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Muchas Naciones... Un Sentimiento  
Vele Landen... Een Stem  
Plusieurs Nations... Une Seul Voix  
Differente Nashon... Un Bos

Fourth Quarterly Magazine 2013  
Volume 04/2013

# CANCIÓN



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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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# Journey Towards A Caribbean Broadband Community

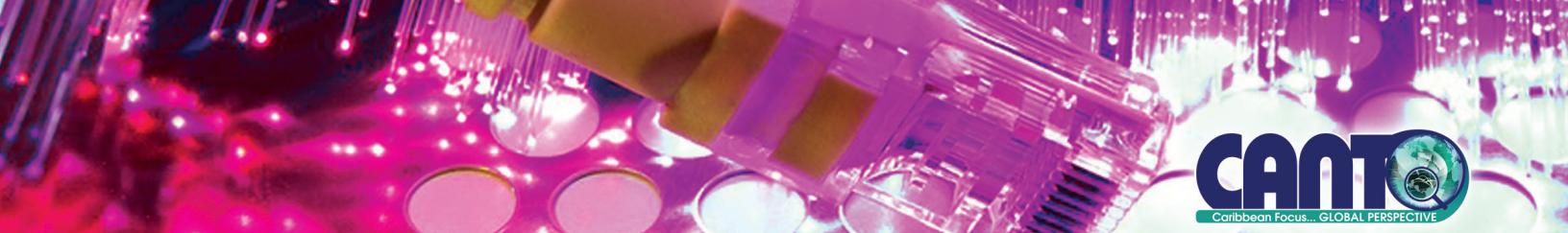
Editorial (English)

2014 will mark 30 years since regional, state-owned telephone operating companies embarked on a journey to find common solutions to challenges encountered in making telephone service available and affordable to Caribbean citizens. Three decades later, a sector considered a utility has morphed into a converged industry, that has transformed the way we communicate, conduct business, use government services, entertain and play. In short, the way we live. The transformation continues. The ICT sector is recognised as a key driver for economic growth, making the stakes even higher. The need for collaboration for common Caribbean solutions, the stimulus that sparked the birth of CANTO, is even more necessary in addressing the issue of today - the broadband divide. As we enter our thirtieth year, celebrating our successes and learning from our challenges, our focus is to lay the groundwork for the next 30 years.

The theme of the Board Meeting in November 2013 was “Charting the way forward to CANTO 2020”. Engaging the youth was identified as a key element of the strategy going forward. Initiatives to support this will include adding young speakers, young entrepreneurs and youth innovators to our conference agenda. The Secretariat has been tasked with exploring adding a Youth Forum to the Conference Agenda for 2014. This is an exciting development. The majority of internet users are young people. They are the early adapters. As the future leaders, entrepreneurs, business leaders, they have a pivotal role to play charting the development of the information society. CANTO will provide a forum to contribute to the process. Youth societies such as engineering and student guilds will be targeted in this effort.

The ministerial panel segment of the conference has proved very instrumental in engaging and strengthening relations between policy makers, operators and service providers as well as other industry stakeholders. It provides a platform to get the views of policy makers, to stimulate healthy debate on national and regional ICT issues and hopefully influence decisions. Given the success of the ministerial panel, giving similar focus to the voice of regulators in their role as policy implementers is a natural next step. Active consideration is being given to introducing a regulators forum at the next conference. With the policy makers, policy implementers and operators and service providers taking on the issues in the stimulating environment of the conference, this should help to facilitate more cooperation among these key players and move the ICT agenda, specifically the broadband agenda forward.

Another key part of the going forward strategy is the further expansion of our membership base. The recruitment drive will specifically target Spanish speaking countries in the Americas. Within the United Nations framework, the Caribbean region is grouped with its Latin American neighbours, the Economic Commission for Latin America and the Caribbean (ECLAC) is a case in point. Sometimes the Caribbean agenda gets lost in that of the wider region; however CANTO hopes to use its unique position to leverage the ICT developments and experience of our Latin American neighbours to benefit developments in the Caribbean region. The Broadband Infrastructure Inventory and Public Awareness in the Caribbean (BIIPAC) project, one of the most ambitious projects to be undertaken by CANTO in its 30 year history, is



moving forward with financing from the Inter-American Development Bank (IDB). The project comprises four components: infrastructure gap analysis, assessment of regulatory & institutional framework, awareness & capacity building programmes, public policy recommendations for broadband expansion and usage, all aimed at expanding broadband networks and usage across the region.

The infrastructure gap analysis is currently underway. It covers eight countries and consideration is being given to adding six more. The main output from this component will be infrastructure and related maps of broadband facilities and that of other utilities. This will inform public policy recommendations for each country to accelerate the penetration rate and usage of broadband services. The output of component one is expected to be ready by May 2013.

In November, requests for consultancy services were issued for components two and three of the project. The final stage, component four will commence after the completion of component one. The deliverable from these components include actionable proposals for Governments in each country to strengthen their legal and regulatory framework, designs of capacity building programmes and public policy recommendations for the design of national broadband strategies for each participating country. To ensure that work already done is not duplicated, the outputs must take account of previous works on the issues.

The success of BIIPAC rests on the collective efforts of the various stakeholder groups. CANTO is committed to use its goodwill and influence to ensure citizens of the Caribbean are afforded a vibrant future in the information society.





Even as CANTO seeks to expand the reach and scope of ICT usage, we are looking ahead at related development issues. One such issue is

electronic waste (E-waste). With the proliferation of ICT devices such as cellular phones, and the rapid rate of obsolescence, proper disposal is a key aspect to a development strategy. In this regard, CANTO is partnering with the Basel Convention Regional Centre for the Caribbean Region (BCRC-Caribbean) to host an e-Waste forum during CANTO's 30th Annual General Meeting to be held in Montego Bay, Jamaica in January 2014.

Under the theme "Pardon the e-Waste Interruption!", the forum will focus on the topic of creating an enabling environment for the sound management of e-Waste in the Caribbean region. Programmes will include the development of regional tack back systems for e-waste generated by the ICT sector and its affiliated markets. In preparation for the forum, an online survey on the topic will gauge the level of awareness of the issue, as well as engender an understanding of the e-waste management situation within the ICT sector regionally. The results from the survey will be used to informed decision and develop actions plans necessary to address the situation. As we tackle this subject we count on your support, cooperation and collaboration in working towards sustainable e-waste solutions for the Caribbean region.

As 2013 comes to a close we take this opportunity to thank our members, partners and many well wishers and supporters for the many ways in which you supported CANTO in 2013. As Henry Ford said, "If everyone is moving forward together, then success takes care of itself. Let us aim to succeed in 2014 and beyond.

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## En camino Hacia una Comunidad Caribeña de Banda Ancha

Editorial (Español)

2014 marcará 30 años desde que un grupo de compañías estatales operadoras de telecomunicaciones en la región, emprendieron el camino a encontrar soluciones comunes para enfrentar los desafíos de hacer estos servicios accesibles y acéqueles para todos los ciudadanos del Caribe. Tres décadas más tarde, un sector considerado como una utilidad se ha convertido en una industria que ha transformado la manera en que nos comunicamos, en que hacemos negocios, en que usamos los servicios gubernamentales, etcétera. En conclusión, ha transformado la manera en que vivimos. La transformación continúa. El sector de ICT es reconocido como factor clave para el crecimiento económico, propiciando servicios de banda ancha alcanzables y universales aun más grandes. La necesidad de colaboración en la búsqueda de soluciones comunes en el Caribe, la chispa que produjo la creación de CANTO, es hoy en día aun más necesaria en la identificación de estas soluciones. En cuanto nos acercamos a nuestro treinta aniversario, celebrando nuestros logros y aprendizajes obtenidos de nuestros retos, nuestro enfoque es el de establecer el terreno de trabajo para los próximos treinta años.

El tema de la reunión del Buro de Dirección en Noviembre del 2013 fue “Esbozando el camino futuro de CANTO hacia el 2020”. Involucrar a los jóvenes fue identificado como un elemento clave de nuestra estrategia futura. Iniciativas para apoyar lo anterior incluirán el incluir en nuestras agendas de conferencias jóvenes oradores, empresarios e innovadores. El secretariado ha estado ocupado en explorar la adición de un fórum de jóvenes en la próxima conferencia del

2014. Esto es una iniciativa muy excitante. La mayoría de los usuarios de internet son jóvenes. Ellos son los nuevos adaptadores. Como futuros líderes, empresarios, negociantes ellos juegan un papel pivotante en el esbozo de del desarrollo de una sociedad informática. CANTO propiciara el fórum para contribuir a este proceso. Sociedades jóvenes tales como las de ingeniería y los consejos estudiantiles, serán blancos para este nuevo empeño.

El segmento de la conferencia del Panel Ministerial ha probado ser muy instrumental en aunar y enderezar las relaciones entre los encargados de trazar las políticas, los operadores, proveedores de servicios así como también los dueños en esta industria. Esto propicia el marco para obtener diferentes puntos de vista, estimular debates regionales y nacionales saludables sobre temas de ICT y finalmente influenciar las decisiones que se tomen en este sentido. Dado el éxito de los Paneles Ministeriales, dando un enfoque similar a la voz de los reguladores y su papel en la implementación de las políticas, este es naturalmente el próximo paso. Una gran consideración se le está dando a la incorporación de un Fórum de Reguladores para la próxima conferencia. Con los establecedores de políticas y proveedores de servicios tratando los temas de estimulación ambiental de la conferencia, esto deberá ayudar a facilitar una mayor cooperación entre las partes claves y mover la agenda de ICT aun mas, específicamente la agenda de ancho de banda.



Otro factor clave de la estrategia futura es la expansión de la membresía. El motor de reclutamiento estará enfocado hacia los países de habla hispana de las Américas. En el marco de las Naciones Unidas, la región caribeña esta agrupada con sus vecinos latino americanos, la Comisión Económica para Latinoamérica Y el Caribe (ECLAC) es uno de los casos. A veces la agenda del Caribe se pierde en lo amplio de la región, sin embargo, CANTO espera utilizar su posición única para posicionar el desarrollo de ICT de nuestros vecinos latino americanos para beneficiar el desarrollo de la región del Caribe.

El proyecto de preparación publica sobre infraestructura de banda ancha (BIIPAC), uno de los proyectos más ambiciosos a ejecutarse por CANTO en sus treinta años, está caminando. Con ayuda financiera del Banco de Desarrollo Inter\_ Americano (IDB), el proyecto tiene cuatro componentes, análisis de las lagunas de la infraestructura, evaluación del marco institucional y regulatorio, programa de preparación y edificación de capacidades y recomendaciones a las políticas públicas para la expansión de la redes de banda ancha e incremento del beneficio del uso de la misma a lo largo de la región. La meta final es el desarrollo económico y social.

El análisis de las lagunas de la infraestructura está en proceso en este momento. Abarca ocho países, y se está considerando extender el análisis a seis países más. El resultado fundamental de este componente será la infraestructura y el esbozo correspondiente de las utilidades de ancho de banda. Esto uniformará las recomendaciones sobre las políticas públicas formuladas por cada país en aras de acelerar la penetración de los servicios de ancho de banda. El resultado del componente uno deberá estar listo para Mayo del 2014.

En Noviembre, se solicitaron servicios de consultoría para los componentes dos y tres del proyecto. El paso final, el componente cuatro, comenzara después del completamiento del componente uno. Los resultados de estos componentes incluyen propuestas de acción para los gobiernos en cada país en vista a fortalecer sus marcos legales y regulatorios, el diseño de programas para el fortalecimiento de las capacidades y recomendaciones de políticas publicas para el diseño de estrategias nacionales de banda ancha para cada país en particular.

El éxito de BIIPAC descansa en el esfuerzo colectivo de varios grupos de involucrados. CANTO está comprometido a utilizar su Buena oficina e influencia para asegurar que los ciudadanos del Caribe puedan acceder a una sociedad informática vibrante en el futuro.

En tanto que buscamos expandirnos para alcanzar el spectrum del uso de ICT, miramos hacia el futuro en temas de desarrollos relacionados con la industria. Uno de estos temas es La basura Electrónica (E-waste). Con la proliferación de ICT dispositivos como teléfonos celulares, y la rápida obsolescencia de estos, la manera adecuada de deshacerse de estos equipos es clave para el desarrollo de las estrategias. En este sentido CANTO esta en colaboración con (BCRC-Caribbean) para auspiciar un Fórum de Basura electrónica e-Waste durante la 30 Asamblea General de CANTO a celebrarse en Montego Bay Jamaica en Enero del 2014.


Bajo el tema “Perdona la interrupción de la e-basura” El fórum se enfocara en el tópico de crear un entorno adecuado para la correcta dirección de la e-basura en el Caribe. El programa incluirá el desarrollo de sistemas para la e-basura generada

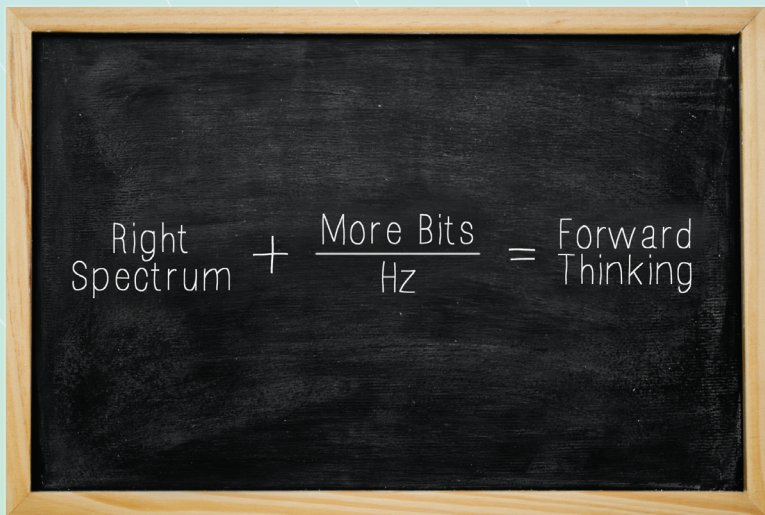
por su Mercado afiliado. En preparación para el fórum fue hecha una encuesta que será utilizada para informar las decisiones y planes de acción de desarrollo necesarios en esta situación. En cuanto nos centralizamos en este tema contamos con su apoyo, cooperación y colaboración en el trabajo hacia una solución de e-basura para el Caribe.

En cuanto el 2013 llega a su final aprovechamos esta oportunidad para agradecer a nuestros miembros, colaboradores y a muchos de nuestros amigos que nos apoyaron en las áreas de CANTO

en el 2013. Como dijo Henry Ford said, “Si todos avanzamos juntos, entonces el éxito viene solo” Unámonos para alcanzar este éxito en el 2014 y más.

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## CANTO's 30th Annual General Meeting

### Strategic Alliances for Sustainable Broadband Development

2014 will herald CANTO's 'Pearl' anniversary – 30 years of proudly serving its members in the ICT sector, in a multiplicity of ways. CANTO, founded in 1984, started with eight operators from eight Caribbean countries. 30 years later the association has proudly grown to over 130 members in 34 countries. To mark this milestone CANTO will continue to observe its present broadband thrust through its theme “Strategic Alliances for Sustainable Broadband Development” which exudes the association's desire to enter into Strategic Alliances to accomplish most especially, broadband infrastructural development throughout the Caribbean. This is an acute need at this juncture as the demand for high-quality broadband in the Caribbean especially that of a wireless nature, far exceeds supply.

Broadband is viewed as networks of deployed telecommunications equipment and technologies necessary to provide high-speed Internet access and other advanced telecommunications services for private homes, businesses, commercial establishments, schools, and public institutions<sup>1</sup>.

Broadband access is absolutely crucial to a country's development and is instrumental for a nation to remain economically competitive in the 21st century. Testament to this is the fact that Broadband serves as the foundation that bolsters a nation's GDP growth, as it drives innovation, revolutionizes the delivery of education, creates employment opportunities and bolsters creativity. Most importantly, it can facilitate access to all

basic human rights that form the fulcrum of any society, such as access to health care, education, government services, suffrage, etc. However, the ability to utilize broadband hinges on the existence of the necessary infrastructure, which in turn can only be established through countries investing in the relevant resources and subsequently pricing access affordably for its people. Failure to do this will severely impact our region's development and leave us ill equipped to compete on the international stage or reap the immeasurable socio-economic benefits to be had from increased broadband access, a risk none of us can afford to take.

CANTO continues to focus on its “Broadband Infrastructure and Public Awareness in the Caribbean (BIIPAC) Project. The BIIPAC project, which is currently in its first phase, serves Barbados, Belize, Dominican Republic, Guyana, Haiti, Jamaica, Suriname and Trinidad & Tobago. BIIPAC is divided into four components namely:

1. Production of Broadband diagnostics and infrastructure maps
2. Review of legal and regulatory framework and current sector trends
3. ICT awareness and capacity building in the Caribbean
4. Preparation of public policy recommendations for the design of national Broadband strategies

BIIPAC has as its objective supporting the design of national broadband strategies in the Caribbean and identifying the regional aspects that need to be incorporated into these strategies to support the Caribbean as it evolves towards universality in broadband access and service, regardless of the location (ubiquity) or the social strata (equity) of its citizenry.

BIIPAC's component one consultant has already been confirmed through an IDB sole-source exception. Recruiting for the best-fit individuals for components two and three is now in train, with component four slated to begin upon the completion of component one.

In phase two, CANTO is partaking in the extension of the reach of BIIPAC through partnership with the Compete Caribbean Programme<sup>2</sup> and the IDB. BIIPAC - Phase II will serve Antigua and Barbuda, St. Kitts and Nevis, Dominica, St. Vincent and the Grenadines<sup>3</sup>, Grenada, and St. Lucia, with Compete Caribbean acting as the executing agency and CANTO the project coordinator.

With all these exciting developments on the horizon for 2014, CANTO will focus its 30th year on creating strategic alliances with all stakeholders to bolster and develop broadband infrastructure in the Caribbean. This will create a more economically viable Caribbean for all and in so doing strengthen the social fabric of our beloved region.

So come join us at CANTO's 30th Annual General Meeting co-hosted by LIME from January 25 - 28, 2014 at the Half Moon Hotel,

Rose Hall, Montego Bay, Jamaica. The event will feature:

- AGM Proceedings
- Voting for Board of Directors positions
- Reports from the Working Committee of the Board:
  - Marketing and Communications Committee Meeting
  - Regulations and Emerging Technologies Committee Meeting
  - Financial Advisory Committee Meeting
  - Disaster Preparedness Committee Meeting
  - Human Resource Committee Meeting
  - Corporate Social Responsibility Committee Meeting
- Presentation of CANTO/IDB Broadband Infrastructure Inventory and Public Awareness in the Caribbean (BIIPAC) Project
- CSR - Initiative - "Pardon the e-Waste Interruption!" - Creating an Enabling Environment for the Sound Management of e-Waste in the Caribbean Region
- Technology trends and its impact on caribbean operators
- Dialogue on 'The Future of CANTO'
- Mini Exposition comprising technology suppliers showcasing products and services
- Caribbean e-Waste Consultation
- Financing Broadband Infrastructure in the Caribbean

So come to Jamaica for CANTO's 30th AGM and "Get alright"!!

<sup>1</sup> [http://itlaw.wikia.com/wiki/Broadband\\_infrastructure](http://itlaw.wikia.com/wiki/Broadband_infrastructure)

<sup>2</sup> <http://www.competecaribbean.org/about-us>

<sup>3</sup> SVG's inclusion is to be confirmed further to the receipt of a Letter of Commitment from their government ■■

## UNECLAC-Information and Communication Technologies for Disaster Risk Management (DRM) in the Caribbean

Representatives from CANTO recently shared the perspectives of the telecommunications industry to an expert group meeting on the use of information and communications technologies (ICT) for disaster risk management in the Caribbean.

The meeting and training workshop were hosted by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) at its Port of Spain, Trinidad Sub regional headquarters from 16 – 18 September, 2013.

Several heads of national disaster management offices throughout the region attended and benefitted from the information shared by Ms. Regenie Fraser, Secretary General of CANTO, who also took the opportunity to announce the establishment of CANTO’s Disaster Management Planning Committee. She also expressed her desire to further understand the needs of disaster management agencies, so that CANTO and its membership, can find opportunities for collaboration.

In discussing what they perceive as their current needs, the experts emphasized the importance of having close relationships with telecom organizations, especially with regard to the implementation of mobile phone-based early warning systems. In the event of a tsunami in the Caribbean basin, for example, many lives could be saved if timely warnings could be provided to the population through the cellular network.

While acknowledging that some disaster management organizations have been working to use SMS to enable this type of emergency notification, the experts agreed that cell broadcast systems would provide a superior technology for this purpose. Unfortunately, cell broadcast systems have not been widely implemented in the Caribbean and the group expressed frustration that telecommunication agencies have not been more cooperative in helping to implement this technology.

A full report on the expert group meeting can be found at <http://goo.gl/9Uyi53>. Moreover, the recommendations that came out of the meeting – including several that related to telecommunications - have been incorporated into a broader ECLAC study on the use of ICTs for disaster risk management in the Caribbean, which will be released by the end of the year.



Ms. Regenie Fraser, Secretary General of CANTO (far right) and Ms. Teresa Wankin, Operations Manager, CANTO (fourth from right) with fellow participants at the expert group meeting on “Information and Communication Technologies (ICTs) for DRM in the Caribbean” held at the ECLAC subregional headquarters for the Caribbean, Port of Spain, Trinidad and Tobago, 16 September 2013.



Ms. Gail Edwards, CANTO Disaster Recovery Planning Committee Coordinator (seventh from left), with fellow participants at the training course on “Information and Communication Technologies for DRM in the Caribbean.”



Mr. Atiba Phillips, consultant (centre), presents a summary of the findings from the ECLAC study “ICTs for DRM in the Caribbean “ to participants at the ECLAC training course on ICT for DRM in the Caribbean.



Ms. Kelly-Ann Phillips, Director, Business Development, InfoCOMM Technologies Ltd (left), Ms. Shelly Bradshaw, Manager, Mitigation, Planning and Research Unit, Office of Disaster Prevention and Maintenance (ODPM), Trinidad & Tobago (seated) and Ms. Gail Edwards, Disaster Recovery Planning Committee Coordinator, CANTO (right) at the ECLAC training course on ICTs for DRM in the Caribbean.



Ms. Diane Quarless, Director, ECLAC sub regional headquarters for the Caribbean (front row fourth from left) with participants at the closing ceremony for the ECLAC training course on ICTs for DRM in the Caribbean.



Mr Siao Si Sovaleni, UNESCAP/APCICT Pacific training partner, introduces the APCICT “Academy of ICT essentials for Government leaders “ programme for the first time to Caribbean participants at the ECLAC training course on ICT for DRM in the Caribbean.

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## The Appeal of Satellite Endures

By Carmen González-Sanfeliu  
Intelsat's Regional Vice President, Latin America & Caribbean



The economies of Latin America and the Caribbean continue to enjoy steady growth. Correspondingly, the strength of the region's telecommunications industry is at its highest point ever.

Intelsat has a long history of helping regional telcos integrate dependable satellite infrastructure into their service offerings – ensuring maximum performance, reliability and continuity.

Major satellite operators continue to assist the region's telcos by providing services that include Internet backbone and instant, middle-mile and last-mile connectivity to local loop capabilities in areas lacking the terrestrial infrastructure to access major fiber routes. These operators provide the satellite links to help telcos complete their service offerings.

Satellites also provide telcos with an effective solution for enterprise networking, supporting

a variety of transactional and multimedia applications – including business continuity, video conferencing, LAN/WAN interconnections, multicasting, virtual private networks, Internet, distance learning, point-of-sale transactions and VoIP.

### Meeting Critical Demand for Business Continuity

Latin America is home to many of the world's most active hurricane zones. Intelsat understands that threat. We located our Latin American headquarters in Miami to be close to our customers and respond quickly to their needs. Intelsat also understands the value of investing in the latest technologies to ensure continuity of operations.

Organizations depend on voice, data and video communications to keep operations running at peak efficiency. The region's enterprises, in particular, place an urgent emphasis on business continuity. Similarly, the region's governments have renewed their focus on disaster recovery. Both of these market segments have come to depend upon the versatility of satellite communications.

Companies are increasingly focused on the reliability of their network systems and communications. This means implementing plans that ensure protection from natural disasters as well as the more common causes of network outages - local power failures and severed communications lines.



With nationwide coverage, rapid switch-over capability and easy integration into an existing information technology infrastructure, a satellite solution enables a company to maintain nearly constant operations right through a wireline network failure.

Combining wireline and satellite technologies enables businesses to minimize or eliminate lost revenue from frozen financial transactions, decreased productivity from off-line applications and safety and security concerns over disabled telephone systems.

### **Importance of Wireless Backhaul Via Satellite**

The region's strong economic growth also has led to a tremendous spike in consumer demand for mobile voice and Internet connectivity. Intelsat and the region's telecommunications providers are meeting this need.

While the amount of fiber coming into the region has risen, it is being matched by the demand for data services – a trend that represents a significant opportunity for satellite. This appears to be the region's time for an explosion of new data and video service usage via wireless devices.

The region's market for wireless backhaul via satellite has experienced steady growth and penetration, particularly in rural and remote areas where 2G to 2.5G services have been provisioned. Universal Service Obligations, as well as saturated urban markets, require wireless telcos to provision 3G and even 4G services in rural markets.

Quickly deployable satellite services help telcos expand their offerings rapidly on a local, national and international scale. Intelsat services, for example, can easily be integrated to complement, augment or extend communications networks.

These services help telcos overcome geographical barriers, terrestrial network limitations and other constraining infrastructural issues. With a robust ground and space network and transmission reliability levels of 99.99 percent, the region's telcos depend on Intelsat to help them deliver uninterrupted service for mission-critical applications.

Even though other technologies compete with satellite for market share, the growth in wireless penetration is clearly increasing demand for backhaul services based on satellite.

### **New Satellite Developments**

The emergence of several High-Throughput Satellite (HTS) options is expected to bring abundant capacity to constrained regions and promises significantly lower costs for satellite service. This improvement will help enable mobile operators to profitably expand their services into untapped markets.

Intelsat's entry into the HTS category is its Intelsat EpicNG platform. Intelsat EpicNG is an innovative approach to satellite and network architecture utilizing C-, Ku- and Ka-band; wide beams; spot beams; and frequency-reuse technology to achieve a major design breakthrough for increased throughput and performance. This next-generation platform

delivers high performance and provides customers with increased control of their offerings. It also delivers all-region coverage.

Designed as a complementary overlay, Intelsat EpicNG is fully integrated with Intelsat's existing satellite fleet and global IntelsatOne terrestrial network, positioning our customers for operational and business success.

The first EpicNG satellite, Intelsat 29e, is scheduled for launch in 2015 and will serve the Americas as well as mobility customers in the North Atlantic. Intelsat 33e is scheduled to follow in 2016, and three more Intelsat EpicNG satellites are being developed.

HTS delivers higher throughput at lower costs. The advent of HTS, combined with highly efficient shared IP satellite infrastructure, makes satellite backhaul of 3G and 4G traffic highly feasible.

More than ever before, satellite operators consider Latin America and the Caribbean to be a strategically important market. The influx of new satellite technologies creates more opportunity to develop low-cost wireless voice and data offerings. These new technologies also will provide strong support for the enterprise-networking applications that drive productivity for the region's businesses. ■■■



## The Software Telco: Tomorrow's Telecom Operator

By Steve Gleave, Senior Vice President of Marketing at Metaswitch Networks



Andreesen's article rang true. Many of the world's fastest growing brands are software companies. Google, the world's largest direct marketer; Netflix, the world's largest video provider; and Skype, the world's largest telco, are all software companies. LinkedIn, Evernote, Dropbox, Spotify, Pixar – all software companies. The world's largest online retailer, Amazon, is a software company and much more.

Amazon, in fact, is a pioneer in wholesaling the storage and compute platforms that power a new breed of fast-growing software companies. While trying to optimize infrastructure for its own use, Amazon discovered that when designing for 85 percent of expected peak capacity, its computer systems could sit idle for as much as 75 percent of the time. So it built an elastic resource that could be scaled up and down as needed, and effectively rented to others at other times (statistically, of course, at all times) to maximize usage. This led to the creation of a wholesale division, Amazon

Web Services (AWS) that now generates billions in annual revenues.

The AWS offering is compelling: bulk data storage for absurdly low-rates and reserved or on-demand machine instances, for computer power that is dialed up through Web APIs. Prices for AWS services have been reduced more than 20 times since launch. Amazon's Simple Storage Service (S3) now stores over 2 trillion third party objects, accessed over 1 million times per second. Amazon will buy-back reserved computing instances that were never used. Wall Street will soon trade them.

The attraction for third parties is to run their applications in virtual machines on AWS's underlying COTS hardware. AWS layers its own software on top to make this monster collection of COTS hardware act as a hugely scalable and fault tolerant compute resource. Google jumped into this market to rent out its cloud capabilities under the brand of Google Compute Engine, while Microsoft's Windows Azure and VMWare's VCloud also ensure that prices will continue to drop.

What does this have to do with the future of telecom network operators?

For a while now, operators have looked at "the cloud" as a source of adjunct service revenue that can include storage, back-up and enterprise application hosting. But the real opportunity lies in seeing this new high performance cloud

as the home for the control and programming of real-time communication services. The advent of multi-core CPUs, with significant amounts of on-board memory and high performance media handling capabilities, means that data center COTS silicon and servers can now handle the needs of real time, synchronous, communications services. This can even be achieved in virtual machines, where applications share underlying common CPU resources through a layer known as a hypervisor. Naturally, there can be trade-offs in such an environment, but a number of techniques are already established for tying virtual machines directly to the underlying CPUs and NICs when serious media handling is required.

Inspired by these advances, thirteen of the world's leading operators united (in October 2012) to create a working group (under the auspices of ETSI) that would look to accelerate the development of virtualized network functions. This group looked to the vendor community to decouple the software in their network elements from underlying, proprietary hardware. The advantages would be many, but the mission was driven primarily to reduce network operating costs and encourage more innovation from vendors and others that could now simply supply software, without the financial obligation of supporting many units of expensive, proprietary hardware. Along the way, the network will become more software-centric.

The concept of NFV (Network Functions Virtualization) has gathered momentum throughout the service provider and vendor ranks. Often mentioned in the same breath as SDN (Software Defined Networking) it is easy to see how the two projects can lead to communication networks that are built on cloud infrastructures, with network intelligence

separated from media handling and a range of Web APIs that allow application developers and end-users to leverage the full power of a truly programmable network. The ultimate goal is to put the brains of this new network in the cloud and dramatically reduce the cost of network elements that handle the packetized media.

Vendors are quickly virtualizing many network elements including softswitches, session border controllers and deep packet inspection platforms for application-aware networking and policy enforcement. Independent initiatives, like Cloud-NFV, have been formed to accelerate vendor interaction and to prototype cross-vendor solutions for the more complex task of service provisioning and orchestration. In another example of the seismic changes that this approach can bring, Metaswitch Networks has delivered an entire IMS core (featuring S-CSCF, P-CSCF, I-CSCF, BGCF, HSS and TAS) on AWS EC2. The effort is called Project Clearwater and it is entirely open source. Calculations at current AWS pricing suggest that a telco could use Clearwater to deliver IMS call control at a cost of \$0.02 per subscriber, per year.

Can an incumbent telecom operator, steeped in a history of TDM switching and, more recently, NGN, truly become more software-centric? Certainly technology won't be the long-term obstacle. There is already a critical mass of vendor activity committed to solving these challenges. A natural reaction is to want to "own everything," but operators should give "renting" a try. Indeed, it can easily be argued that a certification in AWS might soon be a more logical service-tech qualification than the CCIE or CCNE "stamps" that have traditionally been sought. Likewise, leveraging open-source



solutions, a broad development community and a selection of RESTful APIs, the more forward-looking operator will be able to quickly deliver a range of “beta” services that can be spun up to test business and consumer appetites. Beyond these augmented services, embracing concepts of Carrier SDN will allow operators to provide programmable access to their network resources, permitting end users to dial-up bandwidth on demand for everything from data center back-ups to large file transfer to streaming Blu-ray movies. Along the way, the progressive operator moves from offering fixed bandwidth products to delivering the “network as a service.”

While many operators might still need convincing, it is worth remembering that the “landlords” of cloud infrastructure and resources treat all “tenants” pretty much equally. Rates for cloud-based storage and compute instances are readily published – there are no secrets on discounts for volume. There is really nothing to stop ANY telecom operator from virtualizing network functions and shifting the brains of their network into a dedicated or third party data center. Software might be eating the world but it’s time to set your table. Those who look to become software telcos, will most certainly not go hungry. ■■



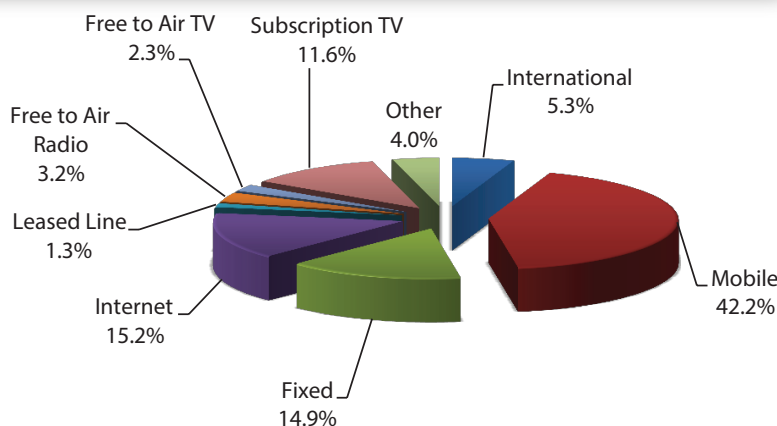
# Telecommunications Authority of Trinidad and Tobago

## Trinidad and Tobago's Telecommunications & Broadcasting Sectors CONTINUE to REFLECT GROWTH

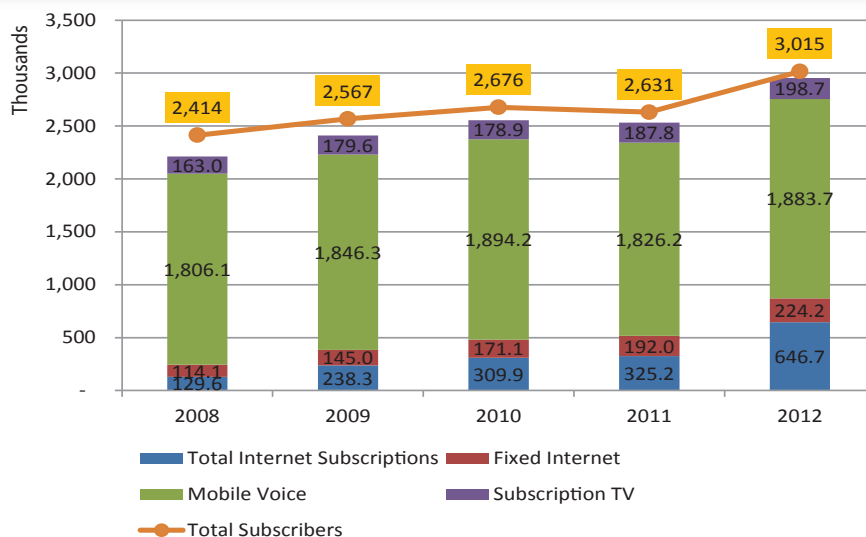


Trinidad and Tobago's telecommunications and broadcasting sectors continue to reflect growth during the period January to December 2012. Combined revenues for both sectors amounted to TT \$5.3 billion<sup>1</sup> or US \$834.1 million<sup>2</sup>. This figure equates to 3.3 per cent of this country's Gross domestic Product.

The chart below outlines percentages of gross revenues contributed to both the telecommunications and broadcasting markets during 2012.



The chart below supplies subscription statistics for the five year period 2008 to 2013.



The Telecommunications Authority of Trinidad and Tobago (TATT) continues to work towards the development of these sectors which ultimately contribute to Information and Communications Technology development in the Caribbean region.

For more facts and figures please see TATT's article in this publication.

<sup>1</sup> This Figure includes revenues from telecommunications and broadcasting services offered to members of the general public and private leased line services.

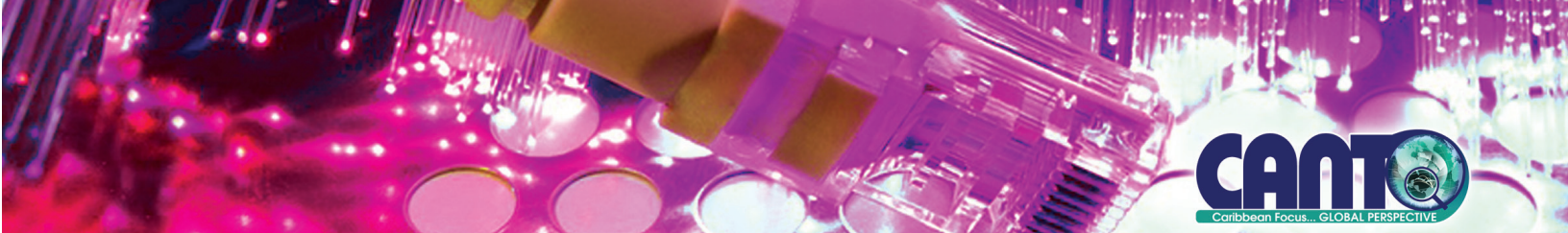
<sup>2</sup> Estimated exchange rate US\$1=TT\$6.37

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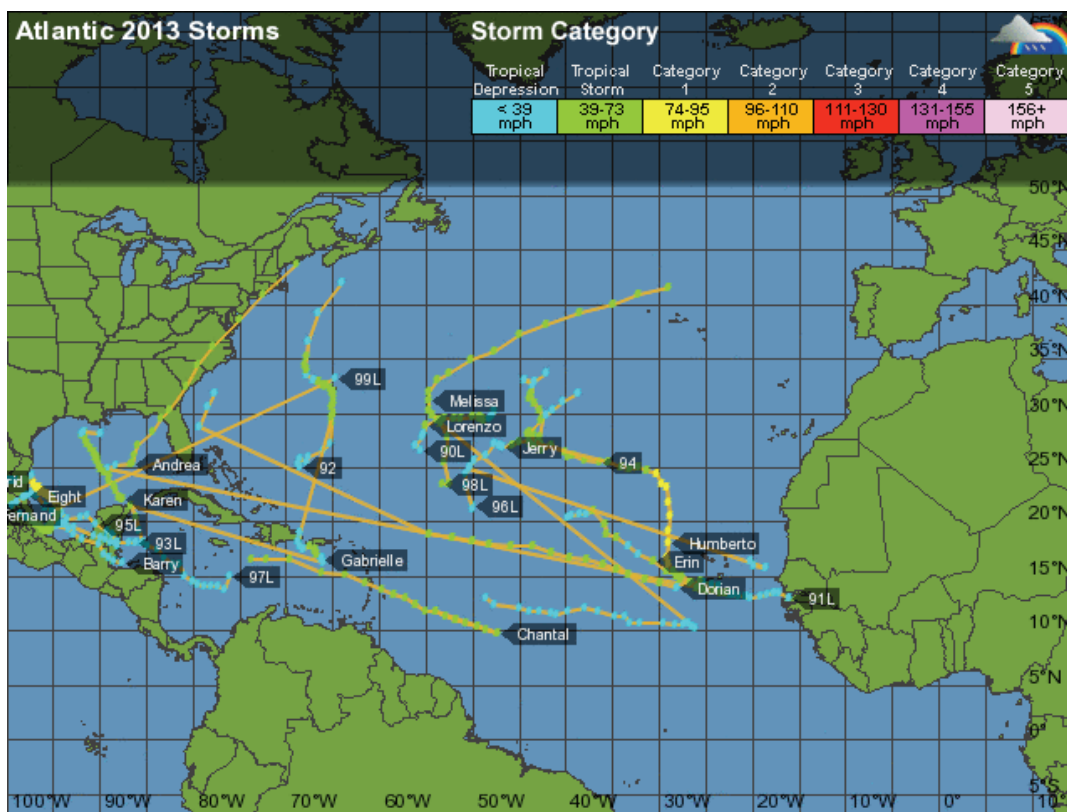
Telecommunications Authority of Trinidad and Tobago

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# 2013 Atlantic Hurricane Season Overview

Angus Steele, Chairman, Disaster Recovery Planning Committee



The 2013 Atlantic Hurricane Season officially came to an end on 30th November, 2013. It is recorded as the least active hurricane season in thirty (30) years. The Chairman of CANTO’s DRP Committee, Mr. Angus Steele is pleased to report that there were no immediate requests from our members or affiliate members for any assistance from CANTO via the DRP Committee during the 2013 Hurricane Season. Below is an overview of the 2013 Atlantic Hurricane Season and DRP Committee 2014 Calendar.

- 2013 was recorded as the least active Hurricane Season in 30 years.
- The UN Weather Agency reported that there have been 86 Tropical Storms Worldwide, 3 short of the annual average since 1981.
- Floods top 2013 world disaster bill. Inland flooding that affected parts of Europe, Asia, Canada and Australia caused about

47% of overall global losses and 45% of insured losses.

- Named storms for the 2013 Atlantic hurricane season were 13 Tropical Storms (of the expected 16 named Tropical Storms) and 2 hurricanes (8 were expected to strengthen to hurricanes) with a 61% probability of at least 1 major hurricane tracking in the Caribbean region (there were no major hurricanes). Even the 2 Hurricanes that formed were just CAT1 Storms. This resulted in minimal threats to our members and their organizations and businesses.
- Flooding was heavily reported worldwide from strong storms in Midwest USA, Colorado, Toronto, Canada as well as the UK. Additionally the deadliest disaster was a series of flash floods in Northern India and Nepal in June.
- Fires also contributed as usual to the disasters during the season in Colorado, the Yosemite National Park in San Francisco, Southern California plus Arizona.
- November 8th Typhoon Haiyan - The most severe typhoon in the Philippines which saw sustained winds of up to 195 mph and dominated talks at the UN Climate Conference in Poland. That was the Philippines fifth natural disaster in a single year.
- In early October, Tropical Storm Karen off the Gulf Coast of the USA and the unusual unexpected gale force winds swept the Southern UK in late October (St. Jude

Storm) leaving thousands of homes without power were also notable challenges.

- July - Earthquake in China, October 11th - Earthquake in Southern Caribbean would certainly be remembered.
- Discussions around the effects of climate change continued while it is generally accepted to date that climate change cannot be linked to any individual weather event, it is widely accepted that warmer temperatures associated with climate change cause more extreme weather and more weather related catastrophes.

#### **Disaster Recovery Planning Committee 2014 Calendar**

The Chairman of the DRP committee, Mr. Angus Steele is pleased to announce the areas of focus for 2014.

1. The CANTO Board of Directors has issued a new directive to recruit a Vice Chair for all committees. The chairman of the DRP committee takes this opportunity to announce that Ms. Sherry Rolle of Bahamas Telecommunications Company has been appointed Vice Chair of the DRP Committee.
2. Finalization and adoption of the Disaster Recovery Inventory Data Collection Template with the HR Committee. An element of this would include some discussions around members having current Asset Registers/Asset Registry including insurance.

3. Ongoing training on DRP related matters.
4. Develop a relationship with various organizations pertaining to DRP within the region that serves members including CDERA, UWI Seismic Research Center in Trinidad, CTU, Regional Amateur Radio Operators (Friendly 7.188 Net) and the Caribbean Amateur Radio Meteorological Emergency Network (CARMEN) otherwise known as "Ham Radio Operators", stormCarib, Weather Underground etc.
5. Lobbying major equipment suppliers to become members to understand their DRP plans in the region.
6. Seeking to implement various MOU's at the start of each Atlantic hurricane season, but to also extend ad hoc requests for assistance from regional airlines and shipping carriers.

We invite you to join the DRP Committee, as we seek to strengthen our Disaster Preparedness and Recovery throughout our membership. We also invite you to attend our 30th Annual General Meeting to be held in Montego Bay, Jamaica. For more information visit [www.canto.org](http://www.canto.org)



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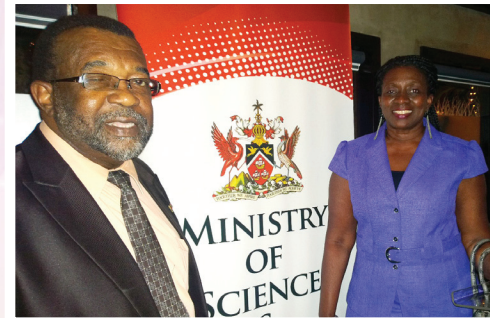
# CANTO S



PLOTT meets past Minister of Justice, Christlyn Moore



CANTO new website training - CANTO staff with Webmaster K. Murray (3rd from left)



From right: R. Fraser with Hon. R. Griffith at the Minister of Science & Technology of Trinidad & Tobago end of year celebrations



Delegates at 2nd Digital Literacy Training program CANTO, UWI & Soroptimist International of POS



O. London (2nd from left) with M. Taylor, W. Roche & R. Fraser of Soroptimist Int'l of POS at the National Association Meeting in Tobago



CANTO meets with member Illuminat: From left: J. Wilkins, T. Wankin, D. Belgrave, R. Fraser, T. Balthazar, K. Ali



CANTO staff at protocol training with trainer M. Barnett



CANTO staff listens attentively at CANTO protocol training



CANTO staff shows off certificates at the completion of the protocol training



CANTO meets with L. Korowajezuk 3rd from left and R. Richardson 5th from left of CelPlan



From left: G. Manzano and T. Wankin at CANTO's annual Christmas dinner



# Snapshots



Group A ICT ministers prepare for Roundtable Session at CANTO 2013



Group B ICT ministers prepare for Roundtable Session at CANTO 2013



R. Abrol of Comverse (Silver Sponsor) of CANTO 2013



R. Croes CEO of Setar and F. Morton of TEMPO Networks - CANTO 2013



P. Torres of Ericsson poses with Best Exhibit plaque - CANTO 2013



D. Currie and J. Marin of IDB



Panelist at Women and Girls In ICT Breakfast meeting at CANTO 2013 Meeting



From Left R. Fraser, E. Suttle (Trainer) and T. Wankin at 7th HR Forum held in Aruba



CANTO Ericsson i-Create winners pose with their cheques



L. McNaughton, D. Charles and D. Currie at 118 Board meeting held in Haiti



J. Wilkins at 118 Board meeting held in Haiti



CANTO meets with N. Benitez of Anritsu (1st from left)

## CANTO Caribbean Round Up – November

After several months of speculation French telco Orange agreed to sell 100% of its Dominican Republic mobile subsidiary Orange Dominicana for approximately US\$1.4bn to Luxembourg-based telecoms group Altice.

Orange Dominicana's purchase is subject to the approval of local authorities and will be submitted to the Orange board of directors during the week of December 9.

Also in November, Altice's subsidiary Altice Caribbean took over 88% of Orange Dominicana competitor Tricom.

Orange Dominicana has a 40% mobile market share, with América Móvil subsidiary Claro holding approximately 50% and Viva and Tricom making up the balance.

Orange Dominicana raised doubt about the rumored sale in October after saying the company planned to continue investing to improve its network.

### Financial results

Cable and Wireless Communications (CWC) saw total revenues fall by 3% to US\$935mn during the six months to September 30, as growth in Panama was offset by declines in the Caribbean and Monaco.

The Caribbean region saw revenues fall by 6% to US\$521mn as slight growth in mobile revenues was not enough to offset declines in broadband, TV, fixed voice and enterprise services.

CWC saw growing demand for mobile broadband, with mobile data revenue up 29% in the quarter. Mobile subscriber numbers were up 8.3% in Panama and 1.8% in the Caribbean.

### Broadband upgrades

As well as its investments in HSPA+ networks, CWC is also set to launch LTE in the Cayman Islands and the Bahamas before the end of this year.

CWC unit Lime Jamaica is upgrading its mobile network to provide broadband speeds of up to 21Mbps in the country with an investment of US\$79mn.

The rollout started in October and US\$20mn of the funds will be spent within this financial year, which ends March 2014.

CWC Caribbean competitor Digicel launched 4G LTE services across the Cayman Islands with 99% population coverage.

Digicel was granted both in the 700MHz and 1800MHz spectrum and initially rolled out in 1800MHz.

As of May this year, 16 of Digicel's 31 markets had HSPA+ and one, Antigua and Barbuda, had LTE. The company was also granted an LTE license in the 700MHz band in February for Turks and Caicos.



## Regulation

Jamaica’s Spectrum Management Authority (SMA) has invited companies to express their interest in potentially bidding for licenses in the 1800MHz, 1900MHz, 1700/2100MHz and 2.5/2.6GHz bands.

In October, the SMA was forced to cancel an auction for the 700MHz band after it failed to attract a single bidder, despite high initial levels of interest from 10 countries.

The Eastern Caribbean Telecommunications Authority (ECTEL) has published a request for expressions of interest for a consultant to implement price cap plans.

ECTEL is asking for an economist or financial advisor with specialist knowledge of telecommunications policy with at least five years’ experience in retail tariff regulation and price cap plans.

Expressions of interest must be received by December 12.

## In brief

Puerto Rico will assume leadership of the Latin American telecom regulators association Regulatel in 2014 after the head of Puerto Rican telecoms watchdog JRTPR, Javier Rúa Jovet, was elected as the association’s president.

French satellite operator Eutelsat and CaribSat, an ISP covering the French West Indies and French Guiana, have signed a distribution agreement for the IP Easy satellite broadband service provided through the Eutelsat 8 West A satellite.

Starting in Guadeloupe, the service will be extended to Martinique, Saint-Martin, Saint-Barth and French Guiana from January 1, 2014.



## National School Connectivity Plan

### Telecommunication Authority Suriname

The Telecommunication Authority Suriname (TAS) in collaboration with the International Telecommunication Union (ITU) has launched the National School Connectivity Plan (NSCP) in Suriname. The NSCP is a result of the “Connect a School and Community project” that was launched in 2012 by the Government of Suriname, with TAS as the focal point in partnership with ITU. The purpose of the NSCP is granting school youth access to ICT by using broadband by connecting the school to the Internet. With this in mind, the TAS together with the ITU carried out a pilot project in four schools, where classrooms were converted to computer rooms and equipped with computers, scanners, printers and Internet connectivity.

In the last couple of months, TAS through the NSCP, focused on closing the digital gap for all regardless of age, ethnicity, disability or area of residence at the following pilot schools:

- The Kennedy School for deaf and hearing impaired children in Paramaribo. (May 17, 2013)
- The Public School Mastklimmenstraat at Latour. (May 24, 2013)
- The St. Thomas More School in Washabo. Rural area, about 360 Km from Paramaribo. (July 19, 2013)

- The Public School Skroetjieweg in Nickerie. Rural area, about 250 Km from Paramaribo. (July 26, 2013)

At the Kennedy School and the Public School Mastklimmenstraat, teachers and students were given training in basic computer knowledge and the use of Internet in the days leading up to the launch at their respective schools. Certificates were also issued to the students upon completion. TAS also subsidized six months of the cost of Internet for these schools; in doing this the TAS ensured each one of these schools had a head start in developing and implementing an efficient self-support system for their school’s computer room.

A lot of gratitude goes to the first lady of the republic of Suriname, Mrs. Ingrid Bouterse - Waldring who accepted the role of patroness of this national project. Mrs. Ingrid Bouterse - Waldring received the NSCP plan on behalf of His Excellency, the President of Suriname, D.D. Bouterse, which was handed over to her by Mr. Cleveland Thomas, the ITU representative on May 17th.

We had a lot of challenges, but we overcame them all, due to a motivated team of workers.



The first lady of the Republic of Suriname, Mrs. Ingrid Bouterse - Waldring receiving the NSCP on behalf of the President of Suriname on May 17th. From left to right: the first lady; acting director of TAS Mrs. Gwen Gadden - Amelo and the ITU Area Representative for the Caribbean, Mr. Cleveland Thomas.



Launch NSCP at the St. Thomas More school at Washabo in Sipaliwini district. Some of the delegation from Paramaribo and an indigenous cultural group. From left to right: 3rd from left at the back, acting Director of TAS Mrs. Gwen Gadden - Amelo; School Director Mrs. Orban; Mrs Faria from the TAS; Member of Parliament, Mr. Andre Misiekaba; District Commissioner Mr. A. Jurel and Mrs. H. Breinburg from the TAS.



Launch NSCP at the public school Mastklimmenstraat. From left to right: Member of Parliament, Mr. Andre Misiekaba; first lady Mrs. Ingrid Bouterse - Waldring, acting Director of TAS Mrs. Gwen Gadden - Amelo; District Commissioner Mr. M. Nerkust; 2 representatives of the department of Education.



Some students of the St. Thomas More school on some of their laptops in the new computer room of their school.



Students of the public school Skroetjie preparing for the march through the streets of Nickerie raising awareness about road safety.



Launch NSCP at the public school Skroetjie at NW Nickerie in Nickerie district. From left to right: member of parliament Mr. Rashied Doekhie; Mrs. Kitty Ameerah spouse of the Vice-President of the Republic of Suriname; school Director Mrs. Ramdas; first lady Mrs. Ingrid Bouterse - Waldring, acting Director of TAS Mrs. Gwen Gadden - Amelo; District Commissioner Mr. W. Joeloem Singh; Mr. Steven Relyveld Minister Spatial Planning, land and forest management.



Some of the TAS delegates amongst the students on March.

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## Making the Case for IPV6

Sean Hopkins, Communications and Technical Writer  
American Registry for Internet Numbers (ARIN)

Over the past several years, ARIN has conducted outreach at the behest of its community to heighten awareness of the impending depletion of IPv4 address space in the region. These efforts included trade show appearances, a variety of educational materials, many speaking engagements, and direct customer mailings. As we near the very end of ARIN's IPv4 free pool, awareness is at an all-time high, and ISPs, hosting providers, network equipment vendors, and even small businesses are getting onboard with IPv6 adoption.

With these pieces of the Internet puzzle coming together, ARIN is shifting its outreach efforts to focus on filling in other pieces, and chief among these are enterprise organizations. It is common knowledge that once there are no more new IPv4 addresses, ISPs will be unable to get new address space for their customers, but because enterprises do not get space from ARIN directly, they may not be tuned in to the impending IPv4 depletion or aware of how it will impact their business. However, these organizations have important products and services that are performed, sold, or marketed on the Internet, so IPv4 depletion poses the same business threats for them as it does for ISPs.

While the Internet continues to be a robust platform for companies looking to market or provide services to a wide variety of customers,

IPv4 depletion implies a future where many new Internet users and devices will be dependent on IPv6 to access the Internet. IPv4-only content risks invisibility to IPv6-native users, though IPv6 traffic will likely be translated to IPv4 at a gateway put in place by their ISP, slowing the flow of information and creating a degraded and frustrating experience for IPv6-native users. Additionally, website analytics and regionally targeted marketing will become increasingly difficult to perform, because these IPv4 to IPv6 translation gateways make it impossible to determine from where your website is accessed from most.

For an enterprise, making your website available over IPv6 may not include purchasing new equipment, training additional staff, or experimenting with new configurations. For many companies it is a simple matter of contacting their hosting provider and asking them to enable IPv6 for their website. Hosting providers who want their customers' websites to be available to the entire Internet as it evolves, will need to provide IPv6 availability. By making sure that your website is accessible over IPv6, you are securing continued growth as the Internet enters this evolutionary phase, and one less obstacle will lie between you and your marketing potential. ■■



## ICTs for Disaster Risk Management

### Atiba Phillips Infocomm Technologies (ICT) Ltd.

As the United Nations Development Programme (UNDP) has recognized, Caribbean countries are vulnerable to a range of hazards due to, and often exacerbated by, their “...geology, tectonic setting, location and topography,” as well as their “...poor land use and environmental management practices” (UNDP 2011:1)

The economic cost of natural catastrophes and man-made disasters worldwide amounted to US\$370 billion in 2011, a significant increase over the previous year. The Japanese earthquake and tsunami alone cost the national economy at least US\$ 210 billion (OECD, 2012). Over the last decade (2000 to 2010), the average death toll rose sharply due to the increasing frequency of disasters, especially in developing countries. The United Nations reported that in 2010 alone, 373 earthquakes, floods, cyclones, volcanic eruptions, and droughts occurred, which affected 208 million people around the world, killing nearly 300,000, and costing US\$ 110 billion in losses. Earthquakes in Haiti (12 January), Chile (27 February), and China (13 April), flooding in Pakistan (July to September), and heat wave in Russia (July to September) were the five most devastating natural catastrophes in 2010, which claimed 280,000 lives and US\$ 52 billion worth of losses.

These disasters have put a spotlight on the growing impact of hazard events on the private sector. While financial markets and board room decision-makers have traditionally placed greater emphasis on short-term returns over issues of sustainability, disaster risk reduction

and vulnerability mapping, over the long-term, these items can prove to be difference between companies that continue to be in business and others who do not survive.

For example, a recent UN report revealed that Toyota lost \$1.2 billion in revenue from the Japanese quake due to parts shortages that caused 150,000 fewer cars to be manufactured in the United States and a 70 percent reduction in production in India and a 50 percent reduction in China.

On the other hand, Orion, which owns and operates one of the largest electricity distribution networks in New Zealand, invested \$6 million in seismic protection that saved the company \$65 million in the 2010 and 2011 earthquakes, the report said.

### The Role of ICTs

Disaster occurrences cannot be eliminated, but they can be better managed. The successful management of emergency situations requires proper planning, guided response, and well-coordinated efforts across the disaster management life cycle.

Three (3) factors in the main are evident with regard to the discussion of ICT and DRM in the Caribbean:

1. The nature of disasters – occurrences which have the possibility of reversing hard gained business and development

advances and threaten the reputation of organizations or livelihoods of people/nations. These occurrences also demand quick response, critical real time, multi-agency coordination, as well as mass/accurate information dissemination and feedback;

2. The vulnerability of the Caribbean - the sub region is among the world's most vulnerable to natural disasters. Data also suggests that the impact of these disasters has been increasing in recent years; as such the need to put in place measures to reduce the vulnerability and impact of these hazards is most critical in this sub region.
3. The nature of Information Communication Technologies (ICTs) are technologies that allow timely (both synchronous and asynchronous) information exchange. They allow for instantaneous feedback, collaboration and automation of tasks that may be difficult for a human to perform under crisis conditions. ICTs such as video conferencing (for example) allow for the "death of distance" facilitating person to person communication and coordination with both local and international collaborator businesses and authorities.

For any disaster response center, managing different stakeholder expectations, capacities, locations, and priorities, is a complex and dynamic endeavor. In addition, given the turbulent nature of disaster situations, a disaster center or manager therein, is subject to information overload, which

can prevent timely and accurate decision making. Knowledge management - the practice of selectively applying knowledge from previous experiences of decision-making to current and future decision making activities with the express purpose of improving the organization's effectiveness (Dorosamy and others, 2013) - can be applied to such situations. Knowledge management systems (KMSs) can assist organizations in dealing with dynamic and complex situations such as emergencies. In this context, an ICT-based KMS can be used for the capture and then re-use of specific crisis response knowledge which can transform past and shared experiences into life-saving knowledge and actions.

ICTs can support the process of knowledge creation, sharing and dissemination to enhance emergency planning and response. The revolutionary potential of ICTs lies in their ability to instantaneously connect vast networks of individuals and organizations across great geographic distances, and to facilitate fast flows of information, capital, ideas, people and products.

With ICTs such as remote sensing, Geographic Information Systems (GIS), satellite phones, hazard mapping, as well as computers, the Internet and mobile phones, the constraints on the place and time for interaction have eased considerably and this can play a catalytic role in reducing disaster risks. ICTs are important tools for lessening disaster risks through (i) early warning (ii) coordinating and tracking relief activities and resources (iii) recording and disseminating knowledge and experiences and (iv) raising awareness (UN-APCICT, 2010)



Beyond these, ICTs facilitate the sharing of best practices within and among organizations; building upon lessons learned from past occurrences in different islands. Additionally, through social media, employees as well as general populations can be empowered to:

- self-organize and triage
- leverage and authenticate incoming data from social and “official” feeds concerning the timing, location and path of a hazard in order to network volunteers; and
- send their own text and social messages and geo-tag incidents on interactive maps, thereby becoming integrally involved in assisting aid workers to target their response

Given the above factors alone, it is clear that leveraging ICTs for DRM, particularly in the Caribbean is of utmost importance for governments and for business. Further, given the fairly good platform of telecommunication infrastructure that exists within the sub region, coupled with a mobile penetration rate which is the highest in the world, it would be unwise of local and international sub regional business interests not to take full advantage of this pervasive ICT phenomenon for reducing disaster risks. ■■

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## CANTO Caribbean Round Up – 2013 Year in Review

In 2013, operators concentrated on network upgrades to LTE as well as expanding their portfolios of corporate ICT services. In the area of regulation concrete advances were made with the establishment of a regional IXP on the island of Dominica while Digicel agreed to eliminate roaming charges for its customers within the Caribbean Community. Attempts to auction spectrum in Jamaica weren't so successful.

Cuba made an important leap in connectivity with the activation of a new undersea cable and restrictions on internet access were lifted. However whether the services are affordable is another thing.

ICT development meetings were held region wide with the Caribbean Telecommunications Union (CTU) reaching several important cooperation agreements with multilateral organizations. And academics, ministers and other stakeholders met in Panama and committed to try to close the digital divide by 2020.

### LTE

LTE really started to take root in 2013 as greater adoption of smartphones and impatient users that want instant access to data added pressure to operators to upgrade their networks.

According to the latest report of the Global Suppliers Association (GSA), there are 13 commercial 4G LTE deployments in the Caribbean: five in Puerto Rico (Claro, T-Mobile,

Sprint, AT&T and Open Mobile), two in the Dominican Republic (Orange, Tricom), two in the Cayman Islands (LIME and Digicel) one in Antigua & Barbuda (Digicel), one in Aruba (Setar NV), and two in the US Virgin Islands (Sprint and AT&T).

Most recently, at the end of November, Digicel and Cable & Wireless Communications (CWC) launched LTE services in the Cayman Islands.

CWC launched in the 700MHz band while Digicel, launched initially in the 1,800MHz band but also has spectrum in 700MHz. Digicel claims 99% population coverage.

Many other operators throughout the region have expressed plans to deploy LTE in the near future. CWC has confirmed plans to launch LTE services in 700MHz through its unit Bahamas Telecommunications Company (BTC) in December.

Puerto Rico is the most advanced LTE market in the Caribbean with five players, some operating since 2011. Aeronet Wireless Broadband says it is deploying an LTE TDD network in 2.6GHz.

In February 2013, Digicel and Islandcom received LTE licenses in 700MHz in Turks and Caicos and Digicel has plans to cover 75% of the population in 18 months and 98% of the population within 30 months.

In Belize, BTL DigiCell is deploying an LTE upgrade and in Bermuda North Rock Communications has requested a license.

In the Dominican Republic, Wind Telecom has confirmed plans to deploy an LTE TDD network to compete with the existing networks of Orange and Tricom.

In Saint Maarten, the regulator launched on Nov. 1 a public consultation regarding which LTE bands to allocate.

Trinidad & Tobago regulator TATT issued a request for proposals regarding use of spectrum in the 700MHz, 800MHz and 1900MHz bands as well as the opportunity for the entrance of a third player.

Responses are required by March 31, 2014. DigiCell has said it plans to be the first LTE operator in the country.

Haiti's telecoms regulator Conatel said in July it would launch a tender for a license to operate a 3G/4G mobile network in the 1900MHz spectrum band.

The spectrum band was previously operated by Haitel, which had its network shut down in April after going into receivership with debts of US\$80mn.

Besides the LTE deployments numerous operators progressively upgraded networks in different countries to HSPA+, which is considered 4G. As of September there were HSPA+ services in 22 markets throughout the Caribbean, according to Informa Telecoms & Media.

In a move to boost adoption of mobile broadband, DigiCell even launched in March its own brand of 4G capable Android-based smartphone dubbed the DL600. Priced at under US\$100; DigiCell expects to reach larger segment of the population with mobile broadband.

## **M&A**

The most important M&A activities were seen in November in the Dominican Republic. After months of speculation, Luxembourg-based telecoms group Altice acquired 100% of Orange Dominicana for approximately US\$1.4bn and also 88% of Tricom for US\$400mn.

Orange Dominicana has a 40% mobile market share and Tricom less than 10%. No indication has been made whether Altice would be interested in combining its assets to take on market leader Claro which controls 50% of the market.

CWC was also busy selling off assets though outside the region. The company completed the sale of its Monaco & Islands and Macau assets as part of its intention to renew its focus on the pan-American region consisting of the Caribbean, where it operates as LIME, and Panama.

## **CWC**

C&WC continued to struggle in 2013 attributing a "difficult" Caribbean economy, particularly the Eastern Caribbean and Barbados but accelerated investments designed to reduce costs and improve services.

CWC went through multiple management changes this year with both LIME CEO David Shaw and CWC CEO Tony Rice stepping down.



The company also announced it would shift its headquarters from London to Florida as part of its restructuring and refocus.

The company continued to invest in diversifying its portfolio launching LIME TV pay TV service in the Cayman Islands making it the first quad-play provider in the Caribbean and adding to pay TV services in Barbados and St Lucia, in addition to mobile TV in Jamaica.

But the services haven't been enough to stem the losses. During the six months to September 30 CWC Caribbean revenues fell by 6% as slight growth in mobile revenues was not enough to offset declines in broadband, TV, fixed voice and enterprise services.

CWC is also now facing competition in its traditional area of dominance, fixed line, after Digicel launched a fixed wireless service in CWC's largest market Jamaica in July.

CWC said it is seeking to cut costs by US\$100mn within two years.

On the organic side CWC is looking to further invest in fiber and HSPA+ 4G networks to drive pay TV and broadband. On the inorganic side the company is looking for acquisitions.

CEO Tony Rice said the opportunity to grow with data offerings is huge given the low smartphone, pay TV and broadband penetration in the Caribbean, as well as growing per capita incomes.

Something that may help is the joint venture CWC entered into in May with Columbus Networks to

provide international wholesale capacity to each other and to third parties.

C&WC and Columbus operate largely complementary sub-sea cable networks in the Caribbean and Central America region. The JV will have a network platform of approximately 42,000km with connectivity to 42 countries.

It will initially operate by providing joint sales and marketing for both C&WC's and Columbus's international wholesale capacity services.

Rice said the alliance positions the company to meet the data capacity demands of its retail operations in the future and optimizes its capital expenditure commitment to its undersea cable networks.

## BAHAMAS

CWC through its unit BTC will lose its 3-year exclusivity in the mobile market in April 2014 following its purchase of 51% of BTC in April 2011.

In a move to prepare itself for competition, BTC promise to launch LTE in December. Also in an attempt to reinvigorate its flagging landline business BTC launched a new low-cost package dubbed "love your landline" for domestic and international calls that uses the company's legacy exchange infrastructure rather than IP.

The Bahamas Investment Authority (BIA) said it is reviewing applications from several companies looking to provide wireless services in the country, when the sector is liberalized. Only Digicel Group has been mentioned so far.

## **DIGICEL**

The Caribbean's largest mobile operator Digicel continued to upgrade its networks, extended its corporate ICT offerings and even started tinkering with new areas such as energy.

The company launched LTE in the Cayman Islands in November, its second LTE market after Antigua and Barbuda and upgraded its St Kitts and Nevis operation to 4G HSPA+ with 96% coverage speeds of up to 21Mbps.

In October, the operator announced a J\$4bn (US\$39.1mn) investment in Jamaica to expand its 4G mobile network and upgrade 2G, building on the J\$7bn investment over the last two years. Also, earlier in the year, Digicel launched a consumer fixed line service in Jamaica with a J\$300mn investment in a move to challenge LIME's dominance in that area.

The service, called DigiHome, is a postpaid service that uses a wireless unit installed in the home to deliver voice and data services.

## **CORPORATE ICT**

Offering corporate ICT services is a trend seen by many operators around the world. In January, Digicel created a new business unit in Panama focused on the corporate segment and competing directly with CWC in that country.

In a move to stamp its footprint in the ICT corporate space Digicel and Columbus Business Solutions (CBS), a subsidiary of Columbus Communications, announced in September ambitious plans to work together to expand

cloud computing offerings in the Caribbean and beyond, with SMEs offering the best prospects for growth.

Digicel launched its cloud computing division in 2009 and has since invested nearly J\$700mn (US\$6.83mn) in a tier 3 datacenter in Jamaica, the only one on the island. In four years the firm has taken its cloud services to 30 markets and has long-term plans to compete with the biggest global players.

Columbus claims it is the only company in the Caribbean equipped to offer end-to-end solutions to organizations of any size, in any industry.

During the year Digicel's business communications unit secured an agreement with the Caribbean's largest furniture, appliance and electrical company Unicomer, which trades as Courts, to implement a unified communications and contact center solution.

CWC also secured significant ICT deals including contracts with Jamaica's technology ministry and the Jamaica Constabulary Force to provide a cloud-based, hosted e-mail service.

## **OTHER BROADBAND INITIATIVES**

Columbus Communications announced plans to construct a new broadband network in Barbados, investing in excess of 120mn Barbados dollars (US\$60mn).

Columbus said it expects to reach 30% of Barbados households by the end of 2013. Columbus entered Barbados in 2012 with the acquisition of TeleBarbados and Karib Cable.





Carrier of carriers GlobeNet, a subsidiary of Brazilian telecoms operator Oi completed construction of its Segment 5 subsea cable system connecting Bermuda to the US.

The company's submarine cable network spans 22,000km and connects Bermuda, Brazil, the US and Venezuela, with further plans to extend to Colombia.

This year also saw the much-anticipated launch of a satellite project that aims to provide fast and cheap broadband to billions of people in underserved areas.

O3b, whose name refers to the "other three billion" people that have limited or no access to connectivity believes it can provide cheap voice and data to operators by using a novel approach, with spacecraft flying in the medium-earth orbit (MEO) at 8,000km, a quarter of the distance from the earth of geostationary satellites, which reduces latency.

The first of four satellites went successfully into Orbit in July. The launch of the second group of satellites from French Guiana, scheduled for September 30, had to be delayed to allow time for further testing. A new launch date, expected to be in 1Q14, will be confirmed in due course.

Customers already signed up for capacity include Royal Caribbean Cruises, Ozônio Telecomunicações for the Brazilian Amazon region, Skynet Colombia for the Colombian Amazon and ISP Quark of Guyana.

## REGULATION

While operators in most countries seem to jump at any chance of obtaining additional spectrum, this doesn't seem to be the case in Jamaica.

In October, Jamaica's Spectrum Management Authority (SMA) was forced to cancel an auction for the 700MHz band after it failed to attract a single bidder, despite high initial levels of interest from 10 countries.

This was the second setback in 2013. In May the SMA was obliged to delay the tender due to a lack of interest and suspicions that the reserve prices for the two spectrum blocks - US\$40mn and US\$45mn - were too high.

In November, the SMA invited companies to express their interest in potentially bidding for licenses in the 1800MHz, 1900MHz, 1700/2100MHz and 2.5/2.6GHz bands.

Jamaica also saw its plans to introduce number portability by the end of 2013 pushed back to May 2014 after technology state minister Julian Robinson said further due diligence was required.

Underdog LIME has said it is confident it would benefit from number portability, once introduced, by attracting customers from Digicel.

Among the concrete action that was taken was Jamaica's Office of Utilities Regulation's (OUR) reduction of mobile termination rates to J\$1.10 (US\$0.01) from J\$5, becoming effective July 1 and lasting until June 30, 2018. The move was made to level the playing field where Digicel accounts for 90% of the market.

## REGIONAL IXPs

In March, Dominica launched an Internet exchange point (IXP), the second in the Organization of Eastern Caribbean States (OECS) and the third in the English-speaking Caribbean.

The three local ISPs - LIME Dominica, Marpin 2K4 and SAT Telecommunications - partnered with the National Telecommunications Regulatory Commission (NTRC) and US-based Packet Clearing House (PCH) to launch DANIX.

At the end of May 2011, the British Virgin Islands (BVI) and Grenada launched IXPs. Other countries that have begun discussions on IXPs are St Kitts and Nevis, St Vincent and the Grenadines and Jamaica.

The regional IXP initiative has been spearheaded by the CTU and (PCH). Benefits include reducing internet traffic latencies and costs by allowing traffic to be routed locally instead of depending on expensive international connections.

## ROAMING

Digicel agreed to eliminate roaming charges for its customers within the 15 Caribbean nations known as the Caribbean Community, or Caricom, taking effect on October 1, 2013.

Following negotiations with the CTU, each travelling subscriber will be treated as if they are using their local/domestic Digicel network throughout the region.

## GUYANA

As one of the last countries in Latin America to still not liberalize its telecoms market, the

government of Guyana said in July it had held “fruitful” discussions with incumbent Guyana Telephone and Telegraph (GT&T) and would resume talks on liberalization in the national assembly following.

The case continues.

## CUBA

Cuba witnessed several important developments in 2013. A submarine cable linking the island to Venezuela and Jamaica was finally activated, ending months of speculation about what had happened to the project after the cable landed in Cuba early 2011.

Telefónica and CWC are providing services to state operator ETECSA via the cable. The submarine cable has provided the country with fixed-line internet infrastructure, decreasing its historic dependence on slow satellite connections.

On June 4, Cuba lifted all restrictions on Internet access for average Cubans, allowing them to get online via ETECSA’s 118 Internet centers throughout the country.

Cubans were allowed access, which was previously allowed only to foreigners, for the first time in February.

The move was part of a wave of reforms for the country this year given President Raul Castro’s relaxation on foreign travel restrictions in January. ETECSA also introduced a new mobile charging scheme, decreased the cost of calls, and outlined plans to install a fiber optic network along its national train system.

However with an initial cost of US\$4.50 per hour unrestricted internet navigation, this is still prohibitively expensive for most Cubans who earned an average monthly salary of 455 pesos (US\$17.17) in 2011.

The country's national statistics office reported that there were just 7 computers per 100 inhabitants and 1.3mn mobile subscribers as of 2011 suggesting that widespread domestic internet use is still a long way off.

That said, by the end of August, more than 100,000 Cubans had signed up to use the service. Castro began allowing the sale of cellular phone services to the general public for the first time in 2008. As with internet, the service was very expensive at the outset, however Cuba expects to reach 2mn mobile lines by the end of this year and 4mn in the next five years.

Cuba's also chose the Chinese Digital Terrestrial Multimedia Broadcast (DTMB) standard after completing digital TV tests in Havana in June. With equipment donated by Beijing, the technology is to be implemented across the country's provincial capitals in 2014 and the analog switch-off due to be complete by 2021.

Cuba's choice breaks with the norm for most countries in Latin America that have chosen Brazil's adaptation of the Japanese digital TV standard, ISDB-T.

## **REGIONWIDE DEVELOPMENT**

The CTU continued in 2013 with its Caribbean Roadshows designed to promote the use of ICT for the development of governments, businesses and citizens.

In July the CTU and the Commonwealth Telecommunications Organisation (CTO) signed an MOU to assist their stakeholders leverage ICT for social and economic development.

CTU secretary general Bernadette Lewis and ICANN president and CEO Fadi Chehadé committed to start implementing concrete actions in the upcoming weeks including capacity building, partnering for outreach events and fostering multi stakeholder dialog at regional and national levels.

In July, CANTO held its 29th Annual Conference & Trade Exhibition in Aruba entitled "Towards a SMART Broadband Caribbean Community."

The conference was attended by over 700 delegates including telecoms/ICT ministers, operators, regulators, suppliers and other industry professionals.

The Council of Ministers of the Eastern Caribbean Telecommunications Authority (ECTEL) held its 28th regular meeting in Dominica from October 24-25th in Portsmouth, on the island of Dominica. Top on the agenda for discussion were: the C&WC/Columbus strategic alliance to sell wholesale capacity to third party carriers; the establishment of a competition authority; roaming and call termination and the use of the 700MHz band.

Other issues included the harmonization initiative for developing a regional ICT infra-structure for broadband, spectrum management, cyber-security and e-legislation among member states. And ending on a hopeful note, during the First

Latin American Regional Telecommunications Congress which took place in Panama City from July 23-26, delegates agreed to put forth an ambitious program to try to identify the conditions needed to generate the necessary investment to close the digital divide by 2020.

The Inter American Development Bank (IDB) estimates that to close the digital divide by 2020 in the region would require at least US\$345bn of investment in fixed and wireless networks.

Most of that investment would have to come from the private sector but the idea is to create favorable conditions to encourage investment by helping reduce the cost of infrastructure deployment through eliminating obstacles such as excessive taxation.

Currently, mobile Internet penetration in Latin America stands at 18%. The aim for 2020 is to raise that to 96%. ■■■



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# *Calendar of* **EVENTS**

**30th Annual General Meeting  
Hosted by LIME, Jamaica**

**25-28 January, 2014  
Montego Bay, Jamaica**

**Financing Broadband  
Infrastructure in the Caribbean**

**27th January, 2014  
Montego Bay, Jamaica**

**CANTO/BCRC Caribbean  
e-Waste Forum 2014**

**28th January, 2014  
Montego Bay, Jamaica**

**CANTO 8th WTISD Essay  
Competition**

**17th May, 2014**

**I-create E-content Initiative,  
Regional,**

**May-July 2014**

**CANTO 30th Annual Conference &  
Trade Exhibition  
Hosted by: The Bahamas  
Telecommunications Limited**

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

**2nd Steering Committee Meeting &  
Project Update  
Broadband Infrastructure Inventory  
& Public Awareness in the Caribbean  
(BIIPAC)1  
Hosted by: The Bahamas  
Telecommunications Limited**

**10th August, 2014  
Atlantis Paradise Hotel, Bahamas**

**Human Resource Leadership Forum  
Hosted by: The Bahamas  
Telecommunications Limited**

**14-15th August, 2014  
Atlantis Paradise Hotel, Bahamas**



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