.tt)

The issue of sustainable broadband development – matters related to network infrastructure including routers, switch gear, submarine cable, data storage, etc. - is an issue well discussed in regional telecom forums. However, a less frequently discussed, but possibly more important issue is that of the achievement of sustainable development through broadband.

Indeed, broadband facilitates better access to the Internet. However, many leaders of public and private sector institutions, from middle management to top level executives, are not fully aware of the strategic opportunities that the current ICT paradigm presents. New ICT-enabled frameworks allow for the re-thinking of the borders of the organization, the revolutionisation of business models (think Kodak vs. Flickr – when last did you go to a store to print a photo?) and the opportunity to effect multiple simultaneous transactions efficiently.

When persons in consequential leadership positions do not possess a deep understanding of the technology, or an ability to clearly communicate how the technology developments can enable the achievement of organizational goals or a national vision, not only is sustainable development put at risk, but we also collectively court disaster.

As a case in point, let us look at the issue of natural disasters. The Caribbean knows well the cost of natural disasters, and the years, sometimes generations that it takes to recover fully from an event (think of the volcanic eruption in Montserrat). Imagine the scale of the issue should there be an "Internet disaster". What systems would we start to try to put in place at that time when, (for e.g.) an external service provider – say Google or the Florida-based Network Access Point (NAP of the Americas) - denies service (due to say a natural disaster in the US); and a regional Prime Minister is then unable to communicate with his/her Attorney General?

If we as nations, put our children on ICT learning platforms, but have no say into the platform (i.e. no meaningful understanding of the architecture of the Internet on which the platform is based, and further no ownership stake at the state level of this basic infrastructure) - then we court disaster. What if the platform, through no fault or action of ours becomes unavailable? How do we begin at that point to think about starting to find a solution or an alternative?

ICT managers do not believe it is within their purview to make those kinds of decisions. Disaster professionals do not feel they know enough about the strategic ICTs matters to strongly opine. The vicissitudes of the political process and generally short timeframe in office has lead politically motivated leaders to shy away from taking decisions which have long term implications or impacts which cannot be seen within the political timeframe.

And so we collectively agree that no one is going to decide; to lead. In so doing, we collectively make a very definitive decision to court disaster. This cycle must be broken.

The time is now, while we have not yet had such eventualities to face, for business and national leaders to really think deeply about the priorities for the current and future development of our economies and about the competencies and assets that we must nurture as a people. We must be led by leaders who have applied themselves to understanding the times and can proactively lead our captains of industry and the state sector to think about … "what if?" We must begin to understand what are the costs of action and the consequences of in action. Leaders must demand that we strategize a proactive response and eventually build capacity to turn these threats into opportunities for growth in the national and regional interest.

This requirement is squarely in the lap of leaders, because such issues are not ICT problems. They are not challenges only for the disaster risk management professionals. These are sustainable development issues which require a bold and informed kind of leadership to squarely address.

Business Sustainability

Another aspect of the "sustainable development through broadband" challenge is the need to justify the development of broadband networks on financial bases rather than simply on noble notions of the benefits of general citizen access to the Internet.

We must recognize that transnational undersea fiber cables represent market access highways which make it as easy for a domestic consumer to purchase product from a North American or UK firm as it is for that same consumer to purchase product from the physical retail outlet around the corner. This means that there is a leak of financial resources out of our economies, particularly to firms who do not support our financial system through taxation, corporate social responsibility (CSR) initiatives or employment.

Domestic businesses, on the other hand, have not (by and large) taken up the Internet challenge to make their goods and services available online. The array of flavors of data protection and electronic payments legislation in different nations of the region, as well as the reluctance of banks to offer online merchant accounts to indigenous businesses, all compound the systemic issues and bottlenecks to the taking off of the e-Business sector regionally.

continued on page 29

CANTO 30th Annu

E. Parkinson - Master of Ceremonies at CANTO 30th AGM

G. Sinclair, CEO of LIME Welcome Remarks

R. Fräser, Secretary General of CANTO - Opening Remarks

D. Currie, Chairman of CANTO - Chairman Remarks

Hon. J. Robinson, Min. of Science, Technology, Energy & Mining - Feature Address

K. Bevans, Vice Chair of CANTO - Vote of Thanks

Cross section of participants at the Opening Ceremony

From left: B. Brown, D. Currie, G. Sinclair, K. Bevans & L. Williams

Members at 30th AGM, Half Moon Hotel, Montego Bay, Jamaica

A. Steele - DRP Committee Report

H. Etnel - Financial Committee Report

J. Wilkins - Marketing & Communications Committee Report

al General Meeting

L. Rogers - Human Resource Committee Report

M. Sutherland-Campbell - Regulations & Emerging Technologies Committee Report

A. Samuels - BIIPAC Regional Coordinator

D. Charles - CANTO Financials 2013

J. Rodrigues - 2013 Auditors Report

A. Amaz of CISCO

P. Gulati of More Magic

B. Grogan of Walton Press

O. Field of Illuminant

J. Stegeman of Costquest Associates

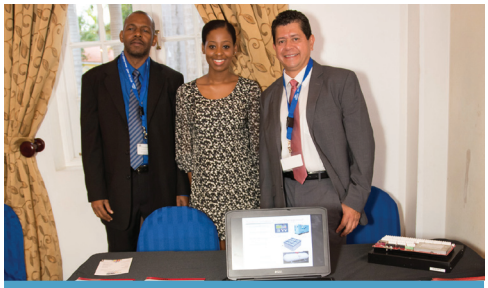
J. R. Jones of BCRC - "Pardon the e-Waste Interruption"

K. Mohammed of BCRC -"Pardon the e-Waste Interruption"

Snapshots at CANTO 30th Annual General Meeting

Advantage 360

Squire Technologies



Kentrox

AJ Telecom Group

LIME, Jamaica

Scorecard Technologies

Retro Hardware

Clearsky Technologies

Walton Press

Cultural presentation

D.Currie 4th from left congratulates event team

C. Ramlal presents token to Z. Limbo of Huawei

CANTO team meets A. Jones-De Weever of Incite Unlimited 4th from left, Ambassador F. Graand-Galon - Ambassador to Suriname 5th from left

T. Wankin 4th from left chats with P.M. of Trinidad & Tobago (1st from left), Min. R. Griffith, Min. S. Roopnarine, Ms. A. Ali Bocas - Director of iGovTT at Official Launch of Star.tt ICT Access Centre in Penal

From left: Min. W. Peters, R.Fräser, P.M. Persad-Bissessar, Min. R. Griffith, Min. S. Roopnarine at the Official Launch of Star.tt ICT Access Centre in Penal

This places the domestic private sector at a significant disadvantage in the global competitive landscape and skews the benefits of additional broadband penetration in the region to extra-regional, more established, non-domestic players.

The Regional Mandate

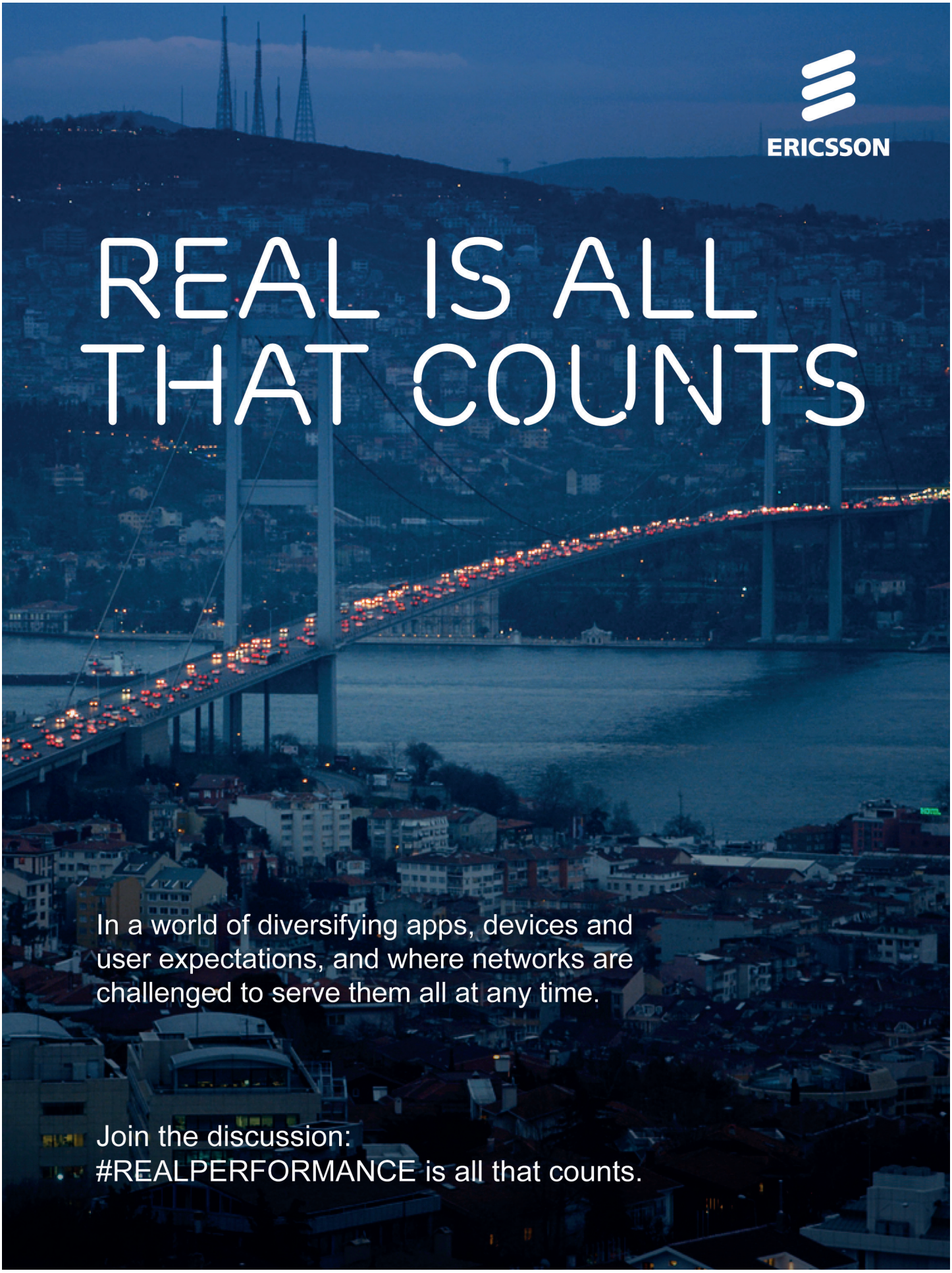
In our role as consultants we have been asked over time to guide governments, regional bodies and various sector organizations to take greater advantage of ICTs for development and for advancement of their interests. What we find however is that the region as a collective, may not be linking the dots.

The region needs to introspect and determine, from an informed state, what position and role will technical connectivity of its islands and economies play in the vision it has for itself moving forward. What role will interconnectivity play in facilitating functional CARICOM integration? What role will it play in helping islands coordinate relief efforts post natural disasters? What role is there for technology and communication connectivity in enhancing intra-regional trade? What role will it play in helping to promote Caribbean cultural products (music, dance, literature and design) abroad?

When leaders apply themselves to understand these issues; when we see that ICT and broadband are not ends in themselves, so much as they are enablers of sustainable development and of unlocking human potential; when our nations come to this realization, investments in development through broadband across the region, both by governments and by the private sector will become sustainable.

This will require leaders to take the time to learn of the implications, opportunities and threats. It will require dedicated state institutions that have greater permanence and are less subject to the political vicissitudes of the day. It will also require a concerted and collaborative effort among telecommunications companies, banks, civil society (including international groups such as ICANN), traditional businesses as well as governments to make the change. Innovative startups which bring to bear customized applications and platforms which encourage intra regional exchange also have the potential to make a significant contribution.

Finally, this will take a significant dose of political will. It will require at least one nation in the region to lead the way and define and implement pro-ICT policies at the business and state levels which the other nations can follow.
Leaders wanted.


ERICSSON
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Join the discussion:
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Demystifying the Cloud

Columbus Communications

The Misunderstood Cloud

The Cloud is not an unheard-of concept in today's technological world, yet, to many people, the exact details of its wide-ranging and productive application remains a mystery to many. Compared to providers like Google and Apple, whose public cloud services maintain a degree of eminence in the mainstream, little is known about other credible private cloud providers and the tremendous impact they have on business efficiency and even for the individual user. In the Caribbean business space a lack of understanding about the potential of Cloud technology often leaves many organizations following the "old-school" IT premise, which can be costly and inefficient. Considering that an effective information and communication technology (ICT) strategy is critical to the success of any enterprise's business plan, it is therefore crucial to understand this technology's dynamic potential.

In essence, cloud computing is an umbrella term for the use of infrastructure or software that is either hosted or managed by an external service provider, in a remote location, often referred to as "in the cloud". By taking advantage of these outsourced services - at least those offered by reputable providers - organizations could achieve a trustable communication, storage and security solution, all of which is designed to meet their specific needs.

Moreover, these services come at a cost that is low in comparison to in-house options. Rather than pay for costly software and infrastructure, with cloud solutions, firms pay fees that correspond only with the level of service that they require. This allows adopters of cloud technology to no longer worry about expensive in-house software or hardware development and maintenance, or about staffing specialized IT professionals. This means that both operational and human resource costs can drop dramatically allowing firms to allocate more of their time and resources towards activities directly related to other business objectives.

The Sky is the Limit

So, the real question is, "what exactly are the different applications of broadband and cloud technologies and what can they do for my business?" Communication and coordination - with employees, clients and business partners - is key to any successful enterprise, as is the organization, collection and security of data. Fortunately, the Cloud has been developed to satisfy each of these criteria.

IP connectivity forms the basis of private cloud services; it is the switch that turns an organization online. It allows businesses to connect to anywhere in the country or across the world, and transmit large amounts of data over reliable, high-performance broadband networks. When this service is offered directly by telecommunications companies, such as Columbus International, the networks are even faster and more reliable, because of the robust network upon which its support services and connectivity rests.

This connectivity provides a foundation for the various communicative utilities that the Cloud offers. Organizations can choose services like

telephony over IP (on-net calls), cloud voice, cloud video, and cloud video conferencing, all of which can be delivered in high quality. And, as communication is executed via the Internet (and can therefore be local or international), the Cloud significantly reduces the costs of both business-business and business-consumer interactions. It also leads to a streamlining of various business processes and, ultimately, overall productivity gains.

Another recent example of a successful cloud application is the Bring Your Own Device (BYOD) program in the workplace. These enable employees to make use of their preferred device, from which they access their company's virtual desktop (designed and maintained by cloud providers) to perform their jobs. In terms of potential benefits for businesses, BYOD programs can reduce capital asset, administrative and human resource costs, lead to a standardized IT infrastructure and increase overall productivity. They essentially make running a business of every size and scope easier.

Secure Data Solutions

Aside from basic connectivity, organizations also have the option to take advantage of storage and security services, which are especially important in today's digital age. Providers offer cloud IT solutions, which include on and off-island solutions for storing and protecting critical business data. These include simple data storage, co-location, full data replication and disaster recovery applications, as well as the necessary cyber security measures (protective, detective and responsive devices) and facility monitoring services (i.e. video surveillance). Combined, these services work to ensure business continuity in the wake of any threat.

In terms of cyber security, private Cloud providers can defend against new forms of attacks, such as APTs (Advanced Persistent Threats), DDOS (Distributed Denial of Service), Botnets and Zero-day attacks. In addition, the data centers operated by providers must be at least Tier 3 compliant – meeting robust account, network, and physical security requirements, while adhering to security control and management regulations developed by the International Telecommunication Union (ITU) and the International Organization for Standardization (ISO). As such, these data centers are solidly reinforced structures, capable of withstanding the harshest of weather conditions – a critical function to ensure continuity in our inherently vulnerable region.

"As a Chief Information Officer (CIO), you know how important infrastructure is to support your business' critical data," said Columbus CIO, Andre Foster. "Where you store the critical business systems and data, which your business depends on, should not be compromised by the infrastructure that houses it. Data Center facilities provide unparalleled solutions for infrastructure and cloud solutions; they provide continuous back-up, redundant cooling and uninterruptible power, all coupled with limitless connectivity options."

Therefore, as Columbus Product Manager Gabriel Marcos notes, "99% of clients would be three-times more secure if they moved their operations to the cloud, rather than keep their infrastructure in-house." Though to the unacquainted the conceptual cloud may seem as airy and insubstantial as the natural phenomenon from which it derives its name, in reality it can be a trustable security option with an infinite amount of potential.

Clearing Up Clouded Perceptions

Business is no longer needs to be a brick and mortar operation. Today, organizing, communicating and transacting information is largely achieved through an effective use of the Cloud. This dynamic technology enables businesses to satisfy everything from their most basic to their most complex objectives, chief among those being to:

- Communicate with ease;
- Monitor and capture transaction data in a meaningful way;
- Plan efficiently for resources;
- Better recognize and meet customers' needs;
- Maintain a secure, effective online presence (website, e-mail contact, etc.); and
- Secure sensitive information.

The Cloud is therefore a modern, cost-effective way to circumvent the issue of frustrated self-sufficiency in this digital world; rather than waste resources on in-house IT programs, the Cloud is an affordable and reliable way for businesses to meet their tech needs. Most important, the Cloud is an important conduit of connectivity and, as acclaimed journalist Thomas L. Friedman once noted, "Connectivity is now productivity."

Banking on Broadband How Caribbean Governments can Provide Incentives to Encourage Broadband Growth for Economic Development

LIME

Once again the Caribbean is at a crossroad about how to incentivize an industry that is poised to undergird future economic growth and development within the region. In the 1970s and 80s much success was achieved when the focus was on providing incentive schemes to encourage investors in the tourism industry. Fast forward to the Internet age and, in particular, the year 2014 where consumer and enterprise demand for broadband technology as a tool of personal and entrepreneurial advancement is motivating governments to explore options for providing the necessary incentives that will facilitate greater ease of implementation.

As the region's longstanding full-service telecommunications provider, LIME has participated in the remarkable economic transformation of Caribbean economies and is keen on expanding regional broadband connectivity through continued investments that will to propel the positive change momentum

Fibre deployment for enhanced Internet services in several markets, delivery of '4G' mobile broadband technology in Cayman and St. Lucia, public Wi-Fi 'Hot Spots' in Barbados, and a U$79M mobile data upgrade in Jamaica further underscore our commitment to the connectivity cause.

The corollary to this massive capital outlay is LIME's ability to deliver lower prices based on the growing audience of subscribers whose desire for high-speed broadband is almost on par with that of any basic public utility.

LIME is leading the regional edition of the global shift towards broadband connectivity and is prepared to make additional investments in lockstep with demand and changes in the technology.
To hasten the transformation, there is urgent need for closer and more meaningful collaboration between Governments of the region and operators on mapping a coherent broadband deployment strategy. For if this does not happen soonest, the region risks foregoing the tremendous developmental advantages that next-generation interactive video conferencing, IPTV, service-oriented grid computing and wireless data services have to offer.

However, in a private-sector-led broadband deployment environment, how can Governments collaborate with operators to accelerate connectivity?

The Cause for Collaboration

LIME's vast experience informs our enlightened position that government policy and the interest of broadband service providers should harmonize – not collide - for the benefit of the peoples of our region. But first, public policymakers must agree a position on how to provide the most adaptive and enabling environment for private broadband providers to invest with certainty under the assurance that governments will be fully committed to the cause. This, notwithstanding the moderate to severe fiscal constraints many Caribbean countries confront in the delicate balancing act to provide operators incentives at the risk of revenue deferral in the short-term; the resultant exponential economic, social and human development in the long run must not be overlooked -term. In short, incentivize now for far more competitive, technologically-advanced and economically viable societies in the future.

Each government possesses the administrative wherewithal to design and implement incentives for operators like LIME to invest more to broaden broadband deployment. At times, such incentives carry little or no fiscal burden. Encouragingly, there are examples of this already taking place within some jurisdictions; evidenced by the relaxation of spectrum fees, duty waivers on capital goods for broadband deployment as well as the lowering of termination rates to bring alignment to broadband and voice pricing.

We welcome the request of the Ministerial Panel of the CANTO conference in July 2012, which requested that the industry, including key partners like LIME, provide guidance on how Caribbean government could incentivize operators to accelerate investment in broadband networks. A timely gesture in the context of global acceptance of the transformational effect of broadband and the findings of the recent ***Global Information Technology Report 2012*** in which several CANTO member countries were given low to moderate rankings having identified certain structural weaknesses; insufficient investment in developing out ICT infrastructure; the inability of our people to use advanced technology to their benefit due to poor educational systems; and, a business environment that has provided the sub stratum for entrepreneurship and innovation.

These findings strengthen the need for broad scale public/private partnerships to address much of the hindrances which contributed to the rankings. Additionally, they are supported by the International Telecommunication Union Report, ***Impact of Broadband on the Economy***, published in April 2012, which made convincing reference to higher levels of broadband adoption in developing countries and its consequential effect on improved GDP. The latter should resonate even more among technocrats.

LIME reiterates its support for CANTO's fair call for the provision of broadband deployment incentives by way of adjustments to fiscal and regulatory frameworks for the telecommunications industry.

Easing the Regulatory Burden, Enhancing Broadband Deployment

Firstly, LIME supports the idea that incentives should - as far as possible - be technology neutral, thereby increasing the possibility that all types of technology will have to be utilized to reach citizens. This should include operators being given incentive windows that relate to the network rollout period required to utilize that spectrum or technology.

We concur with CANTO that governments should consider focus on special incentives for investing in rural areas including providing support for training persons to use the technology for social and business needs. A universal service fund would be a potential vehicle through which to manage geographically targeted incentives. In this regard, governments need to ensure that legislation expands the definition of universal service to include broadband services.

Another critical element of the incentive continuum should involve operators being allowed to test and

trial new types of broadband services with minimal administrative process in order to quickly enhance their ability to compete.

Tax Relief – A Major Factor

The capital cost necessary for network development typically represents the largest potential barrier to rollout of new technology.

A properly structured import duty licencing fee relief regime would ease the significant barrier to potential investors especially in countries where taxes as a proportion of capital costs are very high. We support CANTO's proposal that time-limited exemptions from import duties on equipment required to deliver broadband services should be considered as a condition of operators' compliance with rollout objectives. Additional conditions to ensure strict compliance would be for CANTO members to agree with governments on true deployment costs and revenue forecasts as ongoing qualifying criteria for tax relief.

To speed along deployment, from a human resource standpoint, LIME supports CANTO's call for the implementation of a flexible resourcing policy which allows operators to initially employ persons from other Caribbean operations or from further a field to achieve the successful deployment of newer broadband technology while a seamless transference of knowledge and skills to local employees takes place formally and informally.

Further, LIME is willing to work closely with governments to stimulate demand for broadband deployment by bringing more public services online.

As a responsible regional operator LIME stands ready to work with CANTO and Caribbean governments to develop the most modern and efficient scheme for implementing increased broadband access in order to unleash its full positive economic impact upon the peoples of the region.

An informed, common-sense approach to incentivizing the telecoms industry for the construction of modern broadband networks is but the first step in the shared objective of creating more and better jobs for citizens while making the Caribbean the place of choice for other investments.

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TATT Seeks Enhanced Mobile Data Services for Trinidad & Tobago

Telecommunications Authority of Trinidad & Tobago

"It is about bringing enhanced data services to the people of Trinidad & Tobago. Fast, secure, and robust data services that improve the customer data experience at affordable rates." Cris Seecheran, Chief Executive Officer, Telecommunications Authority of Trinidad & Tobago explains why the new product offering of higher frequency spectrum in the 700 MHz band. Mr. Seecheran was speaking to TATTBytes on TATT's issuance of a Request for Proposal in order to attract providers of Enhanced Mobile Data Services via the following mechanisms:

1. Award Licences for 700 MHz spectrum to Incumbent Mobile Operator(s)and/or potential Third Mobile Operator.
2. Potential for award of a Concession to a Third Mobile Operator.
3. Potential award of Licences for available 850 MHz and 1900 MHz spectrum to a Third Mobile Operator.

Mr. Seecheran explained that there is a current trend, world over, for higher and more efficient broadband speeds, especially in the mobile market. In addition to the above, TATT has been seeking to make broadband more universal and affordable throughout Trinidad and Tobago.

It is that demand that guided TATT to take the decision to make spectrum in the 700 MHz band available to providers in order to facilitate the provision of enhanced data services and TATT took the opportunity to further open the mobile market to increased competition.

Prime frequency bands, like the 700 MHz band, will enable either new or incumbent mobile operators to utilize 'state-of-the-art' technologies in the deployment of new networks and services.

TATT envisages technologies such as Long Term Evolution (LTE), in the 700 MHz spectrum, to be utilized, thus opening the door for greatly enhanced mobile broadband speeds and enhanced services to the public.
Do we need it?

There is a clear demand.
Cris Seecheran explained that in a country with 1.88 million mobile voice subscriptions in 2012, it is estimated that 22.4% of the mobile population used mobile Internet services via their phones. As at December 2012, approximately 422.5 thousand mobile voice subscriptions were using mobile Internet services.

When compared, there were approximately 224.1 thousand fixed Internet subscriptions versus the approximately 422.5 thousand mobile voice subscriptions over the same period. Fixed narrowband Internet subscriptions accounted for 2.9 thousand.

Even more noteworthy, he stressed, was the jump in technology with the introduction of High Speed Packet Access (HSPA+) by the operators in Trinidad & Tobago. This jump to a basic 4G network has paved the way for the provision of services at broadband mobile Internet access speeds, a significant step up from the 2.5G technology (i.e. Enhanced Data Rates for GSM Evolution (EDGE)).

Since 2012, mobile operators have offered customers mobile Internet services utilizing both HSPA + and EDGE technology.

These higher broadband speeds, he added, will bring improvements in application performance and enterprise mobility creating a range of benefits:

- Increased sales and improved customer service
- Improvements in products and services
- Productivity gains
- Personal and team productivity
- Management effectiveness and innovation
- Process efficiency and effectiveness
- Direct cost reductions
- Improved employee motivation
- Improved flexibility, agility and decisionmaking

It is this enhanced performance and increased national productivity that TATT is trying to bring to the local market and why it took the decision to make spectrum available to providers in order to facilitate the provision of enhanced data services and included the opportunity to further open the mobile market to increased competition.

At this stage in the tender process, TATT has received and responded to clarifications sought by interested parties who purchased the tender package and awaits the closing date for proposals, Tuesday 1st April 2014, in order to commence the evaluation process.

It is anticipated that any award(s) arising from the RFP process will be completed by end September 2014.

Connecting the World, One Broadband Connection at a Time

SaskTel

Establishing a connected community has always been a mandate shared by SaskTel International and parent company, SaskTel. As a 100% government owned, full service communications provider, SaskTel has worked closely with all levels of government to enable our province in connecting to the world with state-of-the-art communications infrastructure. Both SaskTel International and SaskTel operate within the province of Saskatchewan, Canada, a province which encompasses some 650,000 kilometers of territory. Besides large geographic distance, weather conditions pose serious challenges. Saskatchewan truly experiences all four seasons; temperatures can reach as low as -40°C during winter months and as high as +30°C during summer months. Such extreme weather means that the added complexities of snow, ice and heat must be taken into account when building large scale ICT networks. Even amongst all these challenges, SaskTel has enjoyed enormous success in connecting its people, communities and province to the world because 'connecting the world' is what SaskTel International and SaskTel does each and every day.

During its 100 year history, SaskTel has played and continues to play an instrumental role in supplying, building and managing the communications networks for not only urban centers, but also for rural communities and the First Nations population within Saskatchewan. SaskTel continues to pursue these engagements as sharing access to communications infrastructure and improving the quality of living for these groups plays an important role in SaskTel's strategy moving forward. A dedication to delivering state-of-the-art communications infrastructure to the community means that SaskTel looks for solutions or partnerships even in situations where there is an absence of a positive business case.

Needless to say, the value of ubiquitous broadband connectivity is easily identifiable to SaskTel. The social and economic benefits from job creation, increased access to basic services such as healthcare or education and the improved delivery of government and business goods and services are only a few examples. SaskTel has had the opportunity to see the positive social and economic impacts that broadband connectivity brings to its citizens and communities and understands how to bring that value to other governments around the world.

One such example is the SaskTel CommunityNet initiative. Launched in 2001, this project was the first of its kind in the region aimed at providing province-wide connectivity and access to broadband communications infrastructure. The initiative included a state-of-the-art province-wide network to connect over 250 locations. The network was specifically engineered to address the requirements of the Government, Health, and Education sectors and offered high speed broadband services to both urban and rural areas with populations over 300 people. Prior to 2001, most rural schools had no high speed internet access and many government organizations had a slow adoption of electronic service delivery. The CommunityNet initiative provided a shared, advanced network which supports:

- E-Government: CommunityNet connected the province's government offices, expanding the ability to undertake e-government services and share data and resources;
- E-Health: CommunityNet connected the province's health care facilities in order to support telemedicine services, remote diagnostics and access to specialists online, as well as secure, confidential access to patient information;
- E-Education: CommunityNet connected the province's schools and post-secondary institutions, providing high speed internet access and distance education applications, (technology enabled learning, video conferencing);
- E-Learning: CommunityNet connected the province's public libraries which extended internet services to citizens who may not otherwise have the skills or financial ability to obtain the necessary computer equipment.
- E-Connect: CommunityNet provided initial steps towards access for small rural communities that had minimal or no access to advanced broadband services.

CommunityNet is a private IP transport network service designed to interconnect local area networks (LANs) in two or more locations. The CommunityNet initiative leveraged three types of technology to deliver service. Where possible, a fibre optic line or digital subscriber line (DSL) was utilized. If fibre or DSL were not permissible, service was provided through a two-way satellite. Upon its completion, the project connected 86 percent of the population within the province with access to high speed internet; over 350 communities were connected, 705 education facilities, over 30 regional colleges, 310 health facilities, 256 government offices, 86 First Nations schools and 162 libraries. Further benefits included enabling public sector organizations to offer

e-commerce services in rural Saskatchewan, and helping businesses overcome barriers of distance and market size.

A second example is SaskTel's continued efforts to work with the First Nations population within the province to provide access to essential communications services. As part of a province-wide connectivity initiative, between 2010 and 2013 SaskTel provided High Speed Internet service and 4G coverage to 28 First Nations communities that were dispersed throughout rural Saskatchewan. By the end of 2013, all First Nations schools and health care facilities had access to fibre based services. First Nations living in Saskatchewan have become the most connected of all First Nations communities in Canada due to SaskTel's commitment and support to ensuring equal participation in communications services throughout the province. These projects mark SaskTel's ongoing effort to spread powerful and extensive communication networks to areas of the province that were previously underserved or had no service.

The server and software applications supporting CommunityNet and our First Nations community networks are also hosted in SaskTel's world-class data centre, located in Regina, Saskatchewan and backed by cutting edge technology, multi-layered security and highly skilled technicians. Today, SaskTel provides data centre services to government, health, education, corporate and private customers on more than 2,300 servers.

The expertise and lessons learned from these initiatives support SaskTel International in providing communications solutions globally. In fact, the experience and expertise that SaskTel has developed at home has contributed to SaskTel International successfully completing a multitude of international professional service engagements spanning 40 countries and 6 continents. Moving forward, SaskTel will continue delivering and supporting communications infrastructure and technology in the pursuit of a vision to deliver increased connectivity, both at home and abroad.

CANTO'S 30th Annual General Meeting Report

Americas Spectrum Issues

Ayanna Samuels - BIIPAC Regional Coordinator

Panelist:

- *Melesia Sutherland-Campbell, LIME Jamaica*
- *Andrew Gorton, Digicel, Jamaica*
- *Graciela Piedras, CITEL Representative*
- *José Costa, IMT, Geneva*

Executive Summary: This session underlined the fact that Caribbean Operators must get access to spectrum to provide Caribbean customers with the type of connectivity they desire. With the opening up of further spectrum to operators, customers will be able to use more broadband-based services wherever they go and mobile connectivity prices would be driven down.

In as far as representing the region in international spectrum fora, CITEL in partnership with the ITU will be the relevant bodies. As such, CANTO was urged to work with CTU to ascertain the spectrum allocation priorities from the region's governments, which would then be communicated to CITEL and the ITU. The fundamentals of the IDB-CTU Spectrum Harmonization in the Caribbean Project were also discussed. Finally, CITEL encouraged the region to communicate their needs to them so the Caribbean can be greater incorporated into CITEL's agenda.

M. Sutherland-Campbell (MSC)
Ms. Sutherland-Campbell's talk was entitled: "Americas Spectrum Issues – Impact on Caribbean Operators."

Ms. Sutherland-Campbell detailed that she recently represented CANTO at a DC Spectrum meeting, so there has been representation from the region at international spectrum meetings. On the matter of the sale of spectrum, she opined that she does not like auctions, instead opting for more transparent methods. Looking forward, she cautioned that the minimum amount of spectrum will have to be retained by operators so they can provide necessary services.

At international spectrum fora, CITEL will represent the region and will partner with the ITU. It would thus be advisable for CANTO to work with CTU to advise our governments, and represent a regional voice on what our region thinks would be the best spectrum related position for the Caribbean to take. Ms. Sutherland-Campbell also advised that the region must have a spectrum related position by early 2015 in preparation for the World Radiocommunication Conference (WRC) planned for November 2-27, 2015. More on the WRC conference may be found at *http://www.itu.int/ITU-R/index.asp?category=conferences&rlink=wrc&lang=en*

She implored all to get involved by sensitizing their own national governments around the nuances of the spectrum issue. She further underscored that we must have a vision for how our telecoms will develop in the spectrum arena. It is integral to expand the boundary of our view she said so that we can accomplish innovative solutions for the peoples of our region.

Andrew Gorton
Mr. Gorton showed a video of exciting Internet connectivity possibilities and stated that this is why the region needs increased connectivity.

He then moved on to discuss the CTU's Spectrum Management (SM) Project. The objective of the project is to deepen the harmonization of spectrum management across the Caribbean. One should

plan for the next 5 to 10 years when having a spectrum planning discourse. Mr. Gorton also shared the GSMA's view on spectrum bands for mobile broadband.

The activities, proposed organizational structure and expected results of the SM project, which may be viewed in more detail within Mr. Gorton's presentation, were also discussed. He opined that with the incorporation of spectrum, Caribbean citizens would be able to use more services wherever they go at cheaper connectivity rates.

Compete Caribbean's contribution to the SM project, which is slated for completion on Jan 22, 2015, has not yet been decided. The project's results will be used to inform spectrum planning across the region. It will further facilitate the region arriving at a collective spectrum related position in preparation for the ITU's Nov 2015 World Radiocommunications Conference. Finally, arriving at a unified position will allow the region to have a voice in forthcoming ITU Regulations and Recommendations affecting spectrum usage.

Jose Costa

Proposals in various stages of development exist for the WRC-15 preparation process. A number of draft Inter-American spectrum related proposals of relevance to the region were presented by Mr. Costa. There is a Mar 17- 21, 2014 spectrum related meeting in Columbia for which preparations are now in place.

A number of topics were broached by Mr. Costa including the following:

1. Cooperation and convergence between broadcasting and mobile services using LTE networks.
2. The need for the region to carry out long range planning for spectrum bands.
3. Public Protection and Disaster Relief.
4. Existence of draft recommendation for use of spectrum in certain bands.

Graciela Piedras, CITEL Representative

- CITEL is keen on increasing Caribbean representation. As such future CITEL meetings could be held in the Caribbean.
- CITEL has asked for Caribbean priority areas to be communicated to them.
- She again encouraged the region to communicate their needs which could translate to further scope for planned webinars.

As a general advisory, Mr. A. Gorton indicated that CITEL meetings are held twice annually and advance preparation for these meetings is required. He also advised that the meetings tend to be many days long and take place in N. America, S. America or the Caribbean.

CANTO'S 30th Annual General Meeting Report

Financing Broadband Infrastructure in the Caribbean. Dialogue on Opportunities for Financing Broadband Infrastructure

Ayanna Samuels - BIIPAC Regional Coordinator

Panelist:

- *Antonio Garcia Zaballos, IADB*
- *Jim Stegeman, CostQuest Associates*
- *Julian Robinson, Ministry of Science, Technology, Energy & Mining, Jamaica*

Executive Summary: the objective of this session was to discuss innovative ways in which Broadband Infrastructure can be financed within the Caribbean. From the multilateral agency viewpoint, Mr. Zaballos detailed that loans can be made available to the private and public sector for broadband financing projects, delegates were encouraged to make contact with the IDB with a view to discussing projects involving Access, Adoption and Usage, as these are priority areas for the Bank.

Mr. Stegeman from CostQuest Associates gave various examples of how broadband rollout has been costed in North America. Costing insight was detailed for rural and urban scenarios.

Minister Robinson shared that whilst his government would not be able to finance broadband rollout directly, there are innovative mechanisms that could be employed to increase broadband penetration. Such mechanisms would include balancing the income earning potential of the allocation of spectrum with a requirement for rollout of broadband, when in discussion with operators.

Mr. Antonio Garcia Zaballos

The IDB is currently in the midst of a special focus on broadband. Access, adoption and usage are three areas for which they are willing to support loans.

It is believed that public investment should not compete with private infrastructure. They also focus on a variety of sectors within broadband as may be seen within the presentation given by Mr. Zaballos.

Mr. Zaballos is of the opinion that public policies are currently not in sync with regulation and legislation. He opined that pubic policy should be a tool for public administration, citizens and businesses. He further outlined that capacity building should address all forms of connectivity.

Regarding increasing broadband connectivity in the region, the infrastructure maps to result from BIIPAC will assist with getting connectivity to rural areas. They will also allow us to identify those areas for which connectivity is most needed. Mr. Zaballos ended by reinforcing that he is open for any follow up discussions.

Minister Julian Robinson

Minister Robinson detailed the current status of broadband infrastructure roll out efforts in Jamaica.

Highlights from his update were as follows:

1. The Jamaican government has administered an e-Learning Project wherein computers were placed in over 200 schools, a number of teachers were trained, local content was developed and schools were able to connect to other schools.
2. Jamaican schools, libraries and post offices were connected in an island wide connectivity project furnished by FLOW and LIME. The minister has not seen take up by providers to build on existing fibre in rural areas

3. 20-25 seat computer labs are in community-based organizations. A number of these labs have been established island-wide.
4. A "tablets in schools" initiative will be rolled out in Sept 2014. There is an opportunity for providers to provide connectivity outside of schools for the 30,000 devices. The ministry will also be developing the content for these tablets.
5. The Government of Jamaica is actively seeking to provide more services online. Currently some taxes can be paid online such as property taxes and speeding tickets.
6. The Ministry intends to balance the income earning potential of spectrum with the need to ensure the further rollout of broadband. He acknowledged that an agreement is required, which would "encourage" providers to ensure rural areas are covered.
7. Pricing of broadband is still a problem. High school and tertiary students are amongst those who suffer, missing out on a chance to transform and create opportunities through broadband access.
8. There is potential for governments to collaborate to not fund directly but in the allocation of spectrum, which is an immense national asset.
9. Universal Service Fund should also form a part of the solution for the further rollout of broadband.

Mr. Jim Stegeman, CostQuest Associates (CQA)
CQA specializes in economic modeling of broadband networks for carriers. They assess cable, wireless and landline services. CQA has a policy agnostic approach. They provides fodder for policy discussions. He does not want to appear partial.

He can look at any specific service or a combination and then provide costing estimations. This thus would be of merit to CANTO's efforts to aid the Caribbean in deciphering how much it would cost to rollout broadband within the Caribbean.

Mr. Stegeman shared some interesting statistics about fibre in the states such as the fact that

- LTE is rampant throughout the US.
- Google is building out fibre in the states to be able to provide 1GB of service to each and every home.
- There is an initiative called the Connect America Fund http://www.fcc.gov/ebcyclopedia/connecting-america - which is administered in such a way that it lets the market decide where funds should be allocated for the proliferation of broadband.
- Fibre to the premise is being modeled to over 160M customer locations in the USA
- Labour, taxes, and interest during construction are included so they have a full idea of costs for project. They then are able to assess whether it is feasible to work on a project.

Other technical information related to CQA's work was presented which may be researched further in their more detailed presentation.

QUESTION AND ANSWER SESSION

Q. C. Facey: Could we reduce cost of spectrum and in so doing effect broadband rollout?

A. Yes. Please see notes from Minister J. Robinson's speech above.

Q. C. Facey: Has safety been considered for the Tablets in Schools Initiative?

A. Minister J. Robinson: Internet security has been built into the RFPs and this issue was addressed in the RFPs received. Physical security of the students carrying the laptops is also an issue and they are ensuring the tablets will be of no use to a thief. There will be a benefit to the society in terms of providing a medium for the growth of small businesses.

Q. A. Gorton: Have the terms of access to the network recently built by FLOW and LIME been communicated to all networks.

A. Minister J. Robinson: He is not sure but will get back to A. Gorton on this matter.

Q. D. Currie: Is it possible for the private sector to obtain a loan from the IDB?

A. A. Zaballos: Yes. There are two different branches of the IDB with the Inter-American Investment Corporation (IIC) being the branch, which provides loans to the private sector. Mr. Zaballos can put people in contact with individuals from the IIC should they be interested. The IIC would then confirm their eligibility requirements and terms of loans offered. Loans of USD 5M to several hundred million dollars have been offered in the past.

Q. D. Currie: Was the desire for operators to use the FLOW & LIME fibre network to provide connectivity to neighbouring communities discussed beforehand?

A. Minister J. Robinson: It is actually a government owned network and there was no discussion beforehand.
D. Currie detailed a successful Surinamese "Computers for Schools" Project. Telesur partners with the operators asking them to provide the schools with computers, whilst the schools are asked to provide a room. Telesur provides connectivity for 5 years.

Q. Opal Lawton: What is the most effective model in terms of implementing a USF approach?

A. Jim Stegeman: Fibre deployment along with fixed wireless. You can achieve 10/20 Mb with this approach

Q. Could prepaid broadband be a more effective way of making broadband more affordable for individuals?

A. Minister J. Robinson: There is no correlation between acquisition of broadband and income levels. If one were to have only assessed income levels, then neither Jamaica no Haiti would have been deemed attractive, however Digicel proved this to not be so.

Q. What spectrum band should be used for the fixed wireless aspect?

A. Jim Stegeman: LTE deployment over 700 for the towers.

CANTO'S 30th Annual General Meeting Report

Creating an Enabling Environment for the Sound Management of e-Waste in the Caribbean Region

Ayanna Samuels - BIIPAC Regional Coordinator

Panelist:

Chair: Regenie Fräser

- *Jonelle Jones, Basel Convention Regional Centre for the Caribbean Region*
- *Khaliqa Muhammed, Basel Convention Regional Centre for the Caribbean Region*

Executive Summary: Jonelle Jones and Khaliqa Muhammed gave sterling presentations about the reality of e-Waste in the Caribbean, replete with a special Trinidad and Tobago case study, in a session entitled *'Creating an Enabling Environment for the Sound Management of e-Waste in the Caribbean Region.'* Delegates were shocked to learn that upwards of 50 million tonnes of e-Waste, defined as anything which requires an electrical current for operation, were produced in 2013. The Caribbean's primary method of treating with e-Waste still remains storage and so the need for greater awareness and policy creation, which would facilitate sustainable e-Waste management strategies for the region, were articulately underscored.

Jonelle Jones from the Basel Convention Regional Centre (BCRC) for the Caribbean, based in Trinidad and Tobago, opened up the two-part presentation on e-Waste. Ms. Jones started off by advising the audience that the primary objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous waste.

One of the foremost challenges faced by e-Waste practitioners is the absence of an internationally accepted definition for e-Waste. As a consequence, BCRC is at pains to regulate the e-Waste industry when some e-Waste products may go unaccounted for. To assist us in moving forward however, Ms. Jones did proffer a suggested definition indicating that "any item which works on electrical current, or put more simply, possesses an on-switch, may be considered e-Waste when no longer in use."

To understand the scale of the problem it is worthwhile knowing that the global quantity of e-Waste produced in 1992 was 14 million tonnes, in ten years that number rose to 24 million tonnes and is estimated to have been 50 million tonnes in 2013. The AGM attendants were informed that ferrous materials form 50% of the global e-Waste stream whilst plastics amount to 30%. Further, when burnt, which is unfortunately a very common practice for "garbage" in the Caribbean, these substances produce persistent chemical organic pollutants. Even without the stimulant of fire however, once exposed to the natural elements, over time everyday objects can release dangerous compounds to the atmosphere. Health implications from the improper treatment of e-Waste include alterations in fetus and child development, neurological effects, renal malfunctions and cancer.

Many people are unaware that valuable materials exist in e-Waste. The practice of recovering substances of value is currently prevalent in Asia and Africa. However there are risks because improper recycling and material recovery activities impact ecosystems and pose threats to human safety.

There is a great opportunity for the Caribbean to take advantage of this market, especially when one considers that 1 tonne of electronic equipment

has more gold than ore, and requires less energy to recoup. In many countries however, there is an inability for e-Waste to re-enter the materials cycle due to stockpiling and lack of recycling/ recovery. Efforts are being made by international organizations to research this matter.

Many initiatives are currently afoot to address the globe's e-Waste problem. For example:

- There is currently a Mobile Phone Partner Initiative of which Dell, Nokia and other original and major equipment manufacturers form a part.
- There is also an effort to remove toxic substances from equipment to render e-Waste less toxic.
- A number of guidance documents have been established with regard to e-Waste.

Some of the specific challenges the Caribbean faces are:

- e-Waste is not given a value in the region making it difficult to manage the situation.
- e-Waste is a "known unknown", in that waste managers know they have a lot of e-Waste, but they don't know what to do with it.
- There is lack of prioritization of this issue and lack of public awareness.
- There are no End of Life (EoL) options available within the region. The options employed include stockpiling and land filling via municipal solid waste collection systems. This is not a sustainable solution.
- There are formal and informal e-waste professionals who export e-Waste, but lack of knowledge about where the e-Waste eventually ends up brings discomfort.

Ms. Khaliqa Muhammed then detailed an e-Waste related case study performed by BCRC recently. The goal was to analyse e-Waste related data in Trinidad and Tobago. One of the factors studied was the country's main electronic and electrical equipment (EEE) exports and imports. It was found that EEE imports are 13 times greater than exports.

Other observations from the study are as follows:

1. Storage is the most popular mechanism being employed now for EoL equipment.
2. There are large quantities of e-Waste in our region, which still need management.
3. People need to understand the link between mismanagement of EEE and the consequences of same.
4. Inconsistent/inadequate records of trade information was found at the Customs level. T&T customs thus needs to tighten up their work in this regard.

Points of note for study conducted:

1. The household and informal sectors were left out and this must be taken into account when reviewing the results.

Ms. Jones returned to speak about the results of the study. Her insight shared was as follows:

1. Some companies were observed to display certification evidencing the hazardous material. This is a great development.

2. National policy needs to be established to implement "producer responsibility" for the management of e-Waste. This means that the producers of EEE should develop policies for the EoL management of their produced goods.
3. A customs sensitization drive needs to be undertaken.
4. Establishment of take back relationships.
5. An e-Waste Community/Household Survey needs to be conducted.
6. There is scope for e-Waste management to be seen as business opportunities for small businesses. The study authors are encouraging the Caribbean to see the market in this way.
7. The control of trans-boundary movement of e-Waste and e-Waste-related components is also a major concern. Some e-Waste practitioners export e-Waste out of the Caribbean but there is no certainty regarding where the e-Waste is finally deposited.
8. Many organizations are showing signs of conducting impressive e-Waste sensitization campaigns. The Community Hub Project in partnership with InfoComm Technologies Ltd. is one such example in Trinidad and Tobago. They produced an "e-cycle" video and want to expand the initiative further. They also held a regional workshop on the *Environmentally Sound Management of e-Waste*.
9. Monitoring and Auditing of e-Waste activities needs to drastically improve in the region.
10. Financing for e-Waste entrepreneurs is a significant challenge. They are having a hard time acquiring loans as banks do not understand the e-Waste market.
11. The US ships 14 million tonnes of e-Waste annually to Hong Kong and LAC. There is thus much scope for greater business opportunities in the region.

QUESTION AND ANSWER SESSION

Q. J. Wilkins: How do we suggest we go about this problem?

A: Mobile phone companies in 2006 formed a partnership aimed at developing comprehensive guidelines for the environmentally sound management of mobile phones. This was successfully completed.

2006 – Mobile Phone Partnership tasked with developing guildelines for environmentally sound management. of mobile phones. They developed a comprehensive guidelines document. Guidelines for Transboundary Movement and valuable materials to be found in E-Waste were also established. These documents are now available within the Basel Convention.

Q. A. Gorton: Do business plans exist for persons wanting to go into business?

A: The BCRC has this on their to-do list as they realize the priority of the issue. They also want to prepare plans for waste from car batteries, etc.

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World Telecommuncation & Information Society Day

Theme: 'Broadband for Sustainable Development'

Video COMPETITION

TO ENTER:

Grab your mobile phone, camera or computer and create a short video (no more than 3 minutes) demonstrating the 'how/what/why of 'Broadband for Sustainable Development' in respect to its impact on your life, community, region and the world.

RULES:

- Open to all students from ages 12-18
- Deadline for submission of video: May 2nd, 2014
- Complete registration form on: http://canto.org/competitions/wtisd-video-competition/
- Must have a facebook account
- For a complete list of rules visit: http://canto.org/competitions/wtisd-video-competition/rules/

Prizes:

Prizes are nontransferable and will be awarded as follows:

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For More Information
http://canto.org/competitions/wtisd-video-competition/
or Contact Tricia Balthazar
CANTO – WTISD Video Competition
67 Picton Street, Port of Spain
Trinidad & Tobago
Tel : 1 (868) 622-3770/4781/0929/5582
Fax: 1 (868) 622-3751
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CANTO 2014

Caribbean Focus... GLOBAL PERSPECTIVE

"STRATEGIC ALLIANCES FOR SUSTAINABLE BROADBAND DEVELOPMENT"

Calendar of EVENTS

CANTO 8th WTISD
Regional Video Competition

17th May, 2014

4th Edition of CANTO's
i-Create e-Content Regional
Mobile App. Competition
June-July 2014

CANTO 30th Annual Conference
& Trade Exhibition
Co-hosted by: The Bahamas
Telecommunications Ltd.

10-13th August, 2014
Atlantis Paradise Hotel,
The Bahamas

Ministerial
Breakfast and Roundtable
Co-hosted by: The Bahamas
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11th August, 2014
Atlantis Paradise Hotel,
The Bahamas

Public/Private Sector Dialogue on
CARICOM Single ICT Space
Co-hosted by: The Bahamas
Telecommunications Ltd.

11th August, 2014
Atlantis Paradise Hotel,
The Bahamas

Recognizing Women in
ICT Session
Co-hosted by: The Bahamas
Telecommunications Ltd.

12th August, 2014
Atlantis Paradise Hotel,
The Bahamas

2nd Steering Committee Meeting
& Project Update
Broadband Infrastructure
Inventory & Public Awareness
in the Caribbean (BIIPAC)
Co-hosted by: The Bahamas
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12th August, 2014
Atlantis Paradise Hotel,
The Bahamas

8th Human Resource
Leadership Forum
Co-hosted by: The Bahamas
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14-15th August, 2014
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