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# CANCION

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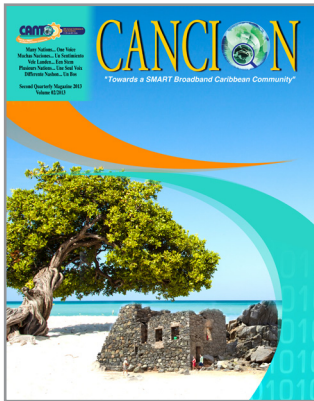
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The Divi-Divi Tree, called Watapana in the Arawak language, is perhaps the most recognizable Aruban icon. It's an endemic bush in the ABC Islands (Aruba, Bonaire, and Curacao), and you'll see images of it on tourist T-shirts, mugs, hats, and on several place-names around the island. The divi-divi, usually never more than a dozen or 50 feet tall, is permanently bent, at nearly a right angle, with its Medusa-like branches seemingly swept back by the wind. All divi-divi trees point to the west, in the direction of the trade winds that come from the northeast.

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## Mission

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 telecommunications technological 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 telecommunications developments in/or affecting the Caribbean.

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

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## Caribbean Broadband Development A Gauge from Latest Global ICT Rankings

Editorial (English)

An article in the Jamaica Gleaner of April 24, 2013 reported that *"Jamaica dipped 11 spots to rank 85th in the new Global Information Technology Report (GITR). The article attributed this decline to broadband penetration levels, availability of venture capital funding and low e-commerce. Given the established link between broadband access and adoption to economic and social development, this is definitely a call to action – how are individual Caribbean countries performing, and what is the prognosis for the region?"*

The GITR is published by The World Economic Forum in collaboration with INSEAD. The report tracks development in ICTs, and measures the impact of its adoption and usage on the social and economic well being of nations. The analytical framework underpinning the calculation is now over a decade old. It is considered one of, if not the most robust tool for quantifying the impact ICTs on key economic and social indicators.

The 2013 report covers 144 countries. The top level index, the Networked Readiness Index (NRI) seeks to measure global competitiveness. The NRI is a composite of four sub indices and ten pillars. It is designed to gauge the extent to which countries are effectively using ICTs to improve competitiveness and improve the economic and social lives of citizens. The report includes seven countries in the Caribbean region; Barbados, Dominican Republic, Guyana, Haiti, Jamaica, Suriname and Trinidad and Tobago.

As was the case in 2012, Barbados is the highest ranked of the Caribbean countries; placing 39th of the 144 countries represented in the report. Of the seven countries represented only Suriname and Haiti ranked higher in 2013 compared to 2012. In terms of actual scores four of the countries recorded lower scores compared to 2012. Dominican Republic, Haiti and Suriname posted slightly higher scores.

To get a better sense of the underlying trends that drive the NRI score and ranking, one needs to dig deeper to understand the drivers. For policy makers this provides good indicators to inform ICT development plans.

Four sub indices (environment, readiness, usage and impact) are combined to compute the NRI. The environment sub index seeks to capture areas generally considered as part of the enabling environment political stability, regulatory infrastructure and the business climate. Dominican Republic, Guyana and Haiti registered improved performance both in terms of rankings and scores.

The readiness sub index measures infrastructure, digital content, affordability and skills. Between 2012 and 2013 only Suriname and Haiti improved in scores and rankings. Haiti moved up 29 places from 142nd to 113th. This is an encouraging sign for Haiti, which has been beset by economic challenges for decades. The usage sub index measures usage of individuals, business and government. Barbados posted a slightly improved score and maintained its ranking. Dominican Republic and Guyana also posted marginally higher score than in 2012. The other Caribbean countries registered lower rankings and scores. The impacts sub index measures the economic and social impact of the adoption of ICTs. Dominican Republic jumped up fourteenth places from 80th to 66th. Suriname moved up one place. All the other countries ranked lower in 2013 when compared to 2012.

It is fair to conclude that Caribbean countries had a better performance in 2012 relative to 2013. This begs the question whether the process to digitization is losing momentum in the region. We hope not, but this is too important a question to leave without definitive answers. More detailed and rigorous analysis of the GITR findings is required. The results should also be corroborated with data from other sources.





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One area of particular concern is the area of impacts. Caribbean countries lag behind the developed countries. Some of the contributing factors identified by the report are weakness in political and regulatory infrastructure; insufficient innovation given low growth in new services and applications; weak capacity and skills base; low individual, corporate, and government usage to drive economic and social impacts.

For the region connectivity is still a factor. While access indicators are still very relevant in Caribbean markets, there is also a need for increased focus on all the pillars, and particularly those that drive socio-economic impact. This dovetails perfectly into CANTO's long held position, that it is not just about the development of broadband infrastructure, it is also how the infrastructure is used to support the economic and social development of individual countries.

CANTO continues to work with other stakeholders to promote the expansion of broadband networks, to improve the legislative and regulatory framework, build capacity in ICT skills at all levels and promote the development of local and regional content. These programmes are all geared at impacting the pillars of the NRI.

The Broadband Infrastructure Inventory and Public Awareness in the Caribbean Project (BIIPAC) is a major component of this effort. The project has four components: infrastructure gap analysis, assessment of regulatory and institutional framework, awareness and capacity building programmes and public policy recommendations for broadband expansion and usage. After the launch in February, the first meeting of the working committees will take place during the Annual Conference and Exhibition scheduled for Aruba July 14 to 17.

Putting into action the theme for this year - ***Towards a SMART Broadband Caribbean Community***, CANTO hosted various programmes, targeted different segments of the society. The World Telecommunication and Information Society Day (WISTD) Essay Competition invited youths across the region to participate by writing and submitting essays on the theme – 'ICTs and Improving Road Safety.' In celebrating International Girls in ICT Day CANTO partnered with Soroptimist International Port of Spain chapter, Microsoft Trinidad & Tobago and University of the West Indies, St. Augustine to host an adult computer literacy programme.

Budding ICT entrepreneurs were invited to participate in the i-Create e-Content Competition. The competition is aimed at promoting and showcasing content developed in the region for a global audience. The competition ran from November 2012 through to May 2013. The focus areas ranged from business and commerce, culture and heritage and entertainment and games. The winners will be announced at the 29th Annual Conference and Trade Exhibition in July.

Each initiative is intended to impact one or more of the pillars that drive ICT development. Building on broadband infrastructure development and ensuring access, and extending to promoting and developing of distinctive competencies, opportunities and capabilities.





## Desarrollo Caribeño de Banda Ancha Una Medida de las Últimas Clasificaciones Globales en ICT

Editorial (Espanol)

Un artículo en el Jamaica Gleaner del 24 de abril del 2013 reportó que "Jamaica cogió el 11 para situarse en el número 85 en el Reporte de Tecnología de la Información Global (GITR). El artículo atribuyó esta disminución a los niveles de penetración de banda ancha, disponibilidad financiera de capital de empresa y a un bajo nivel de comercio electrónico. Considerando la relación entre el acceso de banda ancha y la adopción del desarrollo económico y social, esto es definitivamente un llamado a la acción - cómo marchan los países caribeños de manera individual, y cuál es el pronóstico para la Región?

El GITR es publicado por el Foro Mundial Económico en colaboración con INSEAD. El informe rastrea el desarrollo de ICTS, y mide el impacto de su adopción y uso en el bienestar social y económico de las naciones. El marco analítico detrás de este cálculo es ahora más de una década de viejo. Es considerado uno de los, sino el más robusto instrumento para cuantificar el impacto de indicadores claves económicos y sociales de ICT.

El informe del 2013 cubre 144 países. El índice de nivel superior, el Índice de Preparación de Redes (NRI) busca medir la competitividad global. El NRI está conformado de cuatro sub índices y diez pilares. Es diseñado para medir hasta qué grado los países usan de forma efectiva la ICTS para mejorar la competitividad y mejorar las vidas económicas y sociales de los ciudadanos. El informe incluye ocho países en la región caribeña; Barbados, República Dominicana, Guyana, Haití, Jamaica, Surinam y Trinidad y Tobago.

Como fue el caso en el 2012, Barbados es el de mejor posición entre los países caribeños; ocupando el número 39 de los 144 países representados en el Informe. De los siete países representados solo Surinam y Haití obtuvieron posiciones mayores en el 2013 comparados con el 2012. En términos de mayor puntuación cuatro de los países registraron baja puntuación comparados

con el 2012. República Dominicana, Haití y Surinam obtuvieron puntuaciones ligeramente más altas.

Para ganar en un mejor entendimiento sobre los aspectos que rigen la puntuación y posiciones del NRI, se necesita profundizar para entender estos factores. Para los establecedores de las políticas esto proporciona buenos indicadores para formar los planes de Proyectos de Desarrollo de ICT.

Cuatro sub índices (el entorno, la preparación, el uso y el impacto) son combinados para calcular el NRI. El sub índice de entorno busca capturar áreas generalmente consideradas como la parte del entorno; estabilidad política, infraestructura reguladora y el clima de negocio. República Dominicana y Guyana registraron mejoras en ambos aspectos. En cuanto a posición y puntuación.

El sub índice de preparación mide la infraestructura, el contenido digital, la accesibilidad financiero y habilidades. Entre el 2012 y el 2013 sólo Surinam y Haití mejoraron en cuanto a puntuación y posición. Haití subió 29 sitios de la posición 142 a la 113. Esto es una señal muy alentadora para Haití, que ha sido acosado por desafíos económicos durante décadas. El sub índice uso mide el uso de individuos, negocios y gobierno. Barbados reflejo un ligero mejoramiento en puntuación y mantuvo su posición. República Dominicana y Guyana también mostraron una gran mejoría de puntuación con respecto al 2012. Los otros países caribeños registraron baja puntuación y posición. El Sub Índice de impacto mide el impacto económico y social en la adopción de ICT. República Dominicana salto catorce lugares del 80 al 66. Surinam mejoro en un lugar. Todos los demás países tienen posiciones más bajas en el 2013 en comparación con el 2012.

Es justo concluir que los países caribeños tuvieron un mejor funcionamiento en el 2012 con relación al 2013. Esto nos hace preguntarnos si el proceso de la digitalización pierde el ímpetu en la Región. Esperamos





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que no, pero esto es una pregunta demasiado importante para marcharse sin respuestas definitivas. Se requiere un análisis más detallado y riguroso de las conclusiones de GITR. Los resultados también deberían ser corroborados con datos de otras fuentes.

Un área de particular preocupación es el área de impactos. Los países caribeños se quedan atrás de los países desarrollados. Algunos factores identificados según el informe que contribuyen a esto, son la debilidad en la infraestructura de la política y reguladora; insuficiente crecimiento de la innovación dado el bajo crecimiento de nuevos servicios y usos; bajas capacidades habilidades en la base; bajo uso individual corporativo, y de gobierno para conducir impactos económicos y sociales.

Para la Región la Conectividad de es todavía un factor. Mientras los indicadores de acceso son todavía muy relevantes en mercados caribeños, hay también una necesidad de aumentar el enfoque de todos los pilares, y en particular aquellos que conducen el impacto socioeconómico. Esto sincroniza perfectamente con la posición sostenida por CANTO desde su inicio, que esto no es solamente sobre el desarrollo de infraestructura de banda ancha, sino también sobre como la infraestructura es usada para apoyar el desarrollo económico y social de los países de manera individual.

CANTO sigue trabajando con otros involucrados para promover la expansión de redes de banda ancha, mejorar el marco legislativo y regulador, edificar las capacidades y habilidades ICT a todos los niveles y promover el desarrollo de contenido local y regional. Estos programas son engranados todos en el hecho de impactar los pilares del NRI.

El Inventario de Infraestructura De banda ancha y la Concientización Pública en el Proyecto caribeño (BIIPAC) son un componente principal de este esfuerzo. El proyecto tiene cuatro componentes; análisis de lagunas en la infraestructura, evaluación de marco regulador

e institucional, edificación de la concientización y programas de capacitación y recomendaciones públicas de política para la expansión de banda ancha y su uso. Después del lanzamiento en febrero, la primera reunión de los comités de funcionamiento tendrá lugar durante la Conferencia Anual y la exposición prevista para Aruba del 14 al 17 de julio.

Poniendo en la acción el tema para este año - Hacia un Caribe De banda ancha Inteligente, CANTO auspicio varios programas, enfocando diferentes segmentos de la sociedad. La Competición de Ensayo del Día Mundial de las telecomunicaciones y la Informática (WISTDA) invitaron a jóvenes a través de la región a participar escribiendo y sometiendo ensayos sobre el tema - ICTs y Mejorando la Seguridad vial. En celebración del Día Internacional de las Muchachas en ICT, CANTO colaboro con Soroptimist Internacional del capítulo de Puerto España, Microsoft Trinidad y Tobago y la Universidad de Antillas occidental, San Agustín para auspiciar un programa de enseñanza de la informática para adultos.

Potenciales empresarios fueron invitados a participar en las competencias de ICT e-crear y e-contenido. El objetivo de las competencias es promocionar y exponer contenidos desarrollados en la región para una audiencia global. La competencia tuvo lugar en desde Noviembre del 2012 hasta Mayo del 2013. Las áreas de interés comprendieron desde negocio y el comercio, la cultura y la herencia hasta la hospitalidad y juegos. Los ganadores serán anunciados en la Conferencia Anual y la exposición Comercial en julio. Ellos tendrán la oportunidad de competir la prestigiosa Cumbre Mundial de Premios.

Cada iniciativa es concebida para impactar uno o más de los pilares que conducen el desarrollo de ICT. Edificando sobre desarrollo de infraestructura de banda ancha y asegurando acceso, y ampliando la promoción y desarrollo de capacidades distintivas, oportunidades y capacidades. ■■



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## Trinidad & Tobago Tops CANTO's Essay Competition on "ICTs and Improving Road Safety"

Eighteen year old Diedre Zoe Subran-Ganesh of Trinidad & Tobago emerged first in the highly acclaimed 7th Annual World Telecommunication and Information Society Day (WTISD) Essay Competition. Ms Subran-Ganesh is no stranger to CANTO's WTISD essay competition. This is her second attempt in a playful sibling rivalry to outdo her brother Zachary who placed third in the same competition last year.

Dierdre said: "Last year, after seeing Zachary win third place I really wanted to try again. I was disappointed that I did not place but my mum encouraged me; she always encourages me to enter competitions as well as my school.

Deirdre further said that upon hearing that she won the first place, she was happy and ecstatic and cannot wait to interact with others at CANTO's 29th Annual Conference & Trade Exhibition (CANTO 2013) and experience Aruba. Ms Ganesh is currently studying History, Sociology and Literature at Holy Faith Convent and will pursue studies in Law.

World Telecommunication and Information Society Day (WTISD) spearheaded by the International Telecommunication Union (ITU) is observed annually on the 17th of May. To commemorate this occasion, CANTO based in Trinidad & Tobago engages in numerous activities including an annual essay competition. This year, CANTO staged the competition under the current ITU theme of: "ICTs and Improving Road Safety".

The competition included participating member countries of CANTO. Entries were judged by a panel of experts in the field of telecommunications and education on creativity, organization, mechanics and educational/technical merit. The top four (4) essays will be awarded the following prizes:

- 1st Place: trip for 2 plus hotel accommodation to CANTO's 29th Annual Conference and Trade Exhibition in Aruba from the 14th - 18th July, 2013; a netbook computer plus US\$1,000
- 2nd place: netbook computer plus US\$500
- 3rd place: smartphone plus US\$250
- 4th place: smartphone

The top four places were as follows: **First Place:** Dierdre Zoe Subran-Ganesh, Holy Faith Convent, Trinidad & Tobago; **Second Place:** Gionieva Fraser, St. Joseph Convent, Trinidad & Tobago; **Third Place:** Kamillah Jamila Parker, Antigua Girl's High School, Antigua & Barbuda; **Fourth Place:** Terriquia Benjamin, Antigua Girl's High School, Antigua & Barbuda.

CANTO congratulates all the entrants from Antigua & Barbuda, Belize, Jamaica, Suriname, and Trinidad & Tobago. CANTO also thanked all its members for promoting the campaign in their respective countries and the following judges for their time and patience: Julian Wilkins (Digicel Trinidad & Tobago); Wendy Rocke (Soroptomist Port of Spain); Vydia Bhagan (TSTT); Joyce Zijler (Ministry of Education, Suriname) and Dr. Dionne Miranda of Belize Telemedia Ltd.

The Board of Directors and CANTO Secretariat extends a happy World Telecommunication and Information Society Day to its membership.

*CANTO reminds all that ICTs are important and so is your life! While driving put the mobile phones away to live another day!* ■■



## "ICTs and Improving Road Safety"



**Dierdre Zoe Subran - Ganesh**  
Holy Faith Convent High School  
Trinidad & Tobago

In 2010, the United Nations (UN) General Assembly proclaimed the period 2011 to 2020 as the decade of Action for Road Safety. This followed the 2004 World Report on Road Traffic Injury Prevention by the World Health Organization (WHO) and the World Bank that focused on the catastrophic effects traffic-related injuries have on nations on a global scale. The aim is to reduce road fatalities because these are the number one cause of death for young people worldwide. This is critical because road traffic injuries deter achievements in economic and human development of a country by placing a heavy burden on the health care system and rehabilitation services. Added to this, there is a drain on the financial resources of families who have to deal with medical bills and loss of earnings as a result of the injured or deceased. Consequently, it is inevitable that Information and Communication Technologies (ICTs) are used to improve road safety as every aspect of our day-to-day living depends on ICTs. Furthermore, ICTs have proven to be effective in improving road safety in developed countries.

ITU (International Telecommunication Union) is the UN agency in charge of ICTs. Hence, the ITU assists with Intelligent Transportation Systems (ITS) since these are systems in which ICTs are applied in order to increase road safety and effectiveness of transportation systems. One of these systems is the Driver Assistance System (DAS) which uses specific electronic components in a vehicle that help the driver with the task of driving and are known to be effective in the prevention of accidents, especially in Europe. For instance, a vehicle with DAS has a GPS that uses satellites which can provide up to date traffic information. Additionally, with DAS there is drowsiness and blind spot detection; night-vision and lane change assistance; and a collision avoidance system that uses in-car radars. Conversely, ITU has been working to remove unsafe technology related distractions for drivers such as DVD players on the dashboard of vehicles.

Another system that can save lives is a database system that includes information such as: type of road surface and width, lighting, number of collisions on the various roads, types of vehicles involved, cause of accidents and number of persons involved. The information obtained from these databases can be useful in assisting traffic planners in road design and traffic management. Furthermore, speed management cameras can be used to prevent drivers from speeding. These infrared cameras can determine the speed at which a vehicle is travelling and are linked to a computer to identify a vehicle's registration.

Road worthiness of vehicles can be tested using computer technology, for example to check the braking system and seat belts. Special software is then used to determine if the data complies with legislative requirements of the country. When conducting road safety inspections, laser scanners, cameras or digital photographs can be used to identify potholes, cracks and defective bridges.





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All in all, traffic safety involves the collaboration of law enforcement, transportation and health sectors and this can be made more effective through the use of ICTs. ICTs can be used in road and transportation systems, vehicle safety and in educating road users including drivers, passengers, pedestrians, cyclists

and decision-makers about all aspects of road safety. Studies have shown that in countries where ICTs are incorporated into road safety, there are fewer injuries and fatalities. Indeed, a nation's greatest resource is its people and every effort must be made to minimize and stop road traffic accidents. ■■



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## Telegathering XVIII Trinbago – Two Islands One Vibe !



Sports Day



Kids at Health Fair and Funday

CANTO joined with over 300 Caribbean delegates to participate in Telegathering XVIII held in Trinidad & Tobago. The event was hosted by the TSTT Sports and Social Club under the theme "Trinbago, two islands one vibe" from the 28th March - 1st April, 2013.

CANTO attended the event to promote awareness of the organization as well as to support the industry in which it serves. CANTO got the opportunity to educate attendees of the role of CANTO in their organizations, encourage the telegatherers to remain active in CANTO by taking advantage of the many services and benefits that are available.

What is Telegathering? Tele-gathering is an annual event hosted by the sports clubs of the Caribbean Telecommunications companies. The name has been coined from the words *tele* to signify the link to the telecommunications industry, and *gathering* associated with the activities as a gathering/meeting or reunion of associates. <http://www.telegathering.com/aboutus.cfm>

Telegathering, founded in 1995 is planned and orchestrated by the staff of 19 member countries under the telegathering tagline of 'One Caribbean, One Industry and One Mission'. The objectives are to strengthen bonds across islands, network, socialize and foster teamwork. As a result of the exchange visits, employees in the telecommunications industry develop bonds that benefit them professionally and personally while strengthening industry integration.

Each year, a different member country takes on the responsibility of hosting the event. It requires significant human resources, excellent teamwork, coordination and most importantly, money. The events staged by the host





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ranged from sightseeing, social & networking events and a community based project. Funds for the events are generated by the respective clubs through fund raising events while some of the events are sponsored.

Mr. Kurt Liverpool, host chairperson officially welcomed invited guests, delegates, and sponsors at the opening ceremony held at the House of Angostura. The objectives of Telegathering were reiterated when he stated in his welcome speech:

*"I know that delegates will network, build or renew relationships that can only serve to enhance industry integration".*

All were treated to Trinidad & Tobago cuisine and were entertained by the popular Roy Cape All Stars band of Trinidad & Tobago.

At the core of the event was the traditional sports day which was held on the Friday. Telegatherers were randomly selected and grouped into four teams based on color (red, green, yellow and blue). The games commenced with the ultimate prize being - bragging rights. Though all the teams did their utmost, the yellow team aptly named 'Track', ran away with the first place. The fun filled day promoted health and fitness, cultural diversity, teambuilding and leadership skills.

Volunteerism is key to the success of telegathering as it promotes empathy, self-efficiency and builds camaraderie among volunteers. This year, the community project supported by TSTT's Blink/ Bmobile Foundation hosted a health and fun fair for underprivileged children. Approximately 150 children from ten social welfare homes and schools around Trinidad attended the fair at Victoria Square, Port of Spain. The event started with basic health checks conducted by the Ministry of Health of Trinidad & Tobago. The children were then escorted to the fun part of the fair where they were treated to bouncy castles, face painting, clowns, a magic show and lunch.

Other telegathering events included an interfaith service, shopping expedition, cooking expo, sightseeing tour, j'ouvert (a traditional carnival event) and a day tour of Tobago.

Telegathering XVIII concluded on the Monday with the traditional pass-the-baton ceremony where the host handed over the baton to Grenada. The spice isle of the Caribbean promises to outshine its predecessor at Telegathering XIX. ■■



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## ARIN Wants You to Contribute to Internet Number Resource Policy!

**Sean Hopkins**  
*Communications and Technical Writer, ARIN*

The American Registry for Internet Numbers (ARIN) is one of two Regional Internet Registries (RIRs) serving the Caribbean, and primarily serves the English-speaking territories along with Canada and the United States. ARIN has made it a goal to seek the participation of the Internet community throughout its region in the Policy Development Process.

ARIN hosts public policy meetings twice annually to facilitate community policy discussion, and these meetings are held at various locations throughout the region. This past April, the ARIN 31 Public Policy and Members Meeting took place in Bridgetown, Barbados in conjunction with the Caribbean Network Operators Group (CaribNOG) meeting. The Caribbean Internet technical community was well represented at both meetings, and we thank all those who participated in-person and remotely. In addition to these Public Policy Meetings, ARIN also hosted public policy consultations during the first two North American Network Operators Group (NANOG) meetings this year. These consultations are part of ARIN's new policy development process, and like public policy meetings, they are open public discussions of Internet number resource policy and remote participation is available. From time to time ARIN may hold additional public policy consultations as part of other forums.

Caribbean representatives have contributed to many significant policy decisions since the inception of ARIN. "Caribbean region community members provided essential feedback and insight during the discussion of Proposal 2008-4 Minimum Allocation in the Caribbean region. Their participation was crucial in the passing of that important policy," says ARIN Senior Policy Analyst Einar Bohlin. The ARIN region is only equally represented when it is equally voiced. We urge all members of the Caribbean Internet technical community to visit <https://www.arin.net/policy/> and ensure that your vision for Internet number resource

management matches up with the policies already in place. If it doesn't, submitting a proposed change or addition to the Number Resource Policy Manual (NRPM) is as simple as submitting a proposal to [policy@arin.net](mailto:policy@arin.net). Once ARIN receives your proposal, the ARIN Advisory Council will be made aware of it, and will work with you directly to develop it into a clear, concise proposal to be discussed as part of ARIN's Policy Development Process (PDP). For more information on the PDP, visit <https://www.arin.net/policy/pdp.html>.

ARIN's next public policy and members meeting will be ARIN 32, held in October 2013 in Phoenix, Arizona. If your organization would like to be represented at ARIN 32, but is unable to send a representative, you may want to consider applying to ARIN's Fellowship Program. For each meeting, ARIN will provide financial support for three Fellows to attend each ARIN public policy and members meeting. If the applicant pool permits, one Fellow will be selected from each sector of the ARIN region: Canada, the Caribbean and North Atlantic Islands, and the United States and Outlying Areas. ARIN may select multiple Fellows from a single sector if insufficient qualifying applications are received. ARIN Advisory Council members will serve as mentors for Fellows during each meeting; sharing advice and helping them transition smoothly into the ARIN community.

Many previous fellows have contributed testimonials after their experience to share how impactful it was. After ARIN XXV in Toronto, Canada, one fellow reported, "I'll put it this way... if it wasn't for the program, I wouldn't have been able to go. Now, after having gone, I am extremely confident that I'll be going again (and again, and again)."

If you are not selected for the Fellowship Program, but still want to participate in ARIN's public policy consultations and public policy meetings, you can always participate remotely! Each of these meetings



will be webcast with a live transcript for your viewing pleasure. The live webcast and transcript will record all presentations and discussions from the meeting floor, so you can read along to enhance your meeting viewing, and registered remote participants will be able to log in to a designated meeting chat where they can ask questions, share comments, and participate in consensus polling. Remote registration is free, and all remote registrants will be listed as online attendees on the ARIN website. To complete the experience, ARIN makes all the print materials used during public policy consultations and public policy meetings available on its website, allowing you access to discussion guides, technical information sheets, and other informational and support materials to aid your participation.

If you would prefer to interact with ARIN in your own backyard, keep an eye on [www.arin.net](http://www.arin.net)! We are planning

to hold an "ARIN on the Road" special event in the Northern Caribbean within the next nine months. Additionally, if you know of an event at which you would like a representative from ARIN to present, please visit <http://teamarin.net/spread-the-word/speakers-bureau-2-swf/> for a list of ARIN speakers. To request a speaker, simply send an email to [media@arin.net](mailto:media@arin.net) with the date, venue, and a brief description of your needs.

ARIN strongly encourages members of the Caribbean Internet community to take an active role in Internet number resource policy discussions. You don't need to be an ARIN member in order to participate, and meeting registration is free, so join the discussion and have your voice heard!

Please contact [info@arin.net](mailto:info@arin.net) if you have any questions about ARIN operations or services. ■■

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*"Towards a SMART Broadband Caribbean Community"*

## Regulation in the EU and US: Should the Caribbean Follow Suit?

**Andrew Gorton – Group Head of Regulatory Affairs, Digicel Group**

**Julian Wilkins – Director Telecoms Public Policy, Digicel Group**

### Introduction

The recently concluded CANTO/IDB Broadband Conference in Trinidad highlighted the need for Caribbean countries to coordinate and harmonise their approaches to ICT-enabled development. The aim is to realise the vision of a Caribbean united by Information, Communications and Technology. The volume of regulation in a market is a key factor in determining whether a particular country is an attractive place to invest in Broadband or indeed any other ICT service. Caribbean policymakers should not attempt to implement the same level of regulation as can be seen in the US and EU. The regulatory overhead imposed is excessive relative to the possible revenues that can be realised in small markets. The costs and resources required make it prohibitive for operators to invest and expand in the region.

Current legislation and regulatory approaches are sometimes largely "copied" as opposed to merely being based on EU and US methodologies. This results in a failure to adequately reflect huge differences between Caribbean and European/US countries in terms of the availability of resources both financial and human. Caribbean regulators should therefore adopt a general policy of restraint and not simply adopt US and EU regulations carte blanche. Many aspects of telecommunications regulation are extremely detailed, expensive and time consuming to develop and implement. In order to avoid being rendered less effective through overly complex policies which may deliver negligible or negative net benefit, Caribbean regulators should lead the way in terms of a pragmatic approach to regulation. Such an approach will recognise what is of most net benefit to individual countries rather than copying larger countries which have more resources at their disposal and where the market revenues can make the costs involved justifiable. Big country approaches to regulation should not be imported wholesale into jurisdictions where the markets are not large enough to justify the costs. Rather, regulation should be adapted to fit the market.

### Bureaucracy

Regulators in small economies need to be innovative in their regulatory approach and regulate differently compared with their North American and European counterparts. Regulation of telecoms should focus on encouraging investment and enabling competition to occur in a timely manner and avoid excessive and counter-productive bureaucracy. In the Caribbean, we have observed a major increase in the amount of "red tape" effectively hindering the progress of Broadband implementation as well as in other ICT services. For instance, operators in one jurisdiction in the region were recently asked to provide feedback on several hundred pages of consultative documents in the space of a few weeks: this is an unreasonable timeframe.

More fundamentally, it would appear that large country regulations are simply being copied by some Caribbean regulators resulting in the huge volume of consultative documents that are sometimes produced. This also brings the risk, which we have seen, of creating regulators with literally more employees than the carriers that they are set to regulate which increases the cost of regulation. The impact of population size on the sustainability of any particular regulatory approach can be illustrated quite simply. For example if a regulator costs US\$1m to run, spread over a population of 1 million people that results in a cost of only US\$ 1 per capita. Moreover, the operator has a potential subscriber base of several hundred thousand people from which to recover the costs of regulation. In contrast, if the country's population is only 50,000, the per capita cost rises dramatically to US\$20 per capita and the operator has a potential subscriber base of only a few tens of thousands from which to recover those much higher per capita costs.

We can see therefore that a given level of regulation in one country cannot simply be imposed on another regardless of population size. If one then factors in the ARPU, in the Caribbean compared to those in the US and EU one can easily understand that this approach affects the Caribbean operators much more than its peers in the US and EU.





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## Market Size

Consultation documents and the level of market intervention should be appropriate given the size of the markets in the Caribbean. It is becoming increasingly difficult for operators to respond to regulatory demands or to have regulatory resources available to deal with a large number of documents in a short space of time. In many of the smaller markets there are no dedicated resources to deal with regulatory matters. In addition the complexity of the regulatory issues driven by the regulators requires an expertise in economic, legal and technical regulatory issues which does not exist entirely within the operators or regulators - leading to the need for all sets of parties to engage expensive consultants. Maintaining the level of resources to facilitate such excessive regulatory workloads raises costs to unreasonable levels in relation to the size of the market and the benefits that can be obtained. The regulatory and business overhead in terms of consultation, implementation and subsequent intervention in the market place is disproportionately larger for small economies and the regulators and operators involved in them.

## Market Definitions

There should be caution as to the number of market definitions a regulator tries to introduce into small countries. In the European Union, a region of some 500 million people, only 7 markets are recommended. One small country in the Caribbean has suggested as many as 15 candidate markets - which is hugely excessive, and which has the potential to bury competition in bureaucracy. Our recommendation is that market definition exercises should only be carried out on an as needed basis and over a reasonable period of time with the objective of minimising the level of intervention. This would allow for the analysis to be done thoroughly and thereby allow operators a reasonable chance to comment.

One should note that when the EU implemented the concept of the pre-defined relevant markets in 2003 it took regulators staffed by up to hundreds of people on average around 3 - 5 years to conclude proper analyses of 18 relevant markets and partly as a consequence thereof, the EU has decreased the number of relevant markets to 7.

## Recommended Approach

Less and simpler is a better approach to regulation than attempts at micro-management. It would be easy, as well as a mistake, for a regulator to be drawn too far into the vast array of details that may arise in an increasingly complex ICT environment. With a close examination of the market, regulators can always discern or perceive existing "imperfections". Two major factors need to be noted (a) the limits on resources, especially in the Caribbean given comparatively small population sizes and (b) consequential practical limits on the size of the regulators and operators and what can reasonably be afforded.

## Conclusion

There are fundamental and practical differences, including financial limitations between small economies and the larger ones. For a regulator, instead of asking for implementing a plethora of regulation, the approach should be more pragmatic, focusing on the concerns raised by the public and the industry. To do otherwise would mean that the burden of work imposed on both the regulator and the industry can become disproportionate and unmanageable and lead to a net dis-benefit. In conclusion, we hope that operators, regulators and the public will be able to work together to implement appropriately targeted levels of regulation in our region in order to encourage investment and to help to drive greater penetration broadband and other ICT services. ■■



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## CANTO Caribbean Round Up March – April 2013

LTE is creeping slowly but surely into the Caribbean. As of March there were four LTE networks in Puerto Rico – AT&T, Claro, Open Mobile and most recently Sprint, two in the Dominican Republic – Orange and Tricom - and one in Antigua & Barbuda.

Jamaica's Minister of Science, Technology, Energy and Mining, Phillip Paulwell announced at the end of March plans to auction two LTE licenses in the 700MHz band in July. The licenses will be for 15 years. The government will begin pre-auction activities in early April and the entire process due for completion by July 15. Paulwell said that potential investors from Asia, Europe and North America have already expressed interest.

Digicel already offers 4G services in Jamaica with an HSPA+ network. The operator launched LTE in Antigua & Barbuda in 2012 and in early March was awarded spectrum in the 700MHz band in Turks & Caicos. However, Digicel has insisted that it can offer 4G speeds with HSPA+ and will migrate to LTE gradually.

In a move to boost adoption of mobile broadband, Digicel launched its own brand of Android-based smartphone dubbed DL600 in March.

The device features a large 3.5 inch display, the latest version of Android OS Jellybean and a 1GHz processor. Digicel's smartphone is 4G capable with speeds of up to 7.2Mbps.

The phone, made by Alcatel, will be available in Digicel stores in all of its markets from mid-May for under US\$100; a price the telco says should enable a larger segment of the population to access 4G that previously haven't done so because of the price of brand name handsets.

Also in March, Dominican Republic telco Tricom launched LTE, bringing it into competition with Orange, which launched last July.

Dominican Republic ISP Wind Telecom reportedly began testing LTE in 1Q13.

Still on the topic of mobile data, Cable & Wireless Communications (C&WC) said it enhanced its mobile data network in the Bahamas to meet the expected increase in mobile data usage during The Caribbean Free Trade Association (CARIFTA) Games, which took place on March 29 - April 1. The company installed a new mobile cell site at the country's national stadium as well as four sites in areas of heavy mobile data traffic.

Moving on to something completely different, Saint Martin-based Dauphin Telecom and CaribComX, the pan-Caribbean initiative designed to obtain competitive rates and improve regional communications have deployed a voice-over-IP (VoIP) regional exchange platform.

The multi-vendor platform was designed and installed by Massachusetts-based systems integrator Eastwind Communications and encompasses nine operators spanning 16 countries - Anguilla, Antigua & Barbuda, Barbados, Bonaire, the British Virgin Islands, Curaçao, the Dominican Republic, Guadeloupe, French Guiana, Jamaica, Martinique, Saint Barthélemy, Saint Kitts and Nevis, Saint Martin, Sint Maarten and Saint Vincent.

Cuba figured more in the news than usual, announcing it would launch on April 4 EcuMóvil, a mobile version of EcuRed, the island nation's answer to Wikipedia.

The free online encyclopedia for Android phones will be distributed via the Jóven Club de Computación, a computing access network that falls under the IT and Communications Ministry, which teaches young people about new technologies.

EcuRed was launched on December 14, 2010, by the ICT ministry to "create and socialize" content with





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a "decolonizing" focus and is one of the most visited websites in Cuba with more than 100,000 daily visits. Also during March, Cuba held the XV International IT convention 2013 during which the country unveiled a Linux-based operating system as part of the country's efforts to ensure technological sovereignty.

Dedicated to the discussion of science and information technology, the event attracted specialists from Germany, Italy, Ecuador, Brazil, Venezuela, Colombia, Panama, and Argentina.

The ninth edition of the international IT health congress took place in Cuba the same week. The government is also looking to migrate the health system to open source software, according to the president of the health congress organization committee, Alfredo Rodríguez. The executive said the computerization of the Cuban health system is progressing "very well compared to global standards" despite the lack of cutting edge technologies.

And finally, Guyana has maintained investment in the ICT sector in its record 2013 budget of 209bn Guyanese dollars (US\$978mn).

The government will invest 2bn Guyanese dollars in the advancement of the ICT sector, including the construction of 54 LTE towers to be placed strategically in densely populated areas of the country in order to support fiber optic cable infrastructure. Upon completion, e-government services and content will be delivered to major population centers using this network.

The government also highlighted the importance of telecoms liberalization in its 2013 budget speech, saying that it is currently engaged in discussions with the major telcos in the industry regarding the proposed legislative framework which will enact a transition to full competition in the sector. ■■



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## Saved by the Cloud! – How Cloud technology protects your business

When we think of disaster recovery (DR), we tend to conjure images of getting back to business in the aftermath of hurricanes, floods, earthquakes or fire, or even major hardware failures. However, contrary to this perception, the biggest threat to a company's IT systems are humans. In fact, according to the Uptime Institute, a data center organization for research, education and consulting, 70% of data center downtime is caused by human error, from employees tripping over a cord to pressing the wrong key. According to Marcelo Oliveira, Senior IT Manager for Columbus Business Solutions (CBS), "Data centers must be resilient enough to withstand natural disasters, but it is us humans who are the source of most interruptions at many operations." CBS has data centers located in Trinidad, Jamaica, Florida, Panama, Colombia, Curacao and Chicago. Those in Curacao, Colombia and Chicago are the ones that house CBS' cloud infrastructure, and Cloud Solutions clients may opt to replicate their production environment at any one of these.

Without a disaster recovery system in place, a company's IT department cannot support the affected business areas quickly enough and the organization's efforts to carry on with its day to day business such as developing new business initiatives, marketing campaigns, distribution channels, products, client projects etc, are stymied.

With the advent of cloud technology, a client can host and/or replicate its computing and technology service offsite. In other words, cloud services are outsourced IT resources and services that are provided on demand and at scale. This protects the business against critical data loss and downtime caused by anything from system damage from fire or flood to someone causing a main server to blow out.



There are two key components in gauging the mettle of a disaster recovery solution:

1. the Response Point of Objective (RPO)
2. the Response Time Objective (RTO).

The RPO is the last back up point, when data is useful before a disaster or the interruption occurred while the RTO is the time it takes to recover after the disaster.

Oliveira explained that "business continuity and disaster recovery are key CBS Cloud Services solutions. A core feature of CBS's Cloud Continuity Solutions is its real-time replication, which is the on-going duplication of a business' information that is securely encrypted and transferred to servers at CBS data center facilities. Our patented solution enables a client to fully restore their system at the point immediately prior to the system disruption (the RPO = zero), in less than two minutes (the RTO = 2 minutes) via a web portal with a simple mouse click. This seamless recovery, allows the client to effortlessly resume its business activities with no significant downtime. This saves the client time, money and eliminates loss of productivity."

Understandably, data security may be a concern for businesses new to the idea of hosting their entire IT system offsite with a provider. Mr. Oliveira elaborated in depth on the extent to which his organization has taken steps to ensure clients' data security. "Protecting our clients' data is a key priority – many of our clients are in the financial services, legal service providers and education – hence data security is of paramount importance. All our facilities are subject to the same stringent standards of security and all processes are currently being certified by a renowned Standards Accreditor. All client data is totally secure. The data is copied in real time, encrypted and sent to the cloud housed at our data centers over a private secure VPN channel, and so is not susceptible to any third party access. We also monitor the client's production environment, the replica environment and



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the VPN on a 24/7 basis. None of our employees ever come into contact with any client's data and we have made this guarantee a staple of our engagement contracts with clients. Additionally, as a further security measure, physical access requires biometrical authentication. Fire suppression is guaranteed with Inergen gas and the VESDA system and there is constant video surveillance at all data centers. "

Clients new to cloud technology may speculate as to how much they can trust the service's ability to deliver when the need arises. Mr Oliveira divulged that the process of implementing the recovery solution is a multi-step process in order to assure just that. "Prior to implementation, a rigorous testing period must be completed. The data is replicated in real time and compared to the production environment over a period of time. A test failover and failback are done to ensure that all the data in the production environment at the time of system failure, has indeed been restored. After the testing period is complete, the system is implemented and the on-going monitoring commences. In addition, clients have full access to the replica servers to validate the integrity of the data at any moment."

The other area that may concern others is cost. However, failing to implement a disaster recovery solution carries higher costs that may be difficult to quantify, since it may involve a business' inability to continue in the short or medium term, resulting in significant revenue loss. When asked how CBS' disaster recovery solutions address cost concerns, Oliveira revealed that, "Traditional DR systems tend to require far more client involvement and effort than CBS'. It usually involves the client procuring their own servers and an offsite location to store them. Other ongoing costs include server maintenance costs and IT personnel to monitor and maintain them, which can result in close to 3 times the cost of CBS' solution. Our elegant solution gives our clients immediate access to their data via a web portal and eliminates the stress of handling any part of the storage or recovery themselves. In fact, banks in Panama and Guatemala with their own DR systems indicated that they were most impressed

by the fact that it is a total solution including the necessary hardware, software and maintenance service—all provided by CBS – and placing the power of recovery in their own hands at a mere mouse click."

When asked to sum up the value that CBS's Cloud Solution brings to a client, Oliveira outlined three major benefits,

1. Cost effectiveness – not only is there a more effective utilization of the IT resources as compared to a wasteful traditional DR solution, but clients will require only one application license for both the production and replica environments for most applications.
2. Our patented hands-off failover and failback system via mouse click, eliminates the need for bare metal restores after simple tests of the DR environment, and most importantly
3. The delivery "as a service" allows for immediate business continuity and revenue protection

CBS is a leading broadband services and solutions provider for the Pan Caribbean region and is a brand of Columbus, a diversified telecommunications company based in Barbados. The Company provides digital cable television, broadband Internet and digital landline telephony in Trinidad, Jamaica, Barbados, Grenada & Curacao under the brand name, **FLOW** and corporate data and cloud based services under the brand **Columbus Business Solutions**. Through its wholly owned subsidiary, **Columbus Networks**, the Company provides the capacity and IP services, corporate data solutions and data centre hosting throughout 25 countries in the greater Caribbean, Central American and Andean region. Through its fully protected, ringed submarine fibre-optic network spanning close to 18,000km and its 24,000 km terrestrial fibre and coaxial terrestrial network, Columbus's 2,100 plus professionals provide advanced telecom services to a diverse residential and corporate client base of close to 500,000 customers. ■■





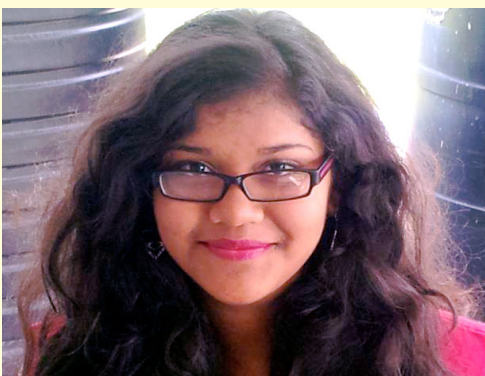
J. Rodrigues & T. Balthazar with S. Osepa of Internet Society with TATT Trainees



T. Wankin & R. Fraser at iGovTT booth on Girls & Women ICT Day



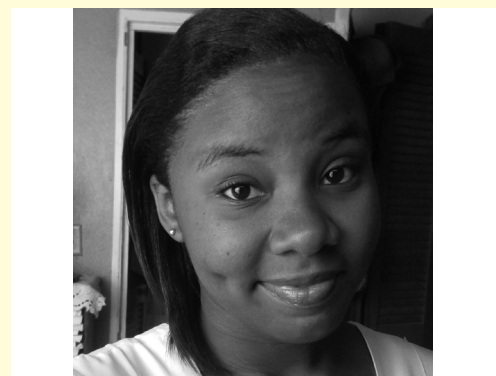
Delegates at Telegathering XVIII - Trinbago - Two Islands One Vibe



Diedre Zoe Subran-Ganesh  
1st place WTISD winner, Trinidad & Tobago



Gionieva Fraser  
2nd place WTISD winner, Trinidad & Tobago



Kamilah Jamila Parker  
3rd place WTISD winner, Antigua & Barbuda



Terrikia Benjamin  
4th place WTISD winner, Antigua & Barbuda



D. Currie & Schiller Jean- Baptiste  
of Conatel, Haiti



CANTO Board of Directors  
at Cocktail sponsored by Conatel



CANTO Board of Directors at dinner  
sponsored by Digicel, Haiti



ICT Stakeholders meeting in Haiti  
hosted by CANTO Board



From left: J. Jean-Baptiste, Jean Marie Guillaume of  
Conatel, & D. Blackburn of Digicel Haiti





Digicel Trinidad & Digicel Haiti  
meet at dinner



110th Board of Directors Meeting in Haiti



Director J. Wilkins presents to ICT Stakeholders in Haiti



R. Fraser, Secretary General meets H. Rincón President Microsoft  
Latin America & Gen. Manager F. Correia of Microsoft T&T



R. Fraser Secretary General meets Justice Minister  
Hon. Christlyn Moore of Trinidad & Tobago



R. Fraser Secretary General  
meets ECLAC Director Dianne Quarles



ICT Stakeholders at BIIPAC Project Launch



ICT Ministers & CANTO Board  
at CANTO 2012, Miami



CANTO 29th Annual General Meeting



UTS & LIME representatives at 29th AGM



Delegates at 29th AGM Opening Ceremony,  
Trinidad Co-hosted by TSTT



CANTO members at Closing Cocktail of 29th AGM &  
BIIPAC launch hosted by TSTT



## Strategies for Winning the OTT battle: How RCS gives Operators the Edge



**John Bickford**  
Snr. VP Regional  
US-CALA, Interop  
Technologies

With Over-The-Top (OTT) applications like WhatsApp and BlackBerry Messenger posing a significant threat to operators' legacy messaging services, the need for mobile network operators to fight back is essential. But what is the best strategy? Operators' responses have ranged from taking a wait-and-see approach to launching OTT-like services in an effort to compete.

With IP-based communication options more prevalent than ever, a growing number of operators are turning to Rich Communication Services (RCS)—known by the brand name “joyn”—to maintain subscriber loyalty and squash competition from OTT services.

### The Appeal of OTTs

Several factors make OTT options particularly attractive to Caribbean mobile subscribers. Offering advanced features like group chat, video chat, and file sharing, OTTs give subscribers new, innovative options that are unavailable with traditional texting technology. Better yet, these services are typically free.

Growing smartphone use in the Caribbean region is also prompting greater OTT use. According to the GSMA's Latin American Mobile Observatory 2011, penetration is expected to increase from 9% in 2010 to 33% in 2014. It notes that Latin America has been following the trend of smartphone growth in the United States, suggesting that by 2018, penetration could reach close to 60%.

Availability of lower priced handset models is largely responsible for greater smartphone adoption throughout Latin America. Shipments of devices costing less than US\$250 will grow from 259 million in 2013 to 788 million in 2018, according to ABI Research.

The price of legacy messaging services is another key factor impacting the popularity of OTTs. In areas where the price of texting is high, particularly relative to the price of voice service, the average number of SMS per person per month is lower than in other countries. This is the case in much of Latin America, according to Portio Research, where the average usage in the region was only 69 SMS per person per month in 2011. In contrast, in the United States, low SMS prices and unlimited plans have caused subscribers to embrace texting, resulting in an average monthly usage rate of 617 messages per person per month, almost nine times that of Latin America. OTT messaging applications are typically free or have a modest annual fee, making them an economical alternative to texting for price-sensitive Caribbean customers.

### Responding to the OTT Threat

Operators can address the impact of OTT services in several ways.

- 1. Wait and See:** Given the rapid pace at which the industry is evolving, some operators are choosing to maintain their existing voice and messaging services, ignoring the IP space at present. Meanwhile, however, OTT apps continue to gain subscribers. WhatsApp, for example, now has more than 200 million monthly active users generating an average of 8 billion inbound and 12 billion outbound messages each day. With operators projected to lose US\$54 billion in SMS revenue to OTT players by 2016, according to Ovum, choosing not to address this competitive threat could have a dramatic impact on operators' revenues.



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**2. Launch an OTT-like service:** Several operators have developed their own OTT-like apps that can compete on a feature basis with other third-party services. Examples include Orange's Libon, T-Mobile USA's Bobsled, and Telefonica's Tu Me. These operator-provided apps may have an advantage over OTT services in that they provide telco-grade quality of service and security, and they promote subscriber loyalty to the operators' brand. However, this approach suffers from the same limitation of OTT players in that OTT-like services operate in closed communities. This means that subscribers can only communicate with other users of the same service, limiting the potential for growth.

**3. Introduce RCS:** As the consumer-facing brand of the GSMA's RCS solution, RCS has been launched in Spain, Germany, South Korea, and the United States, and it is continuing to gain traction worldwide. In fact, the GSMA reports that 31 operators have launched or have committed to launching RCS, and operators throughout the world are currently evaluating the service and conducting trials.

Introducing RCS gives operators several important advantages over an OTT-like service. This standards-based solution offers backward compatibility with SMS and MMS. As a result, RCS subscribers can communicate with mobile users even if they do not have the RCS service on their device. Also, because it is integrated with the user's address book, subscribers do not have to manually add existing contacts to their RCS address book.

In addition, like traditional texting, RCS users do not need to share the same operator or operating system. This gives RCS the potential for universal reach, unlike OTT services or operator-provided OTT-like apps, which operate in closed communities where only those who have downloaded and signed into the service can communicate. Recognizing this limitation, operators who were quick to launch OTT-like services as a competitive response are now announcing the compatibility of their service with RCS. For example, Orange has announced that its Libon app will be RCS compatible by the end of 2013.

RCS is also backed by device manufacturers. Several operators have already launched RCS-embedded handsets, and nearly all leading OEMs have committed to doing so. Meanwhile, downloadable clients are available.

In addition, because hosted RCS solutions are available that do not require operators to have an IMS core, operators can introduce the service immediately on 4G or earlier generation networks without the need for costly network changes.

Though operators have several options for responding to the obvious threat of OTT services, launching RCS provides a strategy for remaining relevant by delivering enhanced communication features to subscribers. RCS offers the advantages of simplicity, universal reach, and telco-grade quality of service, characteristics that give it an important edge in today's increasingly competitive communications market. ■■



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## The Good of Broadband



**Atiba Philips**

We have often heard the maxim: *"the greatest good for the greatest number"*

What might we consider though, to be the "Good of Broadband"? How can we as a region ensure that this "Good" is ubiquitously available (i.e. without regard to location), on an equitable basis (i.e. at an affordable price and without regard to social status)?

There are several "Goods of Broadband" which a government may feel are relevant enough to their national development objectives to warrant the pursuit of a National Broadband Strategy or Policy. Possible development "Goods" which a government may look to a Broadband strategy to enable may include:

- Catalyzing the diversification of the economy as a whole – using broadband connectivity and services as a platform for increasing productivity and efficiency across all sectors;
- The enhancement of country attractiveness for foreign and local Investment;
- The facilitation of those formerly marginalized that they might better participate in public life and democracy - the empowerment of urban underserved as well as rural communities;
- Support for innovation, R&D and Knowledge economy thrusts;
- Influencing the "hearts and minds" of citizens – by programs of content creation (e.g. education, heritage, entertainment or other types of content) which leverage broadband connectivity to impact citizens and communities;
- Enhancement of Data sovereignty – ensuring that public, state and citizen data is secure and accessible with minimal threat of intrusion or interference by foreign governments.

Noting these varied possible benefits of broadband development, it is important therefore to properly define upfront, the primary thrust, outcomes and focus which a particular policy will seek to achieve. Such definition will clarify how the expected policy outcomes are to be monitored, how they will be paid for, who will be accountable for implementation, and the relative roles and responsibilities of those affected.

### Defining the Concepts

At the very outset of the process, a good policy must define key terms and concepts. This is important, noting that occurrences or issues outside of these definitions will not be subjected to the policy.





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What exactly therefore is the definition of this concept called "Broadband"? What do we mean when we refer to terms such as broadband access, broadband service, broadband infrastructure, broadband penetration, etc? For example, when we talk about broadband access are we including high speed mobile Internet access as well? When we talk about broadband infrastructure, are we including things such as Internet root servers, local hosting facilities and Internet exchange points?

## Government Incentives

Once defined, there is a series of tools at a Government's disposal to encourage the ubiquitous availability and equitable access to broadband policy benefits. Government may employ a combination of levers to achieve desired policy outcomes. These levers include:

1. Programs of communication, promotion, awareness and engagement to educate the wider population and specific stakeholders on the overall national vision, the benefits incumbent within it for them, as well as the roles that they collectively need to play to progress the development agenda;
2. The invitation of new entrants into the sector which brings additional capacity;
3. The promotion of increased competition which brings down prices;
4. Causing government to be an anchor tenant, thereby allowing private providers to cover initial infrastructure costs and to then leverage that infrastructure to provide business and citizen services;
5. Tax breaks, subsidies and other financial incentives;

If in the view of the government however, the private sector is not responding to its various stimuli, the government may choose to intervene and deliver services directly to the population. This can be done through the establishment of a state company or execution agency. Also, through the local telecommunications authority, the government may develop and enforce regulations to place a cap on the tariffs that can be charged to customers or reduce the ability of the telco to pass on certain costs

to the customer –e.g. the cost of switching services from one mobile network provider to another while keeping the same mobile number. The government may also insist, for example, on optimizing domestic traffic routing through the establishment of IXPs to reduce the cost of domestic connectivity.

## Other Considerations

As a policy maker there are a number of competing agendas and priorities which must be balanced and addressed to arrive at what we might collectively consider to be, "Good Broadband Policy". A good policy, like a good strategy is as much a statement of what will not be done within the given constraints, as it is a statement of what will be done to move the agenda forward.

Before finalizing policy prescriptions, there are other considerations that a government may identify and seek to manage in the public interest regarding broadband. Senior policy makers would have to consider whether or not there are:

- **National Security Considerations** - do issues such as data sovereignty, cyber crime, business continuity arise?
- **Economic Sustainability Considerations** - does the country have the budgetary fortitude to pursue the policy? Will its national budget allow continuity of the policy in coming years?
- **National Economy Impact** - can the policy result in the kick starting of a number of new indigenous revenue streams and jobs for young people in different areas of innovative activity?
- **Socio-cultural Considerations** - how will proliferation of broadband content into the home and rural areas impact cultural persistence, heritage and identity?
- **Human Resource Considerations** - does the country have the quality of local Human Capital to both guide and take advantage of challenges and opportunities that will be presented?



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- **Training/Education Reforms** - what impact will such a new paradigm have on the way we train our children in schools? How will such a paradigm ready them for the new opportunities and the world of work which they will face in the future?
- **Regional Considerations** - is there any opportunity to coordinate / leverage the local agenda with what Regional partners are doing?
- **Complimentary Policies** - what other policies or complimentary initiatives are required in order to realise the full potential of the effort (e.g. considerations such as cybercrime, Intellectual Property Rights (IPR), cross-border taxation, etc)
- **Overarching Development Agenda** - A good policy must be aware of the larger national and regional context in which it exists. It should not

be in conflict with governing development agendas or international treaties already ratified. New policy should augment the already stated strategic positions, giving clear articulation and specific direction on issue at hand.

Arriving at a policy to maximize the "Good of Broadband", is no ordinary endeavor. It requires deep understanding in areas of public policy, government administration, telecommunications, sustainable development, ICT capacity building, e-Business and e-Government. While many countries have attempted policies, many have not to date been able to reap the true benefits as intended at the outset. While indeed there have been some spectacular successes, the region must squarely address both the opportunities and pitfalls incumbent, and determine with care its way forward. ■■

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## Where Did Things Go Wrong? 10 Mistakes Commonly Made In Acquiring a New BSS/OSS



**Matthew Young,**  
President of Advantage 360 Software

Migrating from one billing and operational support solution to another can be a time-consuming, expensive and an all-too-often disappointing experience. However, paying attention to some common-sense reminders can make all of the difference in achieving a success story.

**1. Price vs. Cost** – While the price of software is a seemingly fixed amount quoted by a salesperson, its true cost can be a wide-ranging variable that can very quickly teach an expensive lesson in the difference between these two distinctly different measuring sticks.

Simply put, cost is the sum of the price paid + total amount of all money that will be spent, lost, made or saved over the software ownership life cycle. For example, application A is a feature-rich end-to-end solution that receives frequent enhancements. Meanwhile, application B is not. There is a good chance that application A will pay-back its entire purchase price within a few months. However, application B may never achieve pay-back.

While a good sales presentation can sometimes blur these distinctions, the objective is to beat the competition and reduce revenue loss and operational expenses at every

turn. So foremost, software should be selected by its ability to best do each of these financially-important jobs. After that, price quickly becomes a moot point.

**2. The RFP Process** – This is your best opportunity to make your business-critical requirements known to the vendor and to ask process-related questions that require concise written responses. An easy starting point is to acquire existing “boiler plate” RFPs that can be sliced and diced into a departmentalized draft for review and modification. Some good examples are usually available from most software vendors.

It is both important to avoid a lengthy evaluation process that can get bogged down by subjective responses and to get as much detail as possible. So, rather than ask an open-ended question like “Tell us in detail how your system processes CDRs / EDRs”? It is better to solicit responses that are easily compared among vendors. For example, “Does your system support near-real time CDR / EDR rating”, etc.? Also, instead of yes / no answers, use numbers that equal non-compliance through full compliance (0 – 3) and prioritize each requirement as an absolute necessity through a non-necessity (1 – 3).

Once response scores are tallied by priority, you may be surprised by their disparities. This is usually the point where the field can narrow sharply in the face of your real-world operational requirements.

User, administration and workflow documentation is another very important factor. Any modern end-to-end solution should be supported by thousands of pages, and examples should be required to determine whether users could mostly rely on self-help or must rely on the availability of potentially extra-cost vendor help. In addition, documentation relating to various migration steps should be required. Some typical examples can be found at [www.advantage360.com/resource-library](http://www.advantage360.com/resource-library). This documentation can be invaluable in setting expectations upfront.



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**3. References** – References in a current relationship with a vendor tend to gloss over sore points. So, you have to ask the right questions to get the right answers. For example, "Have you had major outages and, if so, how often, what was their nature and how long did it take to get things fixed"? "Since you have been with this vendor, have you shopped for a replacement and, if so, why and what did you find", etc.?

Expect that your questions and their answers will probably be reported back to the vendor, as will your "buying temperature". Meanwhile, if you feel that there are shortfalls in some areas, focus on those when contacting additional references to determine if there is a pattern that should be of concern.

**4. Short List Presentations** – A major draw-back of any RFP is the possibility of a vendor misunderstanding requirements and replying that such requirements are fully accommodated when the opposite is true. One of the best ways to avoid buying a "misunderstanding" is to take the best 3 or so responses and ask the associated vendors to a departmentalized on-site presentation that demonstrates compliance with major requirements. While this can usually be accomplished over a couple of days, the time allotted should be whatever amount of time it takes for attendees to feel that each issue has been satisfactorily addressed.

**5. Site Visits** – While RFPs and vendor presentations are important steps, nothing beats the opportunity for prospective users to see the software at work in a real-world environment. A site visit is also a chance to ask more tough questions, like "Have you used other software, and how does this software compare"? "What don't you like about this software"? "What seems to be missing that you would like to see added", etc.?

Try to arrange some time away from the vendor where you can have a relaxed and casual discussion of issues that you may share in common. This can be revealing.

Also, keep in mind that software can be used in many different ways and, as staff comes and goes and updates are received, etc., things can get lost in the vastness of a feature-rich application. In fact, don't be surprised if important capabilities seen in a demo are not being deployed by every user. If this is apparent, you may want to determine why by asking questions like "How does the vendor inform you of new functionality"? "Is training offered with new releases"? "Has the vendor ever done an audit of your setup and use", etc.?

**6. GAP Analysis** – While not all vendors include GAP analysis as a pre-sale step, it should be mandatory. This requires the vendor to visit each department in your organization and ask experience-based questions that are designed to uncover issues that may have not been fully addressed in the RFP, demonstrations or site visits.

Gap analysis should be followed-up by a written report in which the vendor clearly lists its findings. This should also include any issues uncovered in a review of the RFP, of your product offerings, and of any special marketing promotion or web self-help requirements. Also, any issues revealed during demonstrations and site visits. No stone should be left unturned. In this way, the vendor shares in the responsibility of delivering the goods expected. So, the report should be carefully reviewed to insure that any shortfalls are understood and addressed in the final contract and price negotiations.

**7. User & Management Buy-Ins** – The best software in the world is only as good as the best intentions of those who will use it. Because it's not uncommon for staff to question changes to come from new software, it is extremely important to involve key users in various evaluation processes in a way that allows them to buy-in to the inevitable changes naturally.

In addition, senior management and department heads must be unquestionably committed to meeting completion timelines, including adequately staffing the





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project and allowing ample time away from other duties to complete project tasks on schedule, receive adequate training and gain valuable pre-launch hands-on usage experience, etc.

Accomplishing this can make the difference between launches that take 3 to 6 months and those that take 3 to 6 years.

**8. A Line in the Sand** – While initial project and user staffing plans are critical to understanding all rolls and responsibilities, nothing ever goes exactly as planned. So, a centralized collaboration management tool and meaningful weekly progress meetings are essential. These are where attendees should be held closely accountable for task completion commitments and the project manager should identify and resolve bottlenecks to maintain momentum.

Meanwhile, evolving operational and marketing requirements don't stand still, and tend to continually move the goalposts. So, there must be line must in the sand that is an absolute go-live date. This is usually possible once data conversion is verified and billings between the systems are an acceptable match. Go-live should be timed to occur on the day following a final billing on the old system to allow up to 30 days to resolve minor issues before the first new-system billing.

**9. Data Cleanup** – Some software allows the seemingly impossible, such as rate plan feature conflicts or multiple social security numbers for a single subscriber, etc. In transitioning to a solution that demands strict adherence to data integrity rules, the process of fixing any broken or ambiguous data should begin as soon as a migration becomes inevitable.

If operational-critical records are infected with such data, experienced DBAs can accomplish a certain amount of extrapolation-based cleanup. Everything else is usually a

manual cleansing process. Both can be aided by running scripts against the existing database to identify any issues and records affected.

Remember, you cannot expect new software to work better than old software if it is forced to ingest errors. Furthermore, your staff is probably far better suited than the vendor's to recognize anomalies, make corrections and test and verify data conversion results. So, it's a good idea to plan for whatever additional staffing it might take to get this all done.

**10. Money-Back Guarantee** – Really? ..... Absolutely! No one wants a 7-figure train wreck, but they do happen. So, ask the vendor to share the risks with you. The worse they can say is "No". Meanwhile, if they agree with terms that have teeth, it demonstrates confidence in their offering and ability to succeed in the face of normal adversities.

In fact, including a phrase like "Additional consideration will be given to vendors who offer an ironclad money-back launch guarantee" in your RFP will give you the chance to make this distinction up front. To be fair, success is a team effort. So, any such guarantee will usually include a disclaimer that excludes circumstances beyond their reasonable control.

Most software vendors put a lot of effort into the suitability of their applications and in the integrity with which they are marketed. This can leave a lot of choices. The brief suggestions made here are time-proven to narrow that field down and reveal the best overall choice. Needless to say, a great success story is good for everyone! ■■

# TRINIDAD AND TOBAGO SEEKING TO ATTRACT A THIRD MOBILE PROVIDER

Trinidad and Tobago will soon issue a Request for Proposals (RFP) for a third mobile operator. Spectrum in the 700 MHz band, along with the option of accessing spectrum in the 850 and 1900 MHz bands will be available to the successful bidder.

Currently there are two mobile providers operating in the Trinidad and Tobago market with both operators employing GSM/EDGE/HSPA technologies utilizing the 850 and 1900 MHz bands. In the RFP process to be initiated, both incumbent operators will also have the opportunity to gain spectrum in the 700 MHz bands allocated by Trinidad and Tobago for public mobile telecommunications services. The Spectrum Plan selected by the Telecommunications Authority of Trinidad and Tobago (the Authority) in the 850, 1900 and 700 MHz bands is based upon the North American Band Plan.

The RFP will be issued by the Authority, the country's telecommunications and broadcasting regulatory body.

A third mobile provider would add fillip to the country's mobile telephone market, which has been recording consistent growth in the last eight years, since the start of the process of liberalization in 2005.

The two existing mobile companies, Telecommunications Services of Trinidad and Tobago and Digicel Trinidad and Tobago Limited, currently provide mobile services within a telecommunications sector, characterized by steady growth

The Annual Market Report of the Telecommunications and Broadcasting Sectors, published by the Authority, covering the period January to December 2011, has revealed the estimated gross revenues in the

telecommunications sector during the period January to December 2011 to be TT\$ 3.9 billion or US\$ 608.9 million.

Of this amount, mobile services contributed the most revenues with approximately 54 per cent of the earnings for the year, generating TT\$2.1 billion in 2011. In addition, this report also highlighted the level of concentration in the mobile market, using the Hirschman-Herfindahl Index (HHI). Similar to the past 3 years, the HHI at the end of 2011 stood at approximately 5000, implying that the mobile market is concentrated, which may further indicate that there is a duopolistic position held by both mobile service providers in the market.

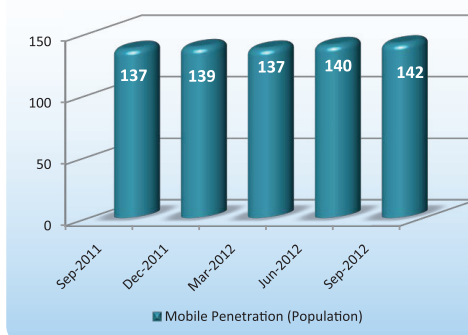
While the performance of the market has so far been favourable, in terms of its revenue generation, the observed stagnation of market concentration in the mobile market over the past four years may signal that the mobile market may be experiencing challenges in realizing its fullest potential of being an ideal competitive market.

The entire market report can be viewed on the Authority's website at [www.tatt.org.tt](http://www.tatt.org.tt)

The presence of a third mobile provider in Trinidad and Tobago will further deepen the level of competition and provide consumers with wider choices, even as the market continues to grow. The Authority's Quarterly Market Update, Quarter 3, also published on the Authority's website reveals a 3.7% increase in mobile voice subscription penetration rates for the period September 2011, to September 2012.

Complementing the move to a third mobile provider is the Authority's plan to implement

**Penetration of Mobile Voice Subscriptions  
Q3 2011 to Q3 2012**



Mobile Number Portability (MNP) also by the end of 2013. The implementation of MNP will facilitate mobile telephone customers who wish to retain their existing telephone numbers while switching to another provider.

Additionally, consumers of both telecommunications as well as broadcasting services would also by the end of 2013 expect to receive enhanced services from providers as the Authority makes final steps towards securing consumer regulations.

Upon finalization of the Consumer Rights and Obligations Policy the required steps will be taken towards the finalization of consumer regulations.

The Authority is anticipating a successful RFP process in order to grant a Concession to a third provider by the end of the calendar year, so that 2014 will open to a busy mobile market where consumers will have wider choices.





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## TATT Hosts IPv6 and DNSSEC Workshops

*Telecommunications Authority of Trinidad and Tobago*

One of the objects of the Telecommunications Act 2001, the legislation upon which the Telecommunications Authority of Trinidad and Tobago (TATT) was established, is *to facilitate the orderly development of a telecommunications system that serves to safeguard, enrich and strengthen the national, social, cultural and economic wellbeing of the society.*

Committed to fulfilling all objects of the Act, TATT has always sought, not only to develop policies, regulations, guidelines and procedures by which providers of telecommunications and broadcasting services must function to ensure the sectors' orderly development, but also to provide avenues for addressing issues and challenges that may arise within both industries over time. Accordingly, TATT has in the past, held technical workshops for the benefit of its staff and relevant stakeholders.

The first of these was held in 2006 on Radio Frequency Identification (RFID) at which the concept of this ubiquitous technology was introduced to various stakeholder groups and in February 2011 an Electronic Numbering (ENUM) seminar was held in collaboration with ENUM LLC and the Caribbean Telecommunications Union (CTU).

With recent challenges being experienced globally in the areas of Internet addressing and security software, TATT hosted two technical workshops on **IPv6** and **DNS security software (DNSSEC) and Router Security Software** in April 2013.

These were facilitated by **Mr. Carlos Martinez** of the Latin America and Caribbean Network Information Centre (LACNIC) and **Mr. Christian O'Flaherty** of the Internet Society (ISOC).

The participants included IT practitioners from state and government agencies, tertiary education institutions, Internet service providers and other private sector organisations.

When the IPv4 protocol was developed in 1970 as a management tool to provide addresses for all devices that use the Internet, today's ubiquitous use was not envisaged. Today, the number of devices connected to the Internet may very well be equal to, or perhaps exceed the current global population. Thus, the explosion of IP enabled devices on the market has just about exhausted all IPv4 addresses and therefore certainly not sufficient to supply the current world population of 7 billion. Consequently, IPv4 has been replaced by IPv6 which was first published by the IETF in 1998. IPv6, the next-generation protocol, provides approximately 340 undecillion addresses, which works out to, three hundred and forty trillion trillion trillion IP addresses, and ensuring availability of new IP addresses far into the future.

The expanded addressing capacity that will be facilitated by IPv6 will enable these trillions of new Internet addresses needed to support connectivity for a range of smart devices - those we know today and those that will be developed in the decades to come.

The presenters provided attendees with enlightening information regarding utilisation of IPv4 technology in an IPv6 environment such as going the way of Dual Stack.

In this scenario the host supports both versions and the dual stack features include the following:

- The hosts can send and receive both IPv4 and IPv6 packets.



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- When connecting with an IPv6 host, a dual stack host will communicate using IPv6. When connecting with an IPv4 host it will behave as IPv4.
- It needs at least one IP address for each protocol
- Will use IPv4 mechanisms to get IPv4 addresses (such as DHCP) and IPv6 autoconfiguration to get IPv6 addresses

#### **DNS security software (DNSSEC) and Router Security Software**

Today an area of great concern is the threat posed by hackers on the Internet infrastructure. This is also a concern in the Caribbean where there is the move towards the development and strengthening of government portals. Coupled with this, the increasing need for e-commerce opens up this region to cyber attacks.

Thus at this workshop participants were informed of the need for securing the Domain Name System and benefits and usage of DNSSEC.

Domain Name Systems (DNS) is a critical component of the Internet infrastructure. The accuracy, integrity, and availability of the information supplied by the DNS are essential to the operation of any system or service that uses the Internet.

However the DNS was not originally designed with security in mind, thus over the years, a number of vulnerabilities have been identified in the DNS protocol threatening the accuracy and integrity of the DNS data and undermining the trustworthiness of the system. These vulnerabilities have increased interest in DNS Security Extensions (DNSSEC) to secure this vital part of the Internet's infrastructure.

The vulnerabilities in DNS include:

- Transmitted data is more prone to spoofing as it is mostly transported over UDP (Eg between master and slaves (AXFR) and between masters and clients (AXFR) "resolver")
- Currently the DNS protocol does not have a way to validate information found in a query response. This makes it vulnerable to different poisoning techniques and poisoned data can be a problem depending on the TTL (time to live) values of the zones
- Slave servers do not have a way to authenticate the master servers they're talking to

DNSSEC protects from data corruption and spoofing by providing a way to:

- validate both the integrity and the authenticity of the records contained in a DNS zone
- delegate trust in public keys (trust chains)
- authenticate zone transfers between masters and slaves

Participants were told that full deployment of DNSSEC will ensure the end user is connecting to the actual web site or other service corresponding to a particular domain name.

TATT will continue to host technical workshops for the benefit of local as well as regional participants as deemed necessary by the organization. ■■



## FibraLink Project Brings High-Speed Broadband Services to Haiti

### *Digicel Haiti*

Last August, Haiti was given broadband Internet services thanks to a US\$17m investment from Digicel. A new 200-km undersea cable now links Haiti to its Caribbean neighbors, giving fixed and mobile broadband services and improved communications to the disaster-struck country.

The 2010 earthquake devastated Haiti's communications infrastructure, with its only subsea cable link being rendered unstable and inactive. The leading fiber-optic cable network provider in the Caribbean Americas region, Columbus Networks, in cooperation with Digicel, successfully laid a new high-capacity link and now own, operate and manage the FibraLink Extension. Utilizing state-of-the-art Dense Wavelength Division Multiplexing (DWDM) and scalable design offering capacity in excess of 1Tbps, this Fibralink extension is set to become the main source of off-island capacity.

The link connects to 21 other countries in the region, as well as the USA and the main Internet backbone gateway in Florida. Digicel worked together with Alcatel-Lucent as the technology supplier, and IT International Telecom provided the marine expertise in the role of co-contractor.

The introduction of high-speed Internet has had a positive impact on the public sector and social activity in the country.

"For more than two years now, Haiti's recovery has been hindered by the lack of reliable high-capacity broadband connections with the rest of the world. With the delivery of this critical undersea cable, the people of Haiti will see a truly dramatic improvement in the range and quality of communications services available," said Conor Clarke, Digicel Group Director of International Business.

"The benefits that this undersea link can bring to Haiti can't be over-estimated," stressed Phillipe Dumont, President of Alcatel-Lucent Submarine Networks. "We are pleased to collaborate with Digicel and Columbus Networks on such a critical endeavor."

Digicel is proud of its efforts to rebuild Haiti, being the country's largest single private investor by funding over \$600m worth of reconstruction projects. As for social projects, the Digicel Foundation is currently on course to achieve its target of building 150 schools by 2014.

Digicel has recently launched its 4G services, following its network being recently upgraded and classified as IMT-Advanced or '4G' by the International Telecommunication Union (ITU). Digicel's 4G network is now the fastest, most advanced cellular network in Haiti – a great leap in bringing Haiti's communications network a step closer to the rest of the world. ■■



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## Maximising Use of Assigned Spectrum in a Converged Environment



**Meleisa Sutherland Campbell,**  
Regulatory Advisor - LIME

Convergence of the provision of several types of services over a common network and through common devices makes it difficult to continue to allocate spectrum in the traditional rigid manner where frequencies are assigned to specific services on specific networks. This approach is otherwise called 'command and control'. Convergence also blurs traditional service boundaries adding to the difficulty of determining which frequency assignment is most relevant for a service.

The difficulties of grappling with the complexity occasioned by convergence, has oftentimes resulted in regulatory inertia and at times lengthy delays in getting services to markets. LIME is particularly concerned about the flexibility to use the spectrum already assigned for new or evolved services on the same or converged platforms.

Spectrum allocation should be technology and service neutral so that operators can avail themselves of the full benefits of a converged licensing regime. There should be flexibility in spectrum allocation to take full advantage

of new services and new technologies for existing services that may evolve with time. Accordingly, the technology to be used in for example the ISM band should be technology neutral and regulators should refrain from or reverse any decision specifying a particular technology for use in that band. In this regard, innovation is not just about technology but also about the development of policy frameworks that facilitate the deployment of technology and diffusion of its benefits.

Caribbean regulators must consider leading in policy innovation rather than waiting to see what the rest of the world will do, important as that is. Reluctance to implement this approach to spectrum management will result in failure to advance our societies through services that improve quality of life and even the ability to reach those who are yet unreached with services fundamental for meaningful participation in the information society.

One approach to providing this flexibility is to allow operators to repurpose spectrum that they have already been assigned. This will boost innovation in the use of spectrum and spectrum based products and services.

The efficiencies or innovations facilitated by repurposing spectrum cannot be denied. LIME however appreciates that the assignment of spectrum is a valuable revenue generator for governments. It is also a significant expense for operators. Where spectrum is to be repurposed by operators, regulators may believe it necessary to increase the price of the spectrum to reflect its increased value and accordingly generate more revenues. This is not supported by operators because the increased price of spectrum is ultimately paid by consumers and if prohibitive, such prices may delay the rollout of the network or services. This would be counterproductive. Spectrum fees should be minimized so that maximum investment is encouraged. ■■



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## About Advantage 360

Advantage 360 is headquartered in southern California, with support offices in six countries. Since 1984, we have developed feature-rich operational support software for the demanding daily requirements of modern convergent telecommunications carriers and service providers across all technologies. We have also successfully completed more than 200 installations world-wide, ranging in size from less than 10,000 to more than 5,000,000 subscribers. As a result, our software is highly scalable and has exceptional localization and multiple language / currency capabilities.

In addition, our customer retention rate remains at 99.5% because we are dedicated to reducing the total cost of ownership by delivering a comprehensive end-to-end solution with more than 70,000 features, an average of 3,500 enhancements a year and world-class support. This eliminates the need for additional modules, such as CRM, POS, inventory, trouble tickets, mediation, sales force and work-flow management, and other OSS functionality and support that cost extra or are totally missing in other systems. In addition, every feature is focused on acquiring and retaining subscribers, assuring revenue and collections and automating processes to reduce staffing dependencies. This immediately results in increased income and overhead reductions that consistently provide an accelerated return on investment of just 6 to 18 months.

## What Our Customers Say

Here is what a few of our customers have to say...

*"The excellent Support and Customer Service received from Advantage 360 staff meet all our business requirements. They are innovative and responsive in providing solutions to all our demands. This is a great company and we look forward to growing our business with their support."* – CTO, DigiCel Bermuda

*"Its Cellular in a box"* – CIO International, AT&T Wireless

*"Advantage 360 has provided us with the flexibility to offer our customers new services, plans, and billing options with its standard features. It has also significantly reduced our staff's workload due to its streamlined functionality. We value our relationship with Advantage 360 and look forward to expanding our use."* – Manager of Information Systems, ENMR –Plateau

*"Advantage 360 not only provided exceptional conversion support during our recent merger of two companies and billing systems, they also provided a custom solution which allowed us to convert our customer base in a scheduled and controlled manner that was transparent to those valued customers."* – GM, CellularOne Bermuda

*"Because of Advantage 360's unique multi-site pricing we have been able to deploy a single feature-rich billing and OSS across multiple properties and markets at a fraction of the cost of individual solutions."* – Billing Manager, Atlantic Tele Networks

*"We knew that we would realize some cost savings by merging our wireless, wireline, internet and IPTV billing systems into a single solution. What we did not expect is staff coming to management for more work because they were out of things to do."* – CFO, Strata Networks

*"Advantage 360 allows us to support our customers across a wide array of services and technologies in a single platform."* – GM, Choice Communications

*"When we chose Advantage 360, we had an extreme urgency to replace several existing billing systems and launch within 6 to 9 months. Not only did they launch us in just 3 months, their software functionality, capacity and support has allowed us to grow from less than 3 million subscribers to more than 5 million in only 18 months."* – CTO, SOTELMA

*"After several years and two failures with previous software vendors in our quest for a truly convergent billing system for our wire line, wireless, data and internet business services, Advantage360's software offered all the functionality and capability that we sought. With the threat of liberalization of the Telecoms market and the emergence of new competitive forces quickly approaching, Advantage360's staff adeptly stepped up to the challenge and helped us meet our critical deadlines for migrating off our legacy billing system. Thanks to Advantage360 we are better poised to be more creative and flexible in our product offerings which is vital for our remaining a viable entity in what will be an extremely competitive Telecoms marketplace. We are very pleased to have forged a relationship with them"* – CIO, Antigua Public Utilities Authority

## Additional Information

To learn more about our feature-rich solutions and world-class support services, please visit our website at [www.advantage360.com](http://www.advantage360.com). We also invite RFIs, RFPs and in-depth competitive comparisons. In addition, we offer both on-line and on-site demonstrations in English and many other languages.



## International Women and Girls' in ICT A Call for Partnership and Participation Initiative

Soroptimist International of Port of Spain and CANTO invite all stakeholders' to be a part of the *International Women and Girls' in ICT - Partnership and Participation Initiative*. The initiative will begin by targeting women and girls in Trinidad & Tobago by creating a sustainable project with a focus on development in ICTs. The purpose of the initiative is to:

- create a sustainable project which will fall under the Women and Girls in ICT umbrella
- discuss potential program components and decide what activities to include
- solicit partners and sponsors to implement and deliver the project

The initiative stems from the International Girls' in ICT day backed by ITU member states to create a global environment that empowers and encourages girls and young women to consider careers in the growing field of Information and Communication Technologies (ICTs). International Girls in ICT Day is celebrated annually on the fourth Thursday in April ([www.girlsinict.org](http://www.girlsinict.org)).

Last year, CANTO and Soroptimist International of Port of Spain, partnered with CANTO members and stakeholders in Trinidad & Tobago to host a high school interactive workshop on Women and Girls in ICT at Bishop Centenary College. Needless to say, the feedback from the participants was phenomenal and the expectations were exceeded by the partners.

Since the launch of the Girls in ICT Day, CANTO, Soroptimist and partners have undertaken several initiatives to commemorate this initiative to ensure that girls in the Caribbean are encouraged to choose careers in ICT. CANTO and Soroptimist PoS also seek to inform and educate parents, teachers and other stakeholders alike on the importance of a career in the ICT sector

for women, girls, businesses and communities. The following outlines the key initiatives undertaken on Women and Girls in ICT to date:

### 1. WTISD Essay Competition, 17<sup>th</sup> May 2007-2013

**Partners: CANTO Members, Ministries of Education, Secondary Schools in the Caribbean, Soroptimist, 17 May 2007-2013**

The essay competitions have been held on a different theme annually since 2007. A secondary School **Girl** won every year.



Students of Bishop Centenary College at 1<sup>st</sup> Interactive Workshop

### 2. 1<sup>st</sup> Interactive Workshop – Partners, 25<sup>th</sup> April 2012

**Partners: Bishop Centenary College, UWI, Soroptimist, TSTT, FLOW, TATT, AFETT, Meredith McSween International, Illuminat, INFOCOMM Technologies Ltd., Media**

Students got the opportunity to explore the different facets of ICT including potential careers highlighted by the presenters which included:



*"Towards a SMART Broadband Caribbean Community"*

1. Senior positions in jobs in ICT sector for women are attainable and feasible
2. ICT is not only about technology but access to it
3. Women in senior positions can generate more revenue to the company
4. Education is key to success in the ICT sector
5. Empowered girls of today can be the forerunners in the ICT sector



1st Women & Girls in ICT Breakfast Meeting

3. **1<sup>st</sup> Women & Girls in ICT Breakfast Meeting, Miami 24<sup>th</sup> July 2012**  
**Partners: Soroptimist, US State Department, CARICOM, Amenzee Amu-2012 WTISD Winner, Leadership Success International-LLC, Minister of Energy, Science, Technology and Public Utilities, Belize**

**The forum outlined that:**

1. In the United States, although women fill close to half of all jobs in the economy, they hold less than 25 percent of computing occupations. Ominously, the percentage of women receiving computer science degrees has declined from over 37% in 1984 to 18% in 2010.

2. At senior levels, the representation of women diminishes to 10% of board of director positions and 11% of corporate officer at Fortune 500 technology companies, and only 4 percent of senior management positions in technical/R&D departments in Silicon Valley companies.
3. Girls and women continue to drop out at each stage of the STEM pipeline, resulting in an increasing gender gap at more senior levels. Starting with the transition to secondary education, girls who have shown equal aptitude for STEM subjects begin opting out of STEM studies, often due to social pressures or insufficient encouragement by teachers.
4. At college and graduate levels of study, where the ratio of females further declines. This trend continues in the workplace where only one-third of women with a computer science bachelor's degree were still employed in a STEM job two years after graduation in 2003. And, 56% of women in technology leave their employers at the mid-level point in their careers, twice the rate of men.

**The forum highlighted the importance of:**

1. National strategies to increase the participation of women and girls in ICT
2. A mechanism to collect and analyze user information by gender, to know how women use technology
3. NGOs to get more involved in raising awareness





*"Towards a SMART Broadband Caribbean Community"*



**4. 1<sup>st</sup> Digital Literacy Course, 2<sup>nd</sup> March – 20<sup>th</sup> April 2013**

**Partners: UWI, Microsoft, Soroptimist**

The purpose was to provide an adult computer literacy program in the twin island state of Trinidad & Tobago. The initiative formed part of the annual International Women's Day activities celebrated each year on the 8<sup>th</sup> March. The theme for 2013 is "The Gender Agenda: Gaining Momentum". The partnership stems from organizations which support and promote the equalization of ICT among the female gender in Trinidad & Tobago.

**5. 2<sup>nd</sup> Women & Girls in ICT Breakfast Meeting, 16th July 2013, cohosted by SETAR – Aruba, Focus on ICT and Road Safety.**

**6. Stakeholders Meeting on Women and Girls in ICT:** This will be a planning meeting for the creation of a project and to chart the way forward to:

1. create a sustainable project which will fall under the Girls in ICT umbrella
2. discuss potential program components and decide what activities to include
3. solicit partners/sponsors to implement and deliver the project.

Soroptimist International POS and CANTO are calling on all stakeholders to join in this initiative to create programs which will elevate women and girls and encourage them to play an active role in ICTs.

**Contact** Wendy Rocke – President SIPOS at 1(868) 789-0895, [rocke@tstt.net.tt](mailto:rocke@tstt.net.tt) or Regenie Fräser – Secretary General CANTO at 1(868) 735-0440, [rfraser@canto.org](mailto:rfraser@canto.org).

- **Soroptimist International of Port of Spain** - is a member of the worldwide organisation for business and professional women founded in 1921. Soroptimists are women at their best helping other women to be their best, [www.soroptimist-tt.org/site/main.html](http://www.soroptimist-tt.org/site/main.html)
- **CANTO** - is a non-profit association made up of operators, organizations, companies and individuals in the ICT (telecommunications) sector. The Association has a Caribbean focus as it relates to ICT issues for the region with a global perspective, [www.canto.org](http://www.canto.org)



"Towards a SMART Broadband Caribbean Community"

# DeployTM – An OSS/BSS Integration & Automation Software

**Mr. Abhinav Mishara, Head Global Strategy & Operations, Diksha Technologies.**

## Need Of The Hour

Telecom operators are always overwhelmed by the numerous disparate systems and the complexities created by them. These complexities not only demand continuous attention of a dedicated technical brigade, but also incur high costs in maintaining them. One of the goals of these technical teams is to facilitate for the daily requirements of business users spanning over operations monitoring, reporting, scheduling, data management, testing etc. Business users consume IT and application services on a daily basis. They have high expectations and demands for access and control to services that support their job functions. They need what they need—when they need it. To add to the ramifications, the ever volatile market keeps the business requirements fluctuating constantly leading to an 'Innovate or perish' situation.

As carriers and service providers have come under greater pressure to increase revenues and decrease operating costs in order to survive, the demand for an intelligent, seamlessly integrated and an interactive OSS/BSS solution has grown exponentially. This has been one of the key driving trends within telecom OSS/BSS and has acquired many synonyms like 'Single Screen Infrastructure', 'Unified OSS/BSS System' etc. Juggling with these numerous complex systems, carriers and service providers are awaiting a solution which delivers this unified solution to its business users.

With a vision to address this gap in the current OSS/BSS systems, Diksha Technologies with their 13 years of pure telecom experience have developed DEPLOY™ which is an End-to-End Automation Platform for OSS/BSS.

## Automating End-To-End Billing Operations With A Unified Solution

DEPLOY™ is a powerful software equipped with capabilities of integrating itself with any Billing System

and can automate the interactions among all OSS/BSS systems. In simpler terms, Deploy transforms an OSS/BSS environment in two-folds:

1. Seamlessly Integrating with the environment and establish automatic data interchange
2. Provides an interactive single point infrastructure for managing non-core processes (processes other than what the native billing system does by itself) like
  - Operations management
  - Business processes
  - Configurations
  - Testing of plans etc.

Deploy is an End-to-End Automation Platform for OSS/ BSS systems and can be easily customized or configured to seamlessly integrate with an existing OSS/BSS ecosystem to automate tasks like:

Since Deploy is built upon Service Oriented Architecture and modern design principles, it can be lent with ease for cloud applications which in turn will help in mitigating risks in Scalability, Data Management & Functional Integration.

Deploy helps to functionally integrate various systems in a Telco eco-system. It provides enterprise-wide data flow management and integrations; it connects functional data points and exposes functional units as web services. It also provides a single Infrastructure to access enterprise wide software components, simplifying complex OSS/BSS integrations. Front-office applications communicate under a common framework and its pluggable nature eases replacement/upgrade of BSS/OSS and other components.

DEPLOY™ addresses current and future business needs by providing an enterprise wide solution that automates Business Processes, Job Scheduling & Active Monitoring to improve productivity and helps reduce operating costs while ensuring reliability for business processes.



It is a functional integration platform which performs Business Process Management and Scheduling. DEPLOY™ can seamlessly integrate with almost any software system in an enterprise enabling easy component sharing and services. This integration with the multi-layered services or components help build, automate, schedule and monitor on various system domains. The DEPLOY™ platform delivers flexibility, reliability and scalability to manage critical business processes for the enterprise.

DEPLOY™ extends an existing OSS/BSS environment by providing an interactive single sign-on infrastructure capable of:

- Mobile App for System Monitoring
- Automation of Entire Bill Cycle
- Testing Automation
- Self-Healing Mechanism
- KPI Dashboards with SLA Binding

The DEPLOY™ platform can also easily enhance its scope of operations through add-on modules. There are numerous applications which can be integrated with DEPLOY™ to achieve maximum automation. The users can add endless arrays of applications to automate every process in billing, from automated testing to automatic bill formatting. Moreover, it centralizes work load management executing on a single Mainframe, or cross-platform environment consisting of multiple and disparate platforms and distributed ERP applications.

## Deploy helps in:

- Identifying mundane tasks and can be automated
- Better organizing of custom scripts leading to huge cost savings during Migrations/Upgrades
- Reducing man-effort in verification and data validation
- Custom-built new functionalities as plug-ins and execute through Deploy.

## Examples: How A Billing Automation Platform Would Be Useful

Let's say you have a billing cycle which is scheduled for a particular day of the month. The billing cycle is usually run manually and requires someone to be there to check if it's running properly. And if there's any error, they need to rerun the bill cycle again. Well, a Billing Automation Platform may contain some self-healing or auto-resolving capability and so whenever the billing cycle is run and a certain type of error is encountered, it will try to correct it based on a set of pre-established rules.

Another function is bill invoice formatting. Most operators already have a bill invoice formatter, but they often don't use out of the box functionality because it's not very fast and high quality – and it's somewhat cumbersome to modify the templates. So a Billing Automation Platform allows you to easily plug in an improved function like that. It becomes a convenient framework to hang SOA functionality from. ■■



# 2013 *Calendar of* **EVENTS**

**CANTO  
Board of Directors  
Meeting**  
Co-hosted by: SETAR,  
Aruba  
Renaissance Aruba Resort  
13th July, 2013

**CANTO Committee Meetings**  
Co-hosted by: SETAR,  
Aruba  
Renaissance Aruba Resort  
13-14th July, 2013

**CANTO/IDB  
Broadband Project  
Steering Committee Meetings**  
14 & 16th July, 2013

**CANTO 29th Annual  
Conference & Trade  
Exhibition**  
Co-hosted by: SETAR,  
Aruba  
Renaissance Aruba Resort  
14-17th July, 2013

**CANTO/Ericsson 3rd  
i-Create e-Content  
Award Ceremony**  
15th July, 2013

**CANTO Ministerial  
Roundtable: Towards  
a SMART Broadband  
Caribbean**  
Co-hosted by: SETAR, Aruba  
Renaissance Aruba, Resort  
15th July, 2013

**Women and Girls in ICT  
Breakfast Meeting**  
Co-hosted by: SETAR, Aruba  
Renaissance Aruba  
Resort  
16th July, 2013

**7th Annual Human Resource  
Forum**  
“Driving Performance  
Through Leadership”  
Co-hosted by: SETAR, Aruba  
Renaissance Aruba  
Resort  
18-19th July, 2013

**LACNIC Caribbean 5**  
17-19th July, 2013

**30th  
Annual General Meeting**  
Montego Bay, Jamaica

27-30th January, 2014





# The Mobile Broadband Explosion Is Here. Is Your Network Ready?

## Cloud Networking

Unblock the cloud connectivity bottleneck

## Mobile Backhaul

Create an affordable and seamless path to 4G

## Ethernet Business Services

Enable service-intelligent, high-performance enterprise WANs

## Data Center Interconnect

Deliver massive scale with ultra-low latency

## Regional & Metro Networking

Simply and cost-effectively accelerate metro service delivery

Innovative solutions from BTI Systems enable service providers to meet today's demand for high-bandwidth Ethernet and optical services delivery while creating a scalable, robust foundation for future high-value services.

[btisystems.com](http://btisystems.com)