Eastern Caribbean Telecommunications Authority (ECTEL)

15th

ANNIVERSARY

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CONTENT

Note From the Editor

Theresa Daniel

The Eastern Caribbean Telecommunications Authority ECTEL, turned 15 on May 4, 2015. It was on that day fifteen years ago that the Governments of Dominica, Grenada, St. Kitts and Nevis, Saint Lucia and St. Vincent and the Grenadines took the bold and historic step of signing the Treaty that would establish the world's only multi-state telecommunications regulator.

Fifteen years later and ECTEL continues to grow, embracing the numerous challenges with which it is confronted in this ever-changing telecommunications sector.

From start to finish, this 15th anniversary magazine edition gives great insights into current trends in the electronic communications environment, not only in ECTEL Member States, but globally as well. The issues, the challenges, the forecasts and possible impact and implications are concisely presented, starting with the feature presentation from one of the main architects of telecommunications liberalisation in our sub region, the Honourable Prime Minister of Saint Lucia, Dr. Kenny Anthony. Director General of the OECS Commission, Dr. Didacus Jules, in his unique way, takes us into the future of broadband in the OECS, a perfect segue into the Internet of Things (IoT), which delves into some of the benefits and risks of IoT. The consumers also get their say in this edition since, as Professor Hopeton Dunn reminds us so eloquently, telecommunications is after all about the people of the region, not about the Governments, regulators or providers.

We hope that the articles presented in this souvenir edition of ECTEL's 15th anniversary answer some of the burning issues and questions occupying your thought space and prepare you as well for the exciting, yet challenging times ahead for the telecommunications sector.

Challenges aside, we do have much to be grateful for and as we ready ourselves to face what lies ahead, we say a heartfelt thank you to the liberalisation trail blazers, who have laid a solid foundation on which we continue to build and evolve.

We wish to say a heartfelt thank you to all our contributors, without whom this publication would not have been possible.

Have an enjoyable read!

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Message from Chairman of Council

When the small independent states embarked on the liberalisation of the telecommunications sector fifteen years ago, it was a response to both internal and external factors. To quote from Mr. Calixte George, a former chairman of ECTEL Council of Ministers and a stalwart in the fight for liberalisation, "The Governments also sought to ensure that the demand for existing telecommunications services would be met to support economic growth and diversification, provide suitable environment for tourism and other critical economic sectors, and also satisfy the educational and social needs of the community"

These realities, combined with the vision of our Prime Ministers, coalesced into the policy framework for the establishment of a single regulator for the telecommunications sector. The five independent states – Commonwealth of Dominica, Grenada, St. Kitts and Nevis, Saint Lucia and St. Vincent and the Grenadines, signed a Treaty to establish ECTEL.

The creation of this new multi-state independent regulatory apparatus was taking place amidst the threats of closure by the incumbent Cable & Wireless W.I. Ltd., and this was a test of unprecedented determination and resolve. In the year 2015 the region is facing challenges from the industry which are manifested in various forms, but of similar intensity and gravity.

In the past year, our regulatory authorities have had to respond to reports of behaviours by service providers which challenge the environment for fair competition and open entry. I have no doubt that regulators, our countries, our Ministers, and our Prime Ministers will remain committed to our tasks with equal resolve in the face of similar tactics, hinged this time to the disguised threat of curtailing investment.

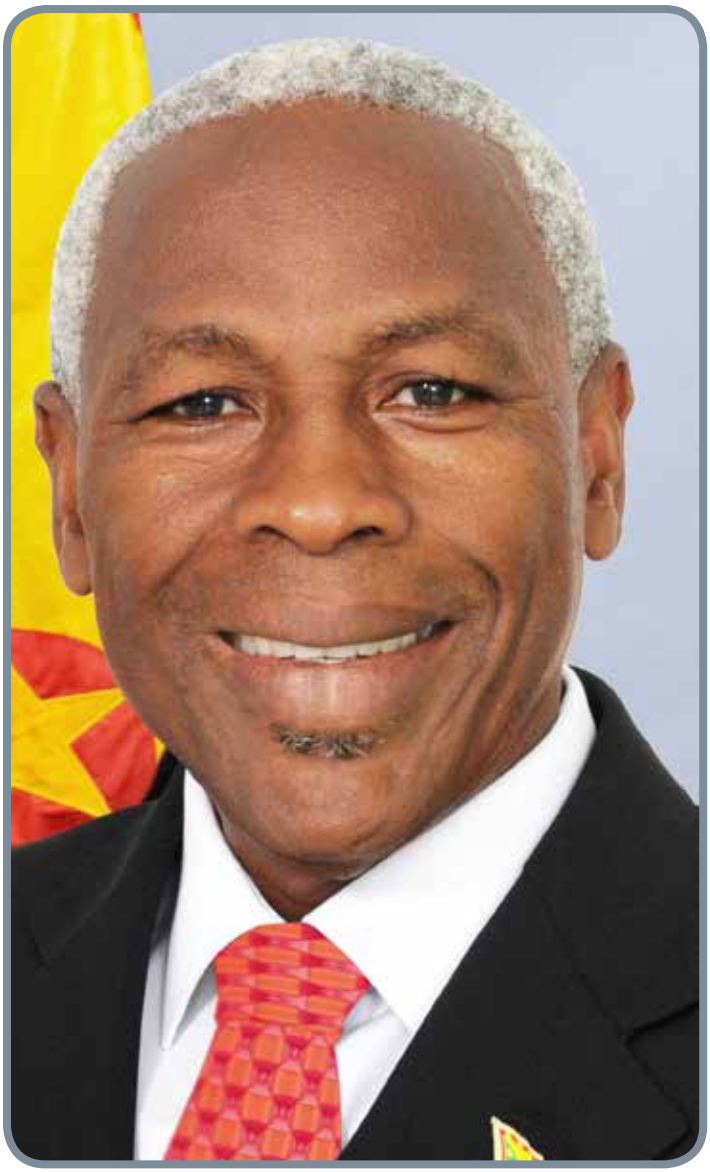
Today, our leaders are aware of the prevalence and impact of technology in all sectors of the society and therefore seized of the opportunity to apply the emerging communication technologies to economic development. It is imperative that the regulatory environment remains stable and progressive to facilitate continued investments and innovation in the sector.

Following liberalization, we have witnessed the transformation of our countries, socially, politically and economically. To put it simply, the the ease and low cost of information sharing through social media has revolutionized business and also influenced changes in the governance of insitutions.

It is fitting that on the cusp of the new era of 5G telecommunications and ubiquitous broadband, we are also poised to address the challenges with new tools of the trade. In the past decade we have promulgated a number of regulations, which provide the authority to the national commissions (NTRCs) to address matters such as universal service, retail rates and quality of service. As we celebrate fifteen years, let us all as a region commit to playing our respective roles in the development of a sector, which can bring harmonised benefits to our people.

As we celebrate, we also pay tribute to all the leaders of government, leaders in the private sector and the staff of the institutions that have provided the requisite support to ECTEL.

On behalf of the Council of Ministers, I extend sincere congratulations to the Eastern Caribbean Telecommunications Authority (ECTEL) on the observance of the fifteenth anniversary of the establishment of our regulatory authority.



Hon. Gregory Bowen,
Minister of Communications, Works, Physical Development, Public Utilities, ICT & Community Development
Grenada

Message from the Chairman of the Board

Mr. Isaac Solomon
Chairman ECTEL Board of Directors
2014 -2015

Over the past decade, and in particular the past five years, the leaders and people of our region have called on regulators to ensure that telecommunications services are available and affordable to all. ECTEL has responded to this call.

The approach of ECTEL through progressive spectrum management policies and the associated regulations has resulted in the growth of the sector. The sector has become far more complex and all-inclusive. It is no longer simply telecommunications. In addition to delivering on our primary goals, ECTEL engaged in a wide range of issues in electronic communications from broadband expansion to internet governance. Consequently, we have built strategic alliances with international organisations which are involved in these areas of work.

As a regulator of the telecommunications sector for five countries, we understand the significance of harmonisation. In this regard we are collaborating with established regional institutions and forging new relationships. ECTEL is working closely with the Caribbean Telecommunications Union- CTU on a range of issues including spectrum management. We have continued to engage other regulators, service providers and the academic community in policy debates through the Organisation of Caribbean Utility Regulators (OOCUR) and the Caribbean Association of National Telecommunications Organisations (CANTO). In addition, we have strengthened and deepened our collaboration with the International Telecommunications Union (ITU), through its Caribbean Office. Of particular note is the formalisation of our engagement on issues related to Internet governance through membership of the Internet Society (ISOC).

ECTEL continues to stand out as a model of regulatory management through the efficient and effective use of our resources. A heavy investment in training for the staff of ECTEL, and the Commissioners and staff of the five National Telecommunications Regulatory Commissions (NTRCs) has provided the competences for regulation of the sector and positioned our teams to confront the emerging challenges of the increasingly complex and intertwined sector.

We have also monitored the pulse of the sector and continue to share quality information with various publics through the annual electronic communications sector review and other publications. As we move forward into the next decade, ECTEL will utilise both traditional and new media to educate consumers in particular, as well as all stakeholders in the sector.

Critical oversight by the Board of Directors and the Council of Ministers has ensured that the work of ECTEL and the five Commissions reflect the needs and priorities of the citizens of the ECTEL Member States.

We recognise that some of the processes related to the execution of our mandate of managing competition in the sector, for instance, goes beyond the boundaries of ECTEL, and extend into the political and other regulatory arenas. We intend to work with all the appropriate institutions to ensure that in light of our separate clear lines of responsibility, there is coordination of our efforts.

In the world around us more people have access to the basic telecommunications services, however, a significant number do not have access to the high value services such as broadband. The commitment to broadband and open access in a digital world, which is the theme of the fifteenth anniversary celebrations, has become the rallying call for our work.

It is once again my honour as Chairman of the ECTEL Board of Directors, to join with the other directors, the Council of Ministers, the staff of ECTEL, and the Commissioners and staff of the NTRCs, in the celebration of fifteen years of our regulatory system. Together we have weathered the storms, together we have built a sustainable platform for our operations, and together we will continue to regulate the sector for the benefit of all our citizens.

Happy Fifteenth Anniversary!

"COMMITTED TO A CONNECTED SOCIETY"

FEATURE ADDRESS

By The Hon. Dr. Kenny D. Anthony
Prime Minister and Minister for Finance,
Economic Affairs, Planning and Social Security

At the 15th Anniversary Conference of the Eastern Caribbean Telecommunications Authority (ECTEL)

AT THE PEAK OF THE WAVE

Fifteen years ago, when these five small island states solidified the liberalisation of Telecommunications through the ECTEL Treaty signed in Grenada, telecommunications was at a cusp, and we needed to be riding at the peak of the wave, and not remain in a technology backwash.

We were still back then just embracing an m-world, a mobile society where transactions are real time and ubiquitous; not limited to where you might be.

Things continue to change at a rapid rate. Fifteen years ago, Voice over IP (VoIP) was still seen as taboo by providers. The big transition in our mobile market was a shift from TDMA to GSM cellular systems and handsets.

There were no touch screens and for that matter screens weren't designed for viewing photos or videos either.

Wi-Fi, which only became used as a commercial term in 1999, was not in the lingo of the average person and a hotspot was a place you'd likely avoid, not search everywhere for. A "tablet" in Saint Lucia was still something sweet and edible made of coconut and dial-up was just in the process.

ADSL standards were still fresh and the average user was still lucky if they simply had dial-up at their homes.

Yet, we knew then as we know now the power of Telecommunications, and we knew that our populations were being short changed due to the absence of competition and effective market regulation.

The reality prior to the turn of the millennium was quite different from what thankfully obtains today. If we take Saint Lucia as a case in point, for fixed line calls, a small island of 238 square miles was divided into as many as eight districts with out of district calls being charged "trunk rates" even more than what is being charged today for mobile calls. This was the state of fixed line calls.

ADVERSE TO GROWTH

Saint Lucia, in fact, under this monopolistic environment, was the highest grossing per capita profit centre in the world for the incumbent. You would then understand our rightful fear towards any new environment where one company monopolises the market.

There clearly, at that time, existed a telecommunications environment that was adverse to growth of economy and society. But we took comfort in the words of poet Ben Johnson that "he who knows not adversity knows not his strength."

CHANGE THE SYSTEM

So the Labour Government I led back then mustered the strength and the will to change the system. We had to take the bull by the horns, and it called for determination, grit, will, and courage. And the reality was the tactics by the incumbent provider were not always pleasant, but they were to some extent expected.

Through the OECS Telecommunications Reform Project we established the legislative and regulatory framework, supported by the technical and administrative capacity to undertake what was a monumental shift in public utilities regulation in the sub-region. Our five states: St. Kitts and Nevis, Dominica, St. Vincent and the Grenadines, Grenada and Saint Lucia continued to show that we could come together for a common cause, to achieve common good for all our people.

Since 2000, we laid the foundation for what has become a worldwide model multi-state regulatory framework.

As I have alluded to, the communications landscape has drastically changed over the past 15 years and ECTEL has played a major part of facilitating this.

PRINCIPLES THE SAME

While the technologies continue to change rapidly, the principles of the telecommunications liberalisation and competition remain the same.

These principles include:

1. Market fairness, competition and protection of new entrants;
2. Promotion of investment by service providers in new and appropriate technologies;
3. Consumer Protection;
4. Supporting and providing social good, including universal access for services; and
5. Seeking affordability for the majority of the market so as to promote economic growth.

IP-DRIVEN INDUSTRY

This industry is now IP-driven. The Internet has become the new platform of transaction, surpassing the legacy voice networks. It is all about data capacity, speed and reliability. And thus, the demands for data-rich photos, videos and other content continues to drive the bandwidth requirements of the average household and the average person upward. The Broadband era is here and will only become more demanding on providers. The push to deliver more for less, the drive of innovation and competition will develop new generations of mobile, wired and wireless solutions, inclusive of richer and more dynamic applications and content.

GLOBAL DATA TRAFFIC

To put this more pellucid by way of figures, I refer to the 2014 CISCO Visual Networking Index Report.

Growth in global mobile data traffic grew year-on-year by a remarkable 69 percent.

What is equally staggering is that that traffic is 30 times greater than traffic in the year 2000 when we signed the ECTEL Treaty.

Nearly half a billion handsets were added globally to the market, and smart devices – while representing a quarter of all handsets – move nearly 90 percent of all data. It is predicted that by 2019, three out of every five devices will be smart, and will only mean more streaming of videos, more downloads, more Skype, more bandwidth required.

We must expect that the trend will be for increased demand in both wired and wireless broadband services.

LAPTOP TO EVERY CHILD

Currently, nearly 50% of homes have Internet subscription in Saint Lucia and this number is growing, in part, I would like to believe, due to Government policy.

Saint Lucia has introduced a programme in our secondary schools through which we have been providing a laptop to every child in a selected form. So far, we have impacted three years of students at secondary level, with nearly ten thousand more units being provided to students and teachers over the past three years. Many parents have thus felt ever more compelled to have their children connected.

These changes have led to fascinating changes in the market. Many people no longer have a fixed telephone line at their home, but they have Internet, often provided through a wireless modem. Today, international voice traffic for Saint Lucia is about half what it used to be five years ago.
There can be no doubt, therefore, the reasons for the downward trend in the number of minutes made on international and domestic calls, as many more citizens and companies benefit from Voice-over-IP solutions from Vonage and Magic Jack, Skype, Facebook and now even calls on Whatsapp.

CONTENT GENERATION

Based on a 2012 feasibility study undertaken by the Caribbean Regional Communications Infrastructure Project, CARCIP, looking at the strength and gaps of the broadband backbone in Saint Lucia, Grenada and Saint Vincent & the Grenadines, it appears that the current infrastructure appears adequate for the future, and with the presence of the Universal Service Fund, investments can be made to support access into underserviced communities and schools.

However, it appears that where we are lagging behind in our sub-region is in content or application development. We have fallen into the very quiet trap of consumers of data and not contributors to it. It is the trap of being the spectator, and not the actors or performers.

Even while we rightly and recently established an internet exchange point in Saint Lucia – meaning that local content did not have to be looped out of the country to reach another person in Saint Lucia, the truth is our content generation is still quite low.

NOT MAXIMISING THE OPPORTUNITIES

It also shows in the low uptake of E-Commerce solutions by the local private sector. Our people are definitely purchasing online at remarkable rates, enough to see the rise of many local shipping agencies that are taking advantage of this.

However, many of our companies still lag behind in web presence and being able to provide online services. This was raised, in fact, at a recent Caribbean Growth Forum Transparency and Accountability Workshop in Saint Lucia. It says that our people are still not maximizing the opportunities available in this regard.

In all honesty, this is not only a failing of the private sector, but also of the public sector. While we have made advancements in applying ICT to our agencies, we are still far behind the developed world. Therefore, there can be no complacency. As both public and private sectors become more connected and are providing more services online, it means the demand for broadband will only continue to increase exponentially.

APPRECIATE NEW PLATFORMS

I must say that this is a paradigm shift that all parts of society and economy must make – coming to appreciate the new platforms that are available for advertising, sales and operations.

And I say this from the perspective of a politician. I post my own messages on Facebook, and it is indeed a powerful tool we have through social media to change how we can relate to citizens more directly.

COLLABORATION

The telecoms field is a highly technical and ever changing one, which makes it very exciting, but of course also extremely demanding.

We must keep abreast of it at all times, but it also means that as a region, we must pool our resources more to this effort. We ought to collaborate however we can.

We cannot be left behind if we believe in the transformational power of Information & Communications Technology to our entire socio-economic milieu. We have the knowledge of fifteen years under ECTEL and we must plan for another fifteen, which I am sure will be no less revolutionary as the last fifteen.

CENTRAL TO NATION BUILDING

The domain of broadband has become central to nation building and while it will be driven largely by market competition and good regulation, the state must play its part in securing the best deal for all citizens.

The Government of Saint Lucia is undoubtedly committed to this cause to realise an ever more connected, competitive, capable society that is driven by affordable, high speed broadband.

The Future of Broadband in the OECS

Thinking Beyond Connectivity

CLOSING ADDRESS

Dr. Didacus Jules
Director General
Organisation of Eastern Caribbean States

At the 15th Anniversary Conference of the Eastern Caribbean Telecommunications Authority (ECTEL)

From Vision to Strategy

I have said often, broadband is the oxygen of the digital age. It has filled the lungs of human innovation and ingenuity for the past two decades, energizing a technological revolution unprecedented in its global scale and human impact. It has enabled the Internet as a platform for exchanging information and delivering services in ways that have transformed every aspect of human civilization and economy.

Perhaps, most importantly, it has afforded us all an avenue to share the most important resource on the planet and one that cannot be exhausted. That resource is knowledge. Knowledge, however, is only valuable to the extent it is exchanged effectively. As someone said, knowledge is the only commodity that exponentially increases the more it is shared and given away.

End Game Known

Another distinctive of broadband from a public policy standpoint is that we don't have to debate hypothetical endgames. In fact, the endgame is well known. It is ubiquitous Internet access, with abundant bandwidth, connecting all manner of devices to all manner of content.

The broadband debate is not about that endgame. It is about how to get there. The providers in our Caribbean – driven as they are by the huge profit opportunity for themselves – would have us believe that their way is the most efficient and perhaps the only way that we can get there.

Any consideration of a thriving Internet economy fueled by broadband must be based on four foundation stones.

1. Effective use of spectrum resources
2. Extensive deployment of fiber and supporting infrastructure
3. Affordable, ubiquitous access to the network
4. Proliferation of digitally accessible local content, including local services and commerce.

Spectrum

Spectrum is not more important than the other three foundation stones. It is, however, the most important to get right because it is the hardest to correct. If initial efforts fail to drive fiber deeper, get everyone on, and use the platform well, you can adjust rapidly. If you allocate spectrum in ways that do not work well, the embedded owners and users of the spectrum will make it difficult to shift (and we are seeing this happening in some Caribbean territories where the providers have been allowed to control unequal swathes of the spectrum).

Fiber

With fiber, the key is to have a rational policy for sharing access to rights of way and other infrastructure that incentivizes basic deployment. Longer term, the challenge is to find a way to incentivize deployment of networks and eliminate bandwidth as a constraint to innovation.

For the OECS our challenge has everything to do with how we allocate spectrum and create incentives to deploy fiber. For example, competition is currently limited by the complex and time-consuming way, access to rights of way to existing infrastructure is provided. The current incentive structure favours working with vertically integrated operators, instead of the wholesale, or even smaller providers that can bring new competitive dynamics and real innovation to the market.

If we manage our spectrum and infrastructure resources well and encourage competition, we will drive the deployment of faster, better, cheaper broadband!

Ubiquitous Access

As to getting everyone on the network, the challenge is complex, involving not just price, but the interactions of price, relevancy, and social virology. To realize our preferred vision for broadband we must focus on increasing the value of broadband by creating incentives to use the broadband. And let us be clear that what we are referring to is not the puerile promotion of Facebook and other broadband consumables… one of the providers is not presenting its

access to Facebook and social media as a major contribution to widespread use of broadband. We are referring to the use of broadband for learning, for small (e)business, broadband for e-government, broadband for creating new tools and services to improve our economic and social lives, our communities and our national competitiveness.

Local Content

As to catalyzing the generation of local content and using broadband to support delivery of public goods more effectively, the key lies in the public service:

First, government activities that by their nature must serve all must be transitioned from analog, paper-based platforms, to a digital platform, without leaving people behind; and second, rethinking how government actually delivers services.

The current reliance on paper-based systems is anachronistic. The inefficiency infects administrative procedures in both the public and private spheres. It also places unnecessary constraints on the effective delivery of services to the public and has a negative impact on the quality of life of citizens and residents.

Government has to take the lead in moving away from the age of paper and fundamentally rethink how it delivers services to citizens and businesses alike.

Connecting Broadband to Development

Broadband is expanding rapidly in Latin America and the Caribbean, but the region still lags behind the world's most advanced nations in terms of coverage, access and adoption of information and communication technology services delivered through fast networks.

Reports from international development agencies such as the IADB, UNDP and ITU reveal that progress in providing faster broadband access varies significantly across the sub-region, despite the economic opportunities and social benefits being well acknowledged.

There are great differences in the level of broadband planning and implementation, with member states facing challenges in achieving greater coverage and uptake.

Among those with a national plan for broadband development, implementation is uneven. Some countries do not even have a national broadband plan.

Although CARICOM has developed a Digital Strategy master-plan, and more recently has been promoting the notion of a Single ICT Space, neither initiative has sufficient detail or momentum to guarantee coherent implementation.

One reason for this dilemma is that integration across the critical areas of infrastructure development, consumer pricing, and affordable access to devices remains largely a national issue. For instance, there are no official broadband speed or penetration targets in any of the territories.

With most countries recording cellphone penetration rates in excess of 100 percent, mobile-broadband has been touted as the future of ubiquitous broadband access. Mobile broadband, however, is no panacea. Conversion of spectrum allocation, a necessary technical prerequisite to achieve faster mobile speeds, has been slow across much of the region. This highlights the continued importance of fixed broadband networks to supplement mobile networks.

To keep pace with global trends, and to establish our own unique standards for broadband delivery, regulators have to take a more holistic perspective and work with industry to resolve such issues and promote strong infrastructure environments.

As the information society grows in importance, digital inclusiveness becomes more urgent. Yet reaching rural and vulnerable populations remains difficult. Cyber security has also emerged as an issue which can affect uptake.

Despite the financial and practical challenges of broadband implementation, it remains the easier part of the supply and demand equation. More difficult are the challenges of improving affordability and raising awareness of the benefits of broadband adoption. These issues must be tacked at the national level if we are to achieve regional benefit.

Although prices have been falling in recent years, cost remains a major hurdle. Broadband users in the Caribbean pay far more for slower service than consumers in OECD countries, where households have more disposable income. In some cases, high trade tariffs make imported access devices such as computers, smartphones and wireless devices more expensive for businesses and individuals, further limiting the expansion of broadband usage.

The consequence of these market realities is a stunting of creative capacity and dampening of innovation potential. This creates unhealthy turbulence for all wishing to chart a course to a digitally enabled future.

Taming the Turbulence

The great business sage Peter Drucker described this challenge when he wrote: “the danger in times of turbulence is not the turbulence. It is to react with yesterday’s logic.”

The biggest challenge in delivering public goods over broadband is that time and time again, governments react to the opportunity with yesterday’s logic.

I understand that member countries each start in a different place. They have different levels of computer literacy, different market, and different political priorities. Each country starts with different competitive advantages and disadvantages in terms of how it can utilize broadband to create economic and social progress. Our challenge in the Caribbean is not to allow the narcissism of small difference prevent us from shaping a strategic framework of common purpose.

While most analysis would reasonably focus on those differences, I suggest another difference is most critical—that is the difference in leadership approaches.

A plan, like all public policy efforts, boils down to three elements: aspiration, the strategy to achieve that aspiration, and the tactics, which your plan refers to as “action areas” to execute on that strategy.

Aspiration is easy, execution is hard.

The countries that have done well, like Korea and Sweden, have demonstrated a long-term commitment to building a broadband based economy. They are constantly studying, reconsidering, course correcting and moving towards that goal.
Today, there is relatively limited competition

between the wireless and wired broadband offerings. Where the industry is going is that both fixed and mobile are improving in ways that will put them in greater competition. Wireless, in its 4G and subsequent modes, will provide speeds equivalent to, or better than, speeds provided to most wireline customers today. At the same time wired will increase its speeds beyond which wireless is ever able to achieve.

From a policy perspective, government should not be the arbitrator of who wins. Rather government should enable both models, and others, such as satellite, to offer markets the best opportunity to succeed. There are many reasons the government should not choose. But the biggest reason is that the country will benefit from the battle. The more that private sector forces invest in improving their networks, the better, in the long run, the connectivity for all users.

To achieve our broader development goals, it cannot be business as usual. In other words, to simply continue to advance at the pace that is determined by commercially viable demand, is not good enough. If we as a region want to accelerate the pace at which we pursue our development goals, it is clear that we will need to do a lot more. Moving beyond current broadband penetration levels, to more affordable services and ubiquitous connectivity will take smarter collaboration between the private and public sector. Amongst the many elements of smart collaboration, we will need:

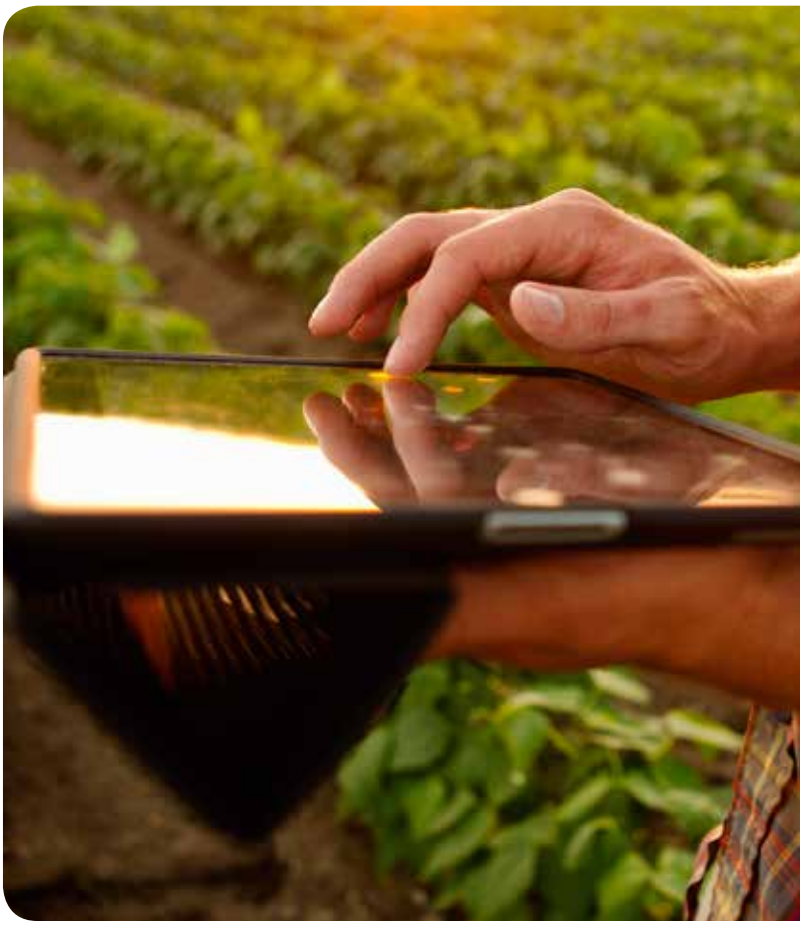
- A rethink of the speeds and penetration targets.
- Clearly defined objectives and timelines.
- Clearly defined scope of these undertakings.
- Clearly defined roles and responsibilities.
- Clear Policy guidelines.
- Well-resourced regulatory structures.
- More facilitating laws and regulations.
- More relevant investment approaches to telecoms infrastructure.
- Targeted research to wisely direct the flow of capital to initiatives that truly address the challenges of employment creation and accelerated development.
- Further to all the above we need clear, purposeful and distinctively strong leadership.

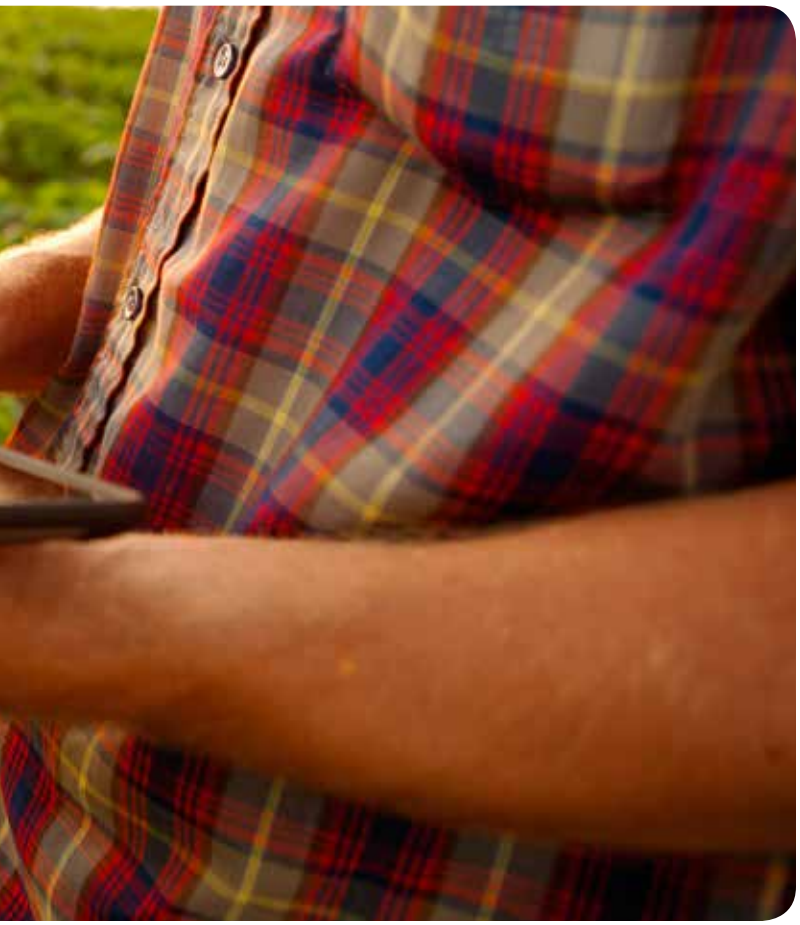
Opportunity to Lead

As we focus on what the OECS can do to assure that it has the broadband infrastructure it needs to continue to enjoy economic and social progress, I offer some thoughts on how OECS can play a role in leading on the broadband stage.

The region has two distinct broadband challenges.

One is in those areas and demographics that are not connected; where the cost of both traditional wired and wireless architectures and provider practices make broadband services unaffordable. The second is the absence of public policy that fosters accelerated broadband services and related consumer sensitization.





In my view, the OECS can play a role in both.

As to the first, there are a number of private efforts, from Google's Project Loon to Branson's OneWeb satellite constellation project, to many others. It is a great thing that so many recognize this need. But we must understand the importance of addressing the fundamental infrastructure gaps closer to home.

The Caribbean Telecommunications Union has been on a campaign to raise awareness of the importance of Internet Exchange Points to the region as a foundation block for the Caribbean Internet Economy. They have also highlighted the urgency of strengthening the region's critical internet infrastructure, updating outmoded regulatory policy and reducing the barriers to the creation of new businesses.

On the issue of local content, what if the OECS were to be the hub of a larger community of educational, research, innovation and cultural exchange supporting institutions that interact continually in ways that we today only see in science fiction?

This isn't so far-fetched. For example, in the United States the Smithsonian Institute, a federal government collection of museums and research institutions, enables college students from around the country to essentially visit and explore the museum collection—including high definition three dimensional renderings of objects in the collection—from their home colleges. The deal also enables such things as live performances of musicians in multiple locations as if they were on the same virtual stage. All this, powered by robust broadband service. To bring the possibilities closer to home - I have argued the case to the Caribbean Heads of Government of the necessity of a complete redesign of the University of the West Indies that would involve the creation of a University System of the West Indies in which the national college in every non-campus territory leverages the power of ICT and the distance capabilities of the Open Campus. Imagine the possibilities: every degree program offered everywhere across the Caribbean; lectures by the best available to all the rest-simulcast and by podcast; a networked community of tertiary learners working together as if geography does not matter.

Eliminating the Tyranny of Distance

There are infinite ways that we can collaborate when we remove the tyranny of distance. The OECS is looking to expand on its vision for social integration, education, and common markets to take advantage of a high bandwidth world.

The challenge for OECS is to accelerate that future when all students, entrepreneurs, innovators and service providers can have the precise aid they need to move forward; when all job seekers can have access to the precise training and information they need to find a job; when all governments can have actionable intelligence to improve the quality of the services they provide and create the environment for economic growth and social progress.

This is a future based on broadband and stewarded by visionary leadership.

Professor Hopeton Dunn
Chairman of the Jamaica Broadcasting Commission

Telecommunications
all about the people of the region

Chairman of the Jamaica Broadcasting Commission Professor Hopeton Dunn has proffered that the telecommunications, broadcasting and related sector is primarily about the people of the region and not about the regulators, providers or government.

Professor Dunn who is also Director of the Caribbean Institute for Media and Communication (CARIMAC) at the Mona Campus of the University of the West Indies says that while regulators, governments and providers play a very important role (enabling roles, empowering roles), they do so for and on behalf of the people of the Caribbean.

Dunn's comments were made at an Open Forum in Bassetterre, St. Kitts as part of activities marking the 15th anniversary of the Eastern Caribbean Telecommunications Authority-ECTEL, at which he was the keynote speaker.

Commenting on ECTEL's 15th anniversary celebrations, Dunn noted that: "The model that ECTEL represents is the kind of thing that we should be talking about in the whole Caribbean, that is, the regulators must be in closer correspondence with each other in terms of addressing the pan regional issues that are arising from multi-national corporations in the region."

Dunn noted that this kind of thing (the ECTEL model) is something he wants to recommend to the joint body of Ministers in the region, not just in ECTEL, but also in the wider Caribbean region.

Universal Access

Professor Dunn whose Jamaica Broadcasting Commission, previously known as the Broadcasting Authority, has been in existence for some twenty-five years, says that if people are to benefit from the technologies and services, they must have connectivity and access of a particular kind.

"We have dealt with this over several years, this notion of universal service and universal access, a distinction which I have offered in relation to the one being when everyone can access the service somewhere at some public place-that's universal access," Dunn noted.

He further explained that universal service has to do with when every individual or household is able to gain access to the services, using whatever devices that they are able to.

Pointing to what he described as the global picture "within which we operate," Professor Dunn observed that urban telephony and broadband issues continue to get a lot of attention, but opined that issues of digital divide remain with us. In his view, rural communities are not as well provided for, as are some sections of urban communities.

"We are seeing the reasons why large telecoms companies are behaving in the way they are because by and large voice telephony has been maxed out (for the most part).

Voice telephony is not seen by many of these business operators as where the revenue sources exist anymore as they did when ECTEL was first established, they are looking to migrate into content," Professor Dunn added.

He further added that the trend for telecoms entering media is driving the process, whereby larger entities coming together to form mergers. He underscored the need for these processes to be managed in an orderly fashion to protect the interest of the people.

"We have to make sure that competition remains part of what we are talking about, we do not want once again to return to this old notion of monopoly in our Caribbean region, Professor Dunn cautioned.

Digital Debris

Professor Dunn spoke to what he described as the "over arching dominance of mobile cellular," and some of the resulting issues including that of 'digital debris.'

"How do we dispose of all the mobile phones we are using, the computers being accumulated and the many other appurtenances to the technology we are using, what are our policies as a region in respect of the disposal of digital debris, is it something that needs to come on our agenda in a much more serious way?" he questioned.

Citing the case of Norway, he noted that the policy there is that telecommunications providers, who are primary financial beneficiaries of these phones, have the primary responsibility for disposal after use. The

Editor's Note: We can confirm that in ECTEL Member States, provider LIME does in fact take care of its digital debris as part of its corporate responsibility by engaging in reverse logistics. In other words the Company ships disused and obsolete gadgets to a company in the United Kingdom which recycles and or disposes of them.

Jamaica Broadcasting Commission Chairman noted that other countries have adopted this policy, but it is still not one that has been universally established as yet.

He noted that disposal routes have been established into the global south where close to three hundred million phones are disposed of every eight months, adding that there are countries that have been persuaded to accept these discarded phones, with Ghana being one the largest digital dumps.

"We don't want that in the Caribbean, our countries are too beautiful to be scarred and marred by these kinds of disposal," Professor Dunn asserted.

"We have to at least first determine how we are planning to dispose of our own debris and manage that situation in a more effective way."

Open Access

Professor Dunn highlighted the "growing tension between open access and proprietary content, copyright and all the restrictions inherent in that and 'copy left' and the openings and opportunities hitherto."

He noted that as a region/sub-region, we have come a long way since the inception of ECTEL but we need to confront the issues that other global regulators are confronting- from landlines, to mobile, to broadband.

"We must now face the reality that the world is changing, we are seeing convergence, we are seeing a whole range of ways in which technologies are being used and the regulators and governments have to adapt and adjust.

"Content is emerging as a central asset and nothing more so than video graphic content in many different durations," Professor Dunn warned.

Observing that at one time a film was considered something of half an hour's duration, this has changed considerably and a film is as short as thirty seconds.

"Therefore our countries are going to need to mobilise what we can to generate as much content as we can and trade it internationally. We must not just be downloaders, we must upload too, Professor Dunn stressed.

"If we inculcate among our youngsters this culture of downloading, then we lose the race already), we have to make sure that our presence is there, our voice is there and we are able to generate recognition and respect; in other words, we must tell our own story."

Professor Dunn urged that attention be paid to mergers, monopolies and acquisitions, noting that the laws are not up to date in this regard.

He encouraged regulators to constantly renew themselves, reminding ECTEL that after fifteen years it should be looking at the next horizon in regulation and the new ways in which it should be going. In the process he has called for inter regulator collaboration, expressing the desire to work closer with ECTEL and other regulators in the region, in order to arrive at common decisions.

"ICTs, telecoms systems and regulators are not ends in themselves, they are means towards the development of the peoples of the Caribbean. With this approach we can robustly look forward to the next fifteen years of ECTEL and even many more decades of sensible and practical regulation in the region," said Professor Dunn.

The Digital Economy

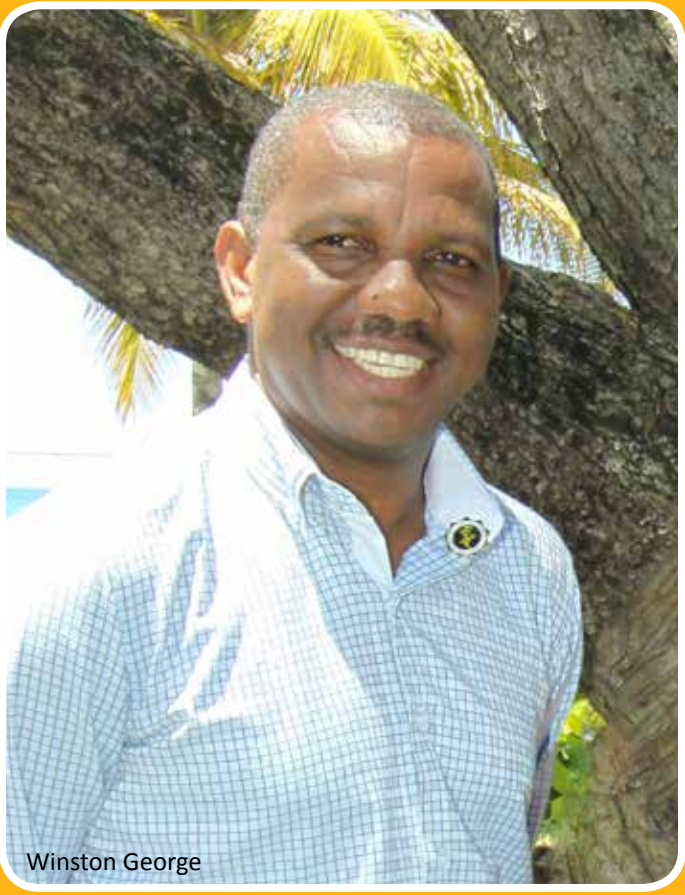
Mainstreaming ICTs in Economic Development Planning

by Winston George
CARCIP Project Officer

Modern Information Communication Technologies (ICTs) allow for the reduction in space and time and help us to complete tasks that would have otherwise taken a much longer time so to do. There are numerous examples that we can look at in this regard. The use of email versus the traditional mail is a prime example. The advance in ICTs has also given us greater capacity for data processing, communication and sharing of information and knowledge and allowed us to make faster and better decisions. These developments have also led to new and enhanced social networks and relationships, increased growth through trade in services, increased financial inflows from traditional and new markets as well as new and cheaper goods and services. Given these realities, how have Governments in the sub-region used or could use these technologies to aid in the process of socio-economic development?

Essentially, Government's role is seen in the main as Economic & Development Planning – the articulation of an economic framework and the economic fundamentals for stability, attracting investment, the maintenance of law and order and the delivery of services to the citizenry and the business community. Critical components, which must always be addressed in the planning and budgetary process, include, but are not limited to Finance (Customs and Tax services), National Security, Identity Management, Education, Health and the productive sectors such as Agriculture, Tourism and Industry.

Governments the world over have applied ICTs to enhance the delivery of public services to their citizens and businesses. This has been popularly called eGovernment and in some cases given the explosion of mobile technology - mGovernment. In the case of business, they have sought to use the technologies to meet their objectives of lowering costs and increasing their profit margins. To the ordinary citizen, the question for them and by extension the Government is, how does ICTs enhance my quality of life? How do these technologies assist with lifting various members of the population out of poverty? In essence, how does it allow them to earn enough financial resources to meet their needs for food, clothing, shelter, health, education and security?


Winston George

In developed countries, the advent and advance of ICTs has transformed many of these economies from the traditional type of economy to what is called today, "the digital economy." Simply, ICTs and the Internet pervade every facet of development in these countries. The OECD notes, "The digital economy now permeates countless aspects of the world economy impacting sectors as varied as banking, retail, energy, transportation, education, publishing, media or health. ICTs are transforming the way social interactions and personal relationships are conducted, with fixed mobile and broadcast networks converging, and devices and objects increasingly connected to form the internet of things." Is there a digital economy in the sub-region? I believe there is a digital economy and Governments in the region have been thinking about and have done things to advance it. The liberalization and regulation of the telecommunications sector, the investment in and extension of broadband networks and provision of cheaper internet access to citizens, the provision of 24/7 services such as e-taxation and the application of modern information systems for the management of finance, health, education, national security and identity management, more citizens connected to the internet and to social networks, and the provision of devices by Governments to their school population are examples of this thinking. In the context of these examples, while the political directorates have realized the potential and have sought the resources to meet the objective of increased and better services between Government agencies, businesses and citizens, in my view, the pace of development has been slow and needs to be far more robust.

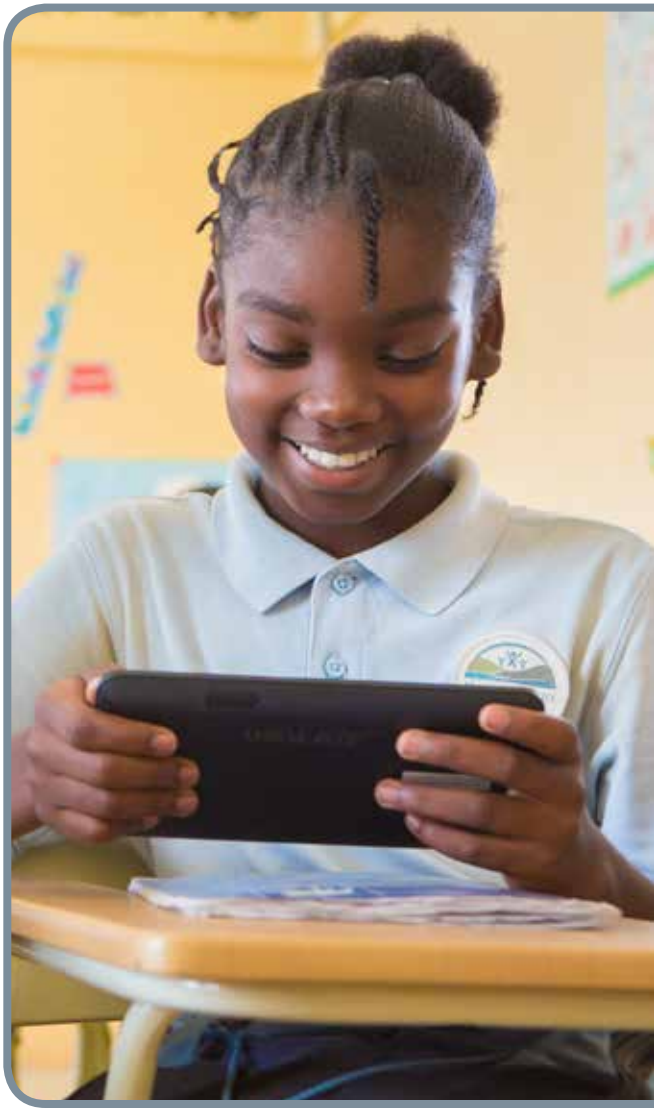
What is the problem? Why has this development been constrained? The problem may lie in the cost of delivering eGovernment services and the people/stakeholders at varying levels responsible for doing so. The problem is not the technology, given the characteristics outlined earlier. The problems are slow policy response, techno-centric solutions without looking at the solution holistically for example, conducting proper cost-benefit and benefit realization analyses, usability etc; failure of previously recommended ICT initiatives and the accompanying loss of resources, and lack of trust among government personnel.

The pace has been constrained by the characteristics, culture and primarily the bureaucracy of the traditional public service. While the public service in terms of an organization has served the countries of the sub-region well, its very nature, being a behemoth of several human beings with different interests, experiences and egos has slowed progress when we should have been much further along the way.

The following challenges shared by countries in realizing the full potential of the digital economy are some symptoms of this behemoth and its traditional structure of governance – leadership and management:

1. There is a lack of a coherent Information and Communication Management policy that should clearly outline standards for the management and sharing of Government's data and information.
2. There is a slow approach to the implementation of E-Government initiatives. There seems to be a disconnect between the implementation of ICT initiatives and the broader public sector reform agenda.
3. There is no system for effectively maintaining existing ICT initiatives (hardware systems or software applications). This requires capacity building for local technicians, thus reducing the dependency on expensive maintenance contracts, avoiding the associated delays and down time especially with mission critical information and financial systems.
4. There is need to streamline ICT or E-Government initiatives to address the most important needs, deliver essential government services especially those that address greater efficiency, cost effectiveness and revenue collection, and eliminate wastage of scarce resources.
5. Delay in the development of many essential or beneficial ICT initiatives that are requested by departments due primarily to limited access to funding, the specific nature of the funding, the bureaucracy of donor agencies, and the limited availability of expertise to create these applications.
6. National ICT literacy needs to be enhanced, while the professional and technical competence of public servants needs to be enhanced to use, maintain and upgrade the various e-government applications.

The issues and challenges outlined are but a few that point to the lack of an appropriate institutional framework for mainstreaming ICTs in the socio-economic development planning



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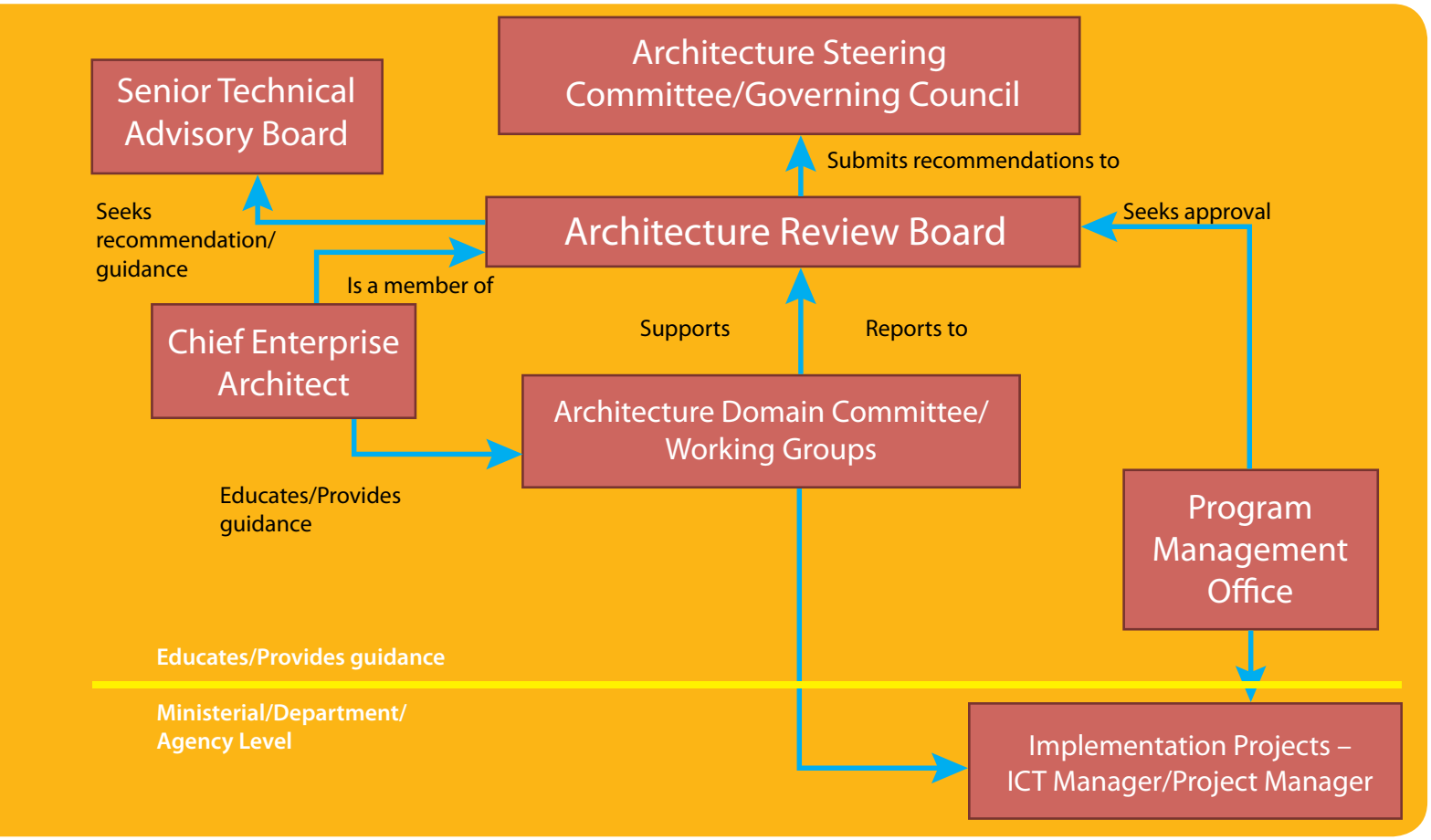
process. Also given the nature of ICTs, the development planning process in this context needs to adopt a more agile approach, where emphasis is placed on empowering teams of people to collaborate and make decisions on initiatives with continuous monitoring, planning and integration to achieve the development initiative within the timeframe set.

Having worked on the World Bank sponsored OECS Electronic Government for Regional Integration Project (EGRIP) sub-component General Enterprise Architecture Standards, PricewaterhouseCoopers India recommended an appropriate institutional framework/governance model for e-government development. In spite of various Ministries and institutions of Government, there is one Government and the very nature of ICTs can deliver a seamless and integrated Government platform for both policy and services. I am therefore of the view that this framework can be applied to mainstreaming ICT in the planning and development of the digital economy in the countries of the sub-region.

The framework provides an Architecture Review Board, Domain Working Groups, Technical Advisory Board and a Chief Enterprise Architect as the critical elements in the planning, implementation and monitoring process. The Ministerial Sub-Committee/Governing Council is critical to political leadership of the process. This committee must meet on a quarterly basis to consider progress on all initiatives based on the policy prescriptions contained in the development plan as it relates to the digital economy.



Architecture Steering Committee – Ministerial Sub-Committee (Ministers of Information Technology, Finance, Planning, National Security, Public Service)

Senior Technical Advisory Board – Development Partners – NTRC, ECTEL, CTU, World Bank etc.; Private Sector Agencies and Businesses

Architecture Review Board – Chief ICT Officer, Director Public Sector Reform, Director of Planning or Nominee, Budget Director, PS/Information Technology, seek input from various PS's with ICT projects, Managers of ICT Units, Policy Analyst.

Chief Enterprise Architect – Chief ICT Officer

Architecture Domain Committee/Technical Working Groups – Managers of ICT Units, Programmers, Network Administrators, Database Administrators, Business Analysts, Security Analysts (Cybercrime) and Engineer

Program Management Office – Customs, Inland Revenue, Treasury, ICT, Education, Health, Registry and Electoral etc.;

In the final analysis, this framework should be more sustainable and should have the ability to transcend political changes at the Ministerial or Government level and ensure that the development of the digital economy and its intended benefits are realized.

Innovation, Diversification and the Digital Economy

Keys to Sustainable and Inclusive Growth

by Bevil Wooding

The Internet and information and communications technologies that support it, have hugely impacted our modern society. Even if we discount the hyperbole that attends most discussions on ICT, there is no doubting its transformative influence on lives, institutions, economies and society at large.

Not only are purely digital businesses becoming increasingly important to the economy, digital tools and processes are radically transforming traditional manufacturing and services industries. Online and offline industries are converging. In fact for some nations, the Digital Economy has already become THE Economy.

Already, across the Caribbean a new generation of entrepreneurs and innovators are joining industry players in a quest to diversify the region's economies away from the traditional areas of tourism, agriculture and extractive industries. However, there remains much to be done.

Problems as Opportunities

The underlying factors that currently hinder development revolve around regulation, education, policy frameworks, research, investment and, ultimately, leadership. Still these challenges can be reframed as opportunities. The obstacles innovators and entrepreneurs face in bringing ideas to life and in building globally competitive businesses, can actually inspire innovation in both process and policy. What is required is a combination of strategic and practical mechanisms. This combination is the cornerstone of innovation in the modern "digital" economy.

The good news is that the Organisation of Eastern Caribbean States, OECS, is uniquely positioned to lead the region in building an indigenously energized digital economy. Advances in the region, including regulatory harmonisation, economic integration and easy movement of human capital, provide the ideal platform for development of the region's knowledge economy. With the right leadership and implementation, the OECS can provide a practical model to engage key stakeholders and trigger a new era of innovation, economic diversification and sustainable development for its member states as well as for the wider Caribbean.

The key to success lies in integrated, collaborative, development – public policy facilitating private enterprise, academic engagement and civil society participation.

Integrated Development Key

There are many lessons that can be drawn from the experience and success of Silicon Valley in the United States. Silicon Valley is often touted as the gold standard for the digital economy, but it didn't happen overnight. Silicon Valley began its innovation efforts in the 1960s when prescient civic leaders zoned land near the city's

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major research institutions to favor young innovative companies. To complement this, the strategy of the city's major institutions was to hire top researchers to develop a network of talented scientists in the region. Further, universities in the area created curricula to develop the skills needed by emerging technology companies. Then, to overcome a relative paucity of investment capital, the city's citizens themselves raised small amounts of seed money to attract the first new firms. The rest, as they say, is history.

The Silicon Valley story, as well as the experience of countries in both the developing and developed world, provide adequate encouragement and hope for the Caribbean that our tremendous potential can be translated into sustainable success. The following are 8 keys to unlocking sustainable and inclusive, technology-enabled development.

1. Securing Venture Capital

Moving ideas from the concept to marketplace-readiness requires more efficient flows of capital, particularly to emerging businesses. These flows were particularly inadequate, locally or regionally. We simply cannot afford to have our creative minds and entrepreneurial talent leave because there are insufficient resources and financial opportunities to develop their businesses locally.

2. Incentivizing Risk Taking

Local financial institutions are notorious for their reluctance to take risks, particularly for service-based or knowledge based businesses. This reluctance inhibits development of a culture of entrepreneurship. The aversion to risk is often rooted in and reinforced by outmoded institutional practices and ill informed policymakers. The acceptance of risk is an essential component in a modern entrepreneurial culture. It takes bold leadership to move beyond the old ways of doing things, regardless of how well they fit the status quo. A change in thinking can be engineered through policy and example.

3. Attracting Star Talent

For generations, the developing world has provided the human feedstock for innovation in the developed world. In fact most developed countries have dedicated programs to attract and secure the best and brightest talent from emerging markets, including accelerated residency and citizenship; business facilitation; research grants and academic scholarship. There is no trademark on these types of incentives. Developing markets can be just as aggressive and inventive in developing programs to attract and retain local and even regional talent.

4. Encouraging Civic Involvement

Structured, inter-sectoral civic collaboration offers a proven mechanism for harnessing the wealth of knowledge and innovation potential, resident in universities, research institutes and civil society groups, to the enabling potential resident in the public and private sectors. The Silicon Valley innovation ecosystem is a much-referenced example of such coordinated collaboration and civic involvement. But it is not the only model. Strategies for encouraging civic involvement should be tailored to local and cultural uniqueness whilst still drawing upon international patterns.

5. Facilitating Technology Transfer

Accelerating the transfer of technology from concept to market does not happen by chance. In the real world ideas don't automatically follow the theoretical path from concept to viable product. Instead, they find best traction when they address the real challenges or solve real problems for a specific audience. The challenge we face is how best to connect innovative entrepreneurs to research institutions, financiers and other key partners.

Innovations, innovators and their inventions all need champions to aid in discovery, refinement and adoption. Such champions can be drawn, for example, from domain experts, enthused users or informed media practitioners. No one really knows what the best technologies will prove to be, but whatever we can teach others, and export knowledge instead of just diminishing natural resources.

6. Building on Natural Assets

The blessing of natural assets and a well-educated population set the foundation for development of the digital economy. Research and innovation built around enhanced development of these natural assets lower development costs and increase the relevance and sustainability of knowledge-based developments.

For example, the advantages of developing Trinidad and Tobago's natural energy resources reach far beyond energy savings and pollution reduction. By developing new technologies in country rather than importing them from elsewhere, citizens could benefit locally by generating higher-paying jobs, creating new career paths for graduates, safeguarding energy security, and creating indigenous opportunities to export innovative technology, while diversifying traditional income streams. Moreover, the positive spillover from this is increased development of entrepreneurially minded business leaders and more relevantly skilled people.

7. Growing Regional Innovation Clusters

Innovation clusters can be considered as synergistic concentrations of firms, industries and institutions that do business with each other and share common needs for talent, technology, and infrastructure. A well-organised innovation cluster can raise the effectiveness of local and regional assets, including companies, educational bodies, and civic groups.

Public-private partnerships among companies, academia, suppliers and customers, local, and national governments, civil society, venture capital firms, and financial institutions can help create a climate in which businesses, employment and competitiveness can grow and prosper. Innovation clusters are an important mechanism for advancing economic diversification.

8. Partnering with Government

Government has a crucial role to play in providing the enabling environment for economic diversification. In the digital economy, the role of the government pivots from large investment of resources to provision of integrated approaches and policies to encourage innovation and business development. By providing "first money" on the basis of a transparent, competitive selection process, governments can help small, innovative firms to secure critical access to early-stage capital. They can also help consumers and businesses by providing the relevant legislative support necessary for the digital economy.

Moving Forward

The conditions are right for decisive movement toward growing the local and regional innovation economy. At several recent fora across the region, the business community, academia and civil society have expressed a willingness to collaborate in overcoming the challenges facing the region. Government also has given positive indication of a new openness to draw on the advice of local experts, and to listen to the concerns of local communities.

We have the human capacity and the natural resources to take our place in the emerging technology-enabled, global economy. The question before us is whether we have collective faith and corporate will to translate our tremendous promise into purpose-filled reality.

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The Internet of Things (IoT)

by Alvin Augustin

The Internet is a dynamic, global information infrastructure of interconnected networks. The Internet offers access to content and information through connections to web pages from numerous devices such as computers, 'smart' phones, tablets and 'smart' appliances. The Internet is evolving and becoming more pervasive, through the integration of various technologies, including low-cost sensors, scalable cloud computing and ubiquitous wireless networks. The evolution of the Internet will make it possible to access information related to the physical environment by means of connected 'smart' devices. Some of these 'smart' devices use wireless networks to connect devices to each other via machine-to-machine communication (M2M) over the Internet with minimal direct human intervention. There are many examples of this evolution of connected 'smart' devices:

- 'Smart' appliances such as air conditioning units which can be controlled through applications on a 'smart' phone. 'Smart' air conditioning units are also able to sense the presence of persons in a room and can turn on or off as well as regulate the room temperature.
- 'Smart' automobiles which are able to drive and park themselves with minimal human input;
- 'Apps' on 'smart' phones that are connected to 'smart' devices in the home and control lights, security alarms, so that the owner can remotely turn on or off these devices.
- Wearable devices ('smart' watches, etc.) that measure and convey the latest status of healthcare information of remotely cared for patients to a central location;
- 'Smart' meters and 'intelligent' grids have the ability to monitor and report on electricity consumption.

The above are examples of what is known as the Internet of Things (IoT). The IoT is one of the most disruptive technologies to come along and has the potential to transform our society. Imagine living in a 'smart' home where 'smart' appliances can themselves turn on/off or issue a warning before they malfunction; or perhaps wearing a 'smart' watch that provides you information on your body's vital signs or your calorie intake; or imagine the shelves in a local grocery store reporting that stock is running low and alerting persons in the supply chain that they need restocking. You may think it's all from a science fiction novel, however the examples given are part of today's world, a world of IoT.

The idea that devices will be capable of sensing and communicating the details of a person's life may be unsettling to some people, while others may embrace the idea. IoT has potential benefits and drawbacks to consumers, businesses, governments. One potential benefit is the economic benefit i.e. it is estimated that by 2025, IoT applications could generate up to $11.1 trillion per year . However, it is likely that all these 'smart' IoT devices may be susceptible to malware, hacking attacks and identity theft, which raises security and privacy concerns. The discussions on the role of IoT in society have begun, as policy makers/regulators are examining strategies to deal with the technology. In addition some International agencies and governments have initiated programmes to prepare for the IoT.

- The International Telecommunications Union (ITU) through its ITU-T Study Group has established a study group to address the standardization requirements of Internet of Things (IoT) technologies, with an initial focus on IoT applications in smart cities.
- The European Commission has established numerous initiatives; key among them is the Alliance for the Internet of Things (AIOTI) to examine the development and deployment of the IoT technology in its Member States.
- The United States of America through its Senate has passed a resolution to develop a strategy for IoT to promote economic growth and consumer empowerment. Additionally, Federal Trade Commission has established the Office of Technology Research and Investigation (OTRI) to 'build upon their [MTU] great work by tackling an even broader array of investigative research on technology

issues involving all facets of the FTC's consumer protection mission, including privacy, data security, connected cars, smart homes, algorithmic transparency, emerging payment methods, big data, and the Internet of Things'.

- China- Chinese Premier Wen Jiabao identified the IoT as an "emerging strategic industry"—and China created a 5-billion-yuan ($807 million) fund to support the IoT industry.
- Like our counterparts around the world, the time has come for Caribbean governments and policy makers to awaken the consciousness of its people and map out multi-faceted strategies to deal with IoT.

The Internet of Things-What is it?

The Internet of Things (IoT) is an emerging concept based on network connectivity of 'smart' devices that are able to sense physical parameters of the real world like temperature, weight, distance, light, presence or absence of persons etc. Such devices are able to communicate these parameters to other devices, applications or persons. The term was first coined by British technology pioneer, Kevin Ashton in 1999 to describe network connecting objects in the physical world to the Internet. Estimates are that there are 4.9 billion connected devices on the IoT in 2015 and a conservative forecast is that by 2020 the number of IoT devices will reach 25 billion.

As stated previously, like all technology the IoT has benefits and challenges. Thus, to develop policy approaches to this emerging technology, one must understand both. Following is a summary of the benefits and challenges of IoT.

Benefits

The IoT will offer numerous, and potentially revolutionary benefits to consumers and organizations including: cost saving, improved productivity and efficient processes. Consumers and organisations can benefit from improved asset utilization and service improvements.

Consumers

Some of the important benefits that IoT will offer consumers will include greater consumer convenience, cost savings and time savings. For example 'smart' devices located along the roadways will communicate wireless to 'smart' cars providing the drivers with traffic conditions, alerting of dangerous road conditions and re-routing the driver to avoid peril and delays.

At home, IoT devices will provide consumers with information related to their usage, for example 'smart meters' allowing them to look at their consumption and allowing them to change their consumption patterns.

Organisations / Business

IoT can help organisations/businesses utilise their infrastructure and assets in innovative ways to offer new services and generate additional revenue. IoT technology is being used in the utility sector, in order to identify and fix problems associated with infrastructure inefficiencies such as wastage and theft. Connecting a wider range of household, office and industrial equipment to the IoT could enable their use of energy to be monitored and potentially changed, for example to switch to a

power-saving mode. Moreover, deriving meaningful information from large volumes of data that IoT devices capture facilitates evidence-based decision-making and may minimize risks.

Cost saving: IoT offers cost savings from improved asset utilisation and service improvements.

Improved Asset Utilisation: Organisations by using smart devices and wireless connectivity will be able to keep track of assets (equipment, plants, etc.) and, based on the data analytics will be able to better deploy assets to areas where the need is greater.

Efficient Processes: IoT devices provide organizations with real time information related to workforce production, resource consumption, energy use, etc., allowing the organization to optimize its processes and minimize delays.

Challenges

Interoperability

One of the biggest challenges of IoT industry is compatibility or interoperability among the different devices. To date, there is no universally accepted standard or protocol for IoT. The industry giants like Apple, Samsung and Google have developed their own proprietary protocols/standards. In most cases, these standards or protocols are not compatible. There have been calls for some standardization of protocols/standards of IoT devices and for the adaptation of 'open' standards.

Privacy and Confidentiality

Despite the potential benefits, there is general agreement among industry experts that increased connectivity between IoT devices and the Internet may create a number of security and privacy risks.

The types, amount and specificity of data gathered by billions of IoT devices create concerns among individuals in terms of their privacy. As it relates to organizations, the confidentiality and integrity of their data is also an area of concern. In addition, IoT devices may present a variety of security risks that may be exploited such as:

- enabling unauthorised access and misuse of personal information;
- facilitating attacks on other systems; and creating safety risks.

Producers and providers of IoT enabled products and services will have to create compelling value propositions for data to be collected and used, as well as ensuring that the data collected and the IoT systems are appropriately protected.

Security

Producers and providers of IoT enabled devices and services will need to protect the infrastructure and data not only from unauthorized access, but also they will need to deal with new categories of risks that the IoT can introduce. Extending connectivity and embedding sensors to new devices creates many more opportunities for potential breaches. Additionally, when IoT technology is used to monitor and control physical assets, such as traffic lights or 'smart' electricity grids, the consequences associated with a breach in security extends beyond the unauthorised release of information, which could potentially result in physical harm.

Role of Policy Makers and Regulators

IoT is a disruptive technology and it has its own set of challenges for policy makers and regulators. However, several barriers have the potential to slow the development of IoT. These barriers include:

Licensing and Spectrum Management

Many of the 'smart' devices will connect wirelessly to the Internet via local area networks, wide area networks or mobile networks. It is therefore essential that there is adequate and sufficient spectrum resources allocated for these applications.

Moreover, any spectrum allocation made should not infringe or interfere with other authorized spectrum users. Thus, the necessary technical parameters will also have to be developed for the operations of these 'smart' devices.

Additionally, regulators will need to have an idea of how much additional spectrum may be required to support the IoT infrastructure, as well as which frequency bands may be appropriate. Consideration will have to be given to the manner in which the IoT infrastructure accesses the spectrum resource and whether a licence is required or an exemption can be given.

Addressing and Numbering

IPv4 addresses were exhausted in 2010. While no real impact has been seen by the general public, the situation has the potential to slow down the development of IoT technology since potentially billions of new devices and sensors will require unique IP addresses. Regulators and policy makers will have to ensure that the necessary frameworks are in place to ensure that networks are IPv6 capable to accommodate the large volume of IoT devices that will be coming online.

Regulatory Oversight

Due to the vast complexities that IoT presents, policy makers/regulators should ensure that they have sufficient capacity and resources to understand the technology and the challenges it poses.

Policy makers and regulators should provide institutional mechanisms for the review of laws and regulations to deal with IoT technology and competitiveness in an effort to avoid anticompetitive behavior and ensure consumer protection and empowerment.

Security and Privacy

Policy makers/regulators ought to ensure that security and privacy are embedded in IoT system design. Additionally, policy makers/regulators should promote the development of privacy and consumer protection rules to safeguard IoT systems that process sensitive data. It may seem simplistic but one way to ensure that privacy and security is maintained is to mandate that IoT devices have an on/off switch.

Conclusion

Generally, the consensus is that industry is best placed to drive the development, standardization and implementation of the IoT technology. However, we must not forget the role of policy makers and regulators in this process. Therefore, given the significant benefits and risks that IoT technology pose to society, policy makers and regulators will need to adopt a proactive approach in ensuring the necessary frameworks are in place to foster the sustainable development of the IoT industry and safeguard the interests of consumers.

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Celebrating 15

Participants attending ECTEL's 15th Anniversary Conference, Bay Gardens Saint Lucia
The Conference kicked off ECTEL's year long 15th Anniversary Conference in May

Dame Pearlette Louisy welcomes guests to the 15th Anniversary cocktail at the Government House

Ministers confer at public forum in St. Kitts
(L-R) Hon. Gregory Bowen, Hon. Melford Nicholas, Hon. Vincent Byron Jr.

Coffee break at Anniversary Conference

Public forum in St. Kitts

Participants at ECTEL's 15th Anniversary Conference

Ministers of Council at Public Forum in St. Kitts

At ECTEL's Anniversary Cocktail at the Government House

At ECTEL's Anniversary Cocktail at the Government House

Photos of ECTEL & NTRC

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NTRC St Vincent and the Grenadines

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Back L-R) Director of Technical Services Andrew Millet | Chief Financial Officer Isaac Mathurin | Managing Director, Embert Charles | (Sitting L-R) Director of Finance & Economics Cheryl Hector | HR Manager Pat Payne | General Counsel Deborah Bowers

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The Role of ICANN in the New Digital Age

What is ICANN?

ICANN, the Internet Corporation for Assigned Names and Numbers, is an international and not-for-profit organization that brings together individuals, industry, non-commercial and government representatives to discuss, debate and develop policies about the technical coordination of the Internet's domain name system.

ICANN was formed in 1998 and its staff operates the internet's Domain Name System (DNS), coordinates allocation and assignment of the internet's unique identifiers, such as Internet Protocol addresses, accredits generic top-level domain (gTLD) name registrars, and helps facilitate the voices of volunteers worldwide who are dedicated to keeping the Internet secure, stable and interoperable. ICANN promotes competition in the domain name space and helps develop Internet policy.

At the heart of ICANN's policy-making is what is called a "multistakeholder model." This decentralised governance model places individuals, industry, non-commercial interests and government on an equal level. Unlike more traditional, top-down governance models, where governments make policy decisions, the multistakeholder approach used by ICANN allows for community based consensus-driven policymaking. The idea is that Internet governance should mimic the structure of the Internet itself – borderless and open to all.

Where does ICANN fit in, with the use of digital technology?

To reach another person on the Internet you have to type an address into your computer – a name or a number. That address has to be unique so computers know where to find each other. ICANN coordinates these unique identifiers across the world. Without that coordination we would not have one global Internet.

A vital element in ICANN's processes is the opportunity for public comment on each substantial piece of work before it is considered for approval. These topics can be operational (such as budget or strategic planning), technical (such as security reports and recommendations) or policy-oriented (such as ByLaw changes). You can find a list of all topics open for public comment on a dedicated public comment page (http://www.icann.org/en/news/public-comment). The page includes links to relevant announcements, documents, comment locations, and reference sources with full descriptions and background information.

ICANN has a proven commitment to accountability and transparency in all of its practices. Indeed, ICANN considers these principles to be fundamental safeguards in ensuring that its international, bottom-up and multistakeholder operating model remains effective.

ICANN doesn't control content on the Internet. It cannot stop spam and it doesn't deal with access to the Internet. But through its coordination role of the Internet's naming system, it does have an important impact on the expansion and evolution of the Internet.

What is the DNS

The domain name system, or DNS, is a system designed to make the Internet accessible to human beings. The main way computers that make up the Internet find one another is through a series of numbers, with each number (called an "IP address") correlating to a different device. However it is difficult for the human mind to remember long lists of numbers so the DNS uses letters rather than numbers, and then links a precise series of letters with a precise series of numbers. The end result is for example that ICANN's website can be found at "icann.org" rather than "192.0.32.7" – which is how computers on the network know it.

ICANN draws up contracts with each registry of domain names. It also runs an accreditation system for registrars of domain names. It is these contracts that provide a consistent and stable environment for the domain name system, and hence the Internet.

ICANN's role is therefore to oversee the huge and complex interconnected network of unique identifiers that allow computers on the Internet to find one another. This is commonly termed "universal resolvability" and means that wherever you are on the network – and hence the world – that you receive the same predictable results when you access the network. Without this, you could end up with an Internet that worked entirely differently depending on your location on the globe.

If you have an interest in global Internet policy related to ICANN's mission of technical coordination, you are encouraged to participate. ICANN provides many online forums through its website (www.icann.org) , and the Supporting Organizations and Advisory Committees within the ICANN community have active mailing lists for participants. Additionally, ICANN holds public meetings through the year.

The "Have-Nots" Divide

Contributed by NTRC St. Vincent and The Grenadines

Over the last decade and a half, it was envisioned that fixed networks would be a thing of the past. Mobile (wireless) networks were seen as the rising network of the future. As such, service providers began reducing the capital expenditure allocated to the development of their existing fixed networks and this was especially evident on the access plant side. At that time, the idea of utilizing 3G and 4G Mobile Network technologies as a solution to reduce the number of homes without Internet access was also strongly supported.

However, sometime over the last 4-5 years all this began to change and with good reason. Initially, the mobile networks offered unlimited data usage packages similar to that which was also offered on the fixed networks. Over time, these plans became usage limited. The introduction of video streaming was also very instrumental in changing the whole picture as the mobile networks simply could not handle the bandwidth required as superbly, compared to the fixed network.

Even now, according to the Boston Consulting Group (BCG), as mobile carriers build LTE networks, many are engineering their networks to ensure downlink speeds of 1Mbps and uplink speeds of 64kilobits per second. While such speeds are adequate for some data services it is not a reliable solution for streaming high-definition video, beyond a certain distance –particularly when streaming indoors.

While we have mobile subscribers per 100 people with a rate of over 100% in all of the ECTEL Member States we are still in the 15-20 % per 100 people for fixed broadband in four of the ECTEL states with St. Kitts & Nevis being the exception at 25%. This is in light of the fact that most developed countries are in excess of 30%. Based on my own thorough research and analysis of data from the World Bank, it is projected that it will take us another 10-15 years, based on our current growth rate, to reach a penetration level of 30% in the ECTEL states barring St. Kitts & Nevis. This is evidently a trending 'have-nots' divide!

The 'Haves' versus the 'Have-nots'? It is quite obvious, those that "have" a fixed broadband internet connection will benefit from the existing and future services that are around the corner. They will be able to get a tertiary level education online at their convenience, do their research for their CPEAs and SBAs, start new online businesses, or even expand existing businesses online. They will be able to maximize usage of their mobile apps (using Wi-Fi from their fixed connection, as compared to using their mobile data plan) inclusive of high value applications, such

Apollo Knights is the Director of the National Telecommunications Regulatory Commission (NTRC), St. Vincent and The Grenadines.

as video conferencing and streaming , as well as low-latency applications utilising the cloud be it engineering , accounting, etc. Such applications simply won't function properly on slow broadband connections, all of which are perceived to be current needs.

Consider the coming phenomenon of the Internet of Things (IoT) and that most of the things we own are in our homes or businesses. To connect these to the Internet efficiently we will require a connected house. As an example, one of our mobile providers is now offering IP camera solutions for homes and businesses. This is all part of the Internet of Things (IoT). However, you will be surprised that the solution is not being offered over their mobile broadband service. You need to have a fixed line internet connection (from their competitors) to get the service. So those who "have" can get this service to secure their family and property but the "have-nots" are being left behind.

refer to are those that do not have fixed broadband at home presently, which in all OECS countries is estimated to be more than 50% of our households, with the exception of St. Kitts and Nevis.

In St. Vincent and the Grenadines, the NTRC initiated a pilot project under the Universal Service Fund (USF) with the aim of converting 340 households from being "have-nots" with no fixed broadband at home to a "have" status. Since the project began two years ago, the NTRC has successfully completed the transition of 320 households with the hope of maximizing the target quota by September 2015.

With the average of three persons per household it can easily be said that over 1000 persons have been impacted by this project or close to 1 per cent of our population. Some of the criteria required to be eligible for the programme includes:

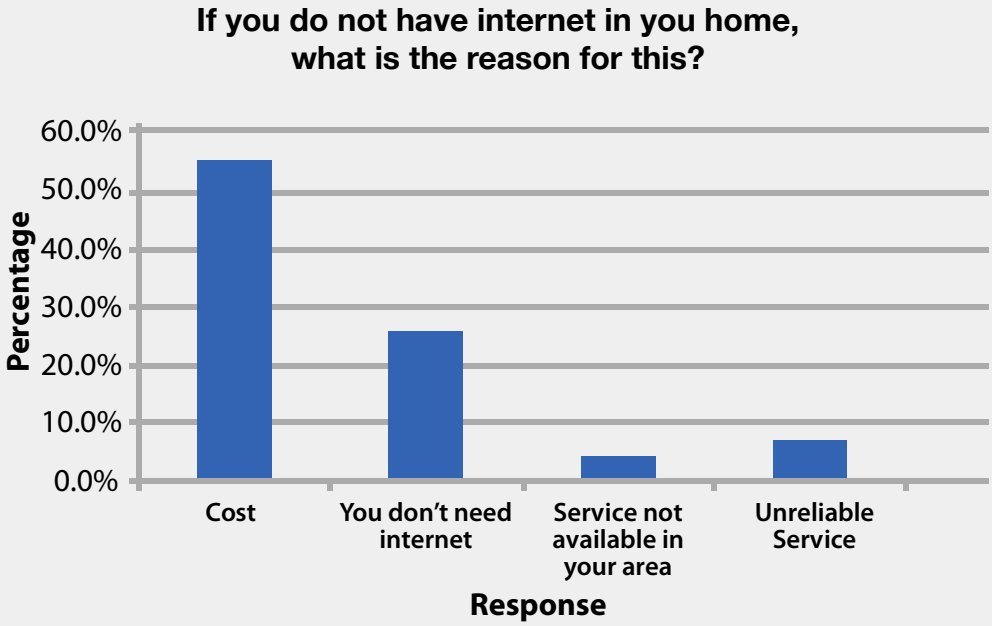


Fig 1. Shows data from the NTRC SVG USF operating plan of 2013

It's also no coincidence that one of the largest mobile providers in our region is buying up existing fixed line/cable networks and also deploying its own terrestrial fiber in others. They are getting prepared for the future services which require large data pipes that can most efficiently be delivered via fixed broadband pipes. Even the backhauling of mobile traffic now requires higher bandwidth solutions that are only available via fixed line pipes. We must also point out that for some applications, especially in rural areas, fixed wireless is also being considered as an alternative to fixed line broadband solution. It should be noted that one of the main differences between mobile and fixed-wireless solutions is that mobile networks end at the base station. Fixed –wireless networks on the other hand, include highly specialised radio equipment connected to premises, allowing a carrier or service provider to guarantee speeds.

Overall, there is no doubt that fixed broadband has become a utility for those who already have it, especially in those countries that provide a number of e-services. The "have-nots" that we

1. The household should not have had internet in the last two years. This ensures a measure of interest protection as it is not the intention to have persons giving up their existing internet to benefit from this subsidized package.
2. Should have a computer (desktop or laptop). The Government of St. Vincent and the Grenadines implemented a programme over the last five years to equip all students (primary, secondary and tertiary) with laptops that can be taken home. This involves approximately 30,000 students.

If eligible, these households pay ten EC dollars per month and the rest is paid as a subsidy to the service provider by the NTRC via the USF. Such a programme, if scaled up with possibly different pricing points and executed in other member states of ECTEL, can have a substantial impact on reducing our quantity of "have-nots".

The availability of affordable internet access with satisfactory speed is the number one friction point according to the Boston

Consulting Group (BCP) in both the developing and developed countries. Costly mobile broadband access is not a viable solution to our 50%+ of households without fixed broadband internet. Our existing fixed broadband Internet rates while being less costly than mobile broadband is still not affordable for a vast number of our households. This has been verified by the subscribers of the NTRC low cost pilot programme for 340 households. The BCP further highlighted in their 2014 paper on reducing e-friction that "Countries that fail to address issues of access have little hope of furthering their internet economies''. The findings from a national survey conducted among 2000 households by the NTRC SVG in 2013 (see Figure 2) supports the views of the BCP. It was found based on analysis that two of the main challenges of not having Internet in the home was affordability (excess of 50%) and seeing a need (excess of 20%) for the Internet. Notably, similar results were obtained when a similar survey was conducted by NTRC Saint Lucia.

Shontell Murphy is a consultant to the USF programme

Frankly, the 20%+ of households in both SVG and St. Lucia not seeing a need to have internet in their household is very troubling. They may be able to afford it but do not think they need it. They most likely see a need for a fridge and a stove but not for the Internet, possibly because they do not equate its availability as a necessity for whatever reason. This is likely as a result of a lack of e-services by both our public and private sectors in the sub region and also possibly a need for more public awareness on the potential benefits of having online access. Such issues must be addressed in Broadband plans for our member states.

It is evident that we cannot depend solely on privately owned service providers across our sub region to bring our fixed broadband penetration numbers up to those of the developed world. They have been at it for the last two decades and if we are to leave it to them it will take us another decade and more to reach the current penetration levels of the developed states as seen from the graph in Figure 2. We have no other choice but to have public sector intervention in this critical area. We need to have direct Government interventions as well as regulatory interventions.

We have to stop and think for a moment about what our countries in the sub region will be like if we had 40% penetration of water or electricity to our homes. A penetration level of 15% on Figure 2 of the above graph approximates to roughly a penetration rate per household of around 40%. At present we are in the 90% penetration levels per household for water and electricity. Consider a natural disaster affecting our islands and bringing us to the 40% level for either water or electricity. Will we consider taking 10 years to bring us back to 90%? I believe not. Countries such as France, Greece, Estonia and Spain are already declaring Internet access to be a fundamental right of all citizens. Why then should we approach the issue of household internet access which has now been labelled a necessity any differently?

We have to also look at the "have-nots" from an economic perspective and in our Caribbean context. Households are dynamic and do not just come in a few sizes as it pertains to income. It's more of a continuum where disposable income is faced with many wants and needs. Choices have to be made based on perceived priorities and affordability. Our economies in the sub region have a large sub section of persons who prefer to pay as you go for many services. These include transportation, mobile communications, mobile data, groceries, cooking gas, etc. A good example is cooking gas. A substantial number of our households use the 20lb cooking cylinder even though it's more expensive per lb, than the larger 100lb cylinder. It would most likely be a situation of affordability. Likewise, the issue of perceived affordability is relevant as it relates to fixed line broadband. We have to find ways of bringing more affordable packages to fit the needs of different household income levels. The same applies to prepaid voice. Prepaid voice is more costly per minute than postpaid voice service, however prepaid is the choice of the majority of our customers as it is perceived to be more affordable.

In short, our governments, in collaboration with regulators and service providers, have to develop and execute broadband plans in our sub region to reduce the extent of the "have-nots" divide. We are currently behind in this area

but it's "better late than never". We can commit to making a start in 2016. According to a recent report on the state of broadband, 134 countries now have national broadband plans with the objective of providing universal broadband access (of different speeds), which notably has gone up from what it was in 64 countries 6 years ago. It's sad to report that our ECTEL states are not in this list of 134 countries. While some developed countries can depend on large private tech companies such as Google and Facebook to help deploy broadband networks, we cannot depend on such initiatives in our region due to our small economies. The collaborative work of the Irish Government and Vodaphone (A global Mobile Operator) is a good example of the vision we hope to achieve in rolling out fixed broadband networks. Each has respectively invested 500 and 450 million pounds, to bring fiber to more than a thousand towns and villages across Ireland.

In addition, broadband-enabled applications will also give residents the opportunity to increase their civic engagement and benefit from increased economic opportunities. Improved availability and access to information and public services will empower the individual thus allowing them to play a more active role in society. The increased availability of high-speed broadband will open up access to a number of opportunities that will no longer only be confined to benefit the selected few who are connected (the "haves"), but will be the privilege afforded to all. High-speed, affordable and universal broadband will benefit businesses of all sizes and will also be conducive to the development of integrated e-services such as e-health which has the potential to provide more relevant and efficient medical care closer to patients' homes. These are just mere fractions of the numerous possibilities which will be available with access to high-speed universal broadband.

Overall, we have too large a section of our households that fall into the "have-nots" category for fixed broadband. Over the last decade and a half since fixed broadband came to our sub region we have left its development mainly in the hands of the service providers. Over the last 5-7 years, some regulatory interventions on fixed broadband expansion via our Universal Service Funds were initiated. This however has been predominantly targeted at filing the gaps at the community and school levels. We are now at the critical stage of needing to work at the household level. We cannot leave the household level to the providers otherwise it will take us a decade or more to simply reach the level of penetration that exists currently in the developed world.

There is no other option but for the regulators and Governments to step in at this time. We need national broadband plans in all ECTEL Member States that will clearly lay out our Broadband goals and strategies. In parallel, we have to revise our current USF regime to expand its scope and its level of funding. The USF will have to play a pivotal role in assisting member Governments in funding the execution of their respective broadband plans. If we continue to leave households behind we in turn leave parents behind and more importantly our children and students behind. This will ultimately lead to us leaving our countries behind in this new knowledge based and connected society. We cannot navigate this knowledge 'jungle' with some soldiers using compasses ….they all need GPS!

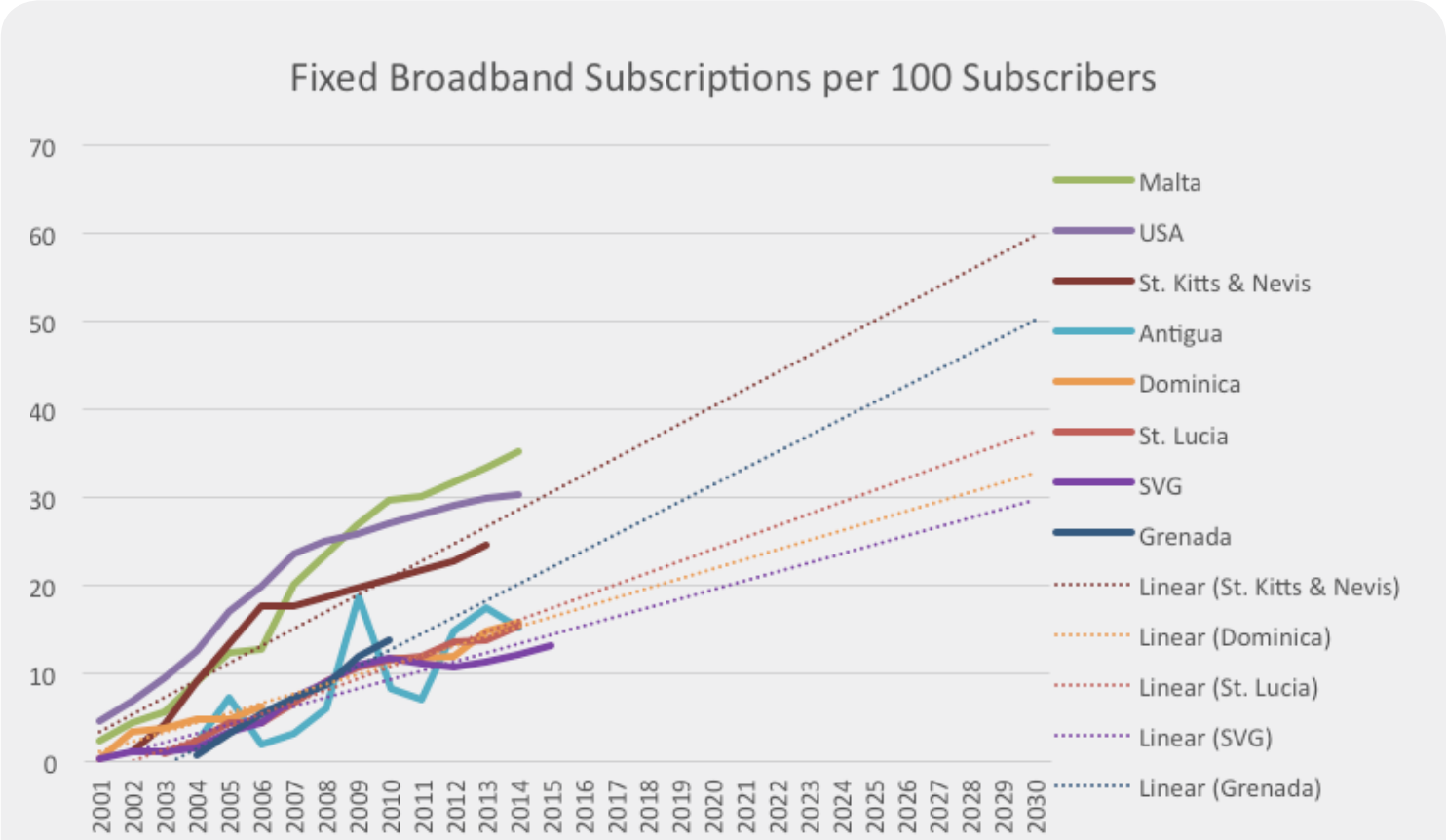


Figure 2. Source: Worldbank data

Commitment to Broadband and Open Access in a Digital World

"The Consumers' Perspective"

by Junior Bacchus

Broadband by any definition from a consumer's perspective converges to a simple meaning: "access to affordable, high quality and transparent ICT services". Affordability relates to economic conditions within the market and is relative to the investment infrastructure. It therefore begs the question, "How a Multi-Island State of Grenada, with a similar size market as St. Vincent and the Grenadines can allow much 'CHEAPER' internet services than in neighbouring St. Vincent and the Grenadines?"

High quality services relate to reliability, consistency and market confidence. No consumer should have to worry whether or not a video or audio document/attachment will quickly become accessible. High quality services also mean that when problems arise, corrective action will be swift and services are restored in reasonable time. Too often consumers are left without important ICT services for an exceedingly long time without an apology, concern or restitution. A minimum standard of services should be crafted to meet consumers' basic need.

Many commercial entities including Radio and Television rely on telecommunication providers for many of their programmes to reach their intended audiences. Too often we hear that many "talk programmes" are affected by lack of internet access. You often hear the Magic Jack is out of service or you cannot access the internet, etc. Businesses should be committed to satisfying their customers' expectation and we must strive to deliver platforms that can withstand the test of time.

The Caribbean, like the rest of the world is experiencing mergers of many forms. Today you hear one company fighting against the other in "bitter" competition. Many consumers naturally choose their side. Lo and behold the next day these two "bitter" rivals are in bed with each other. They are either merging or one is taking over the other. The consequence of the mergers very often leaves the consumer without choice. The recent LIME/FLOW merger is a case-in-point. Monopoly followed by monopolistic behaviour – with poor services, higher prices, no transparency. This is what forces consumers to blame their Governments and regulators for not protecting their rights.

At this point in our development here in the OECS and St. Vincent and the Grenadines in particular, the commitment to broadband is a critical pillar going forward. ICT therefore must form a significant part of all governmental agencies. I point to government deliberately because it is their responsibility to ensure the appropriate framework and enabling environment is in place to encourage investment in this sector. It is also government's responsibility from a legislative standpoint to ensure the appropriate market dynamics are in place not only to promote competition in the sector, but to prevent monopolies and monopolistic type market structures from taking root. In these parts, consumers are all too familiar with these kinds of market arrangements where dominant providers exist.

Consumer Advocate and Activist Junior Bacchus is President of the Consumers' Association, St. Vincent and the Grenadines, former President of the Minibus Association and a former President of Lions Club South, St. Vincent and the Grenadines.

Far too often we hear a lot of talk where these issues find their way into election manifestoes, budget addresses, campaign speeches and other governmental pronouncements, yet our people continue to suffer. Presently, broadband access is still too costly and far too many persons are without reliable access to the Internet. This, despite the fact that many of these services are now available on smartphones and other smart devices. It appears that the devices are becoming much smarter, and faster than the authorities and regulators. Our consumers must become smarter than the devices and must say a unanimous "NO" to abuse.

With my limited knowledge of the use of these devices, I recently uncovered that I had been paying for a minimum of two megabytes service yet never even received one megabyte in over 90% of the time. My immediate action was to terminate my relationship with this provider. They never compensated me, for failing to deliver what was promised. Regulators must find means to check and verify the contract promise and punish the provider and compensate consumers. In too many instances the quality of service is poor and the average consumer seems to have no recourse. In any event, the dispute resolution process is way too bureaucratic. Very often we hear consumers complaining on talk radio, yet the NTRC never has cause to act since no formal complaints were lodged.

At a recent public consultation in St. Vincent and the Grenadines we learnt that many of the services provided by our telephone companies are unregulated. The price of cell phone calls are unregulated, so rather than competition to keep prices at a minimum, we have collusion in private, but bitter conflict in public. Consumers are too aware of many backroom deals. Transparency must become a major pillar of this infrastructure. Another example has to do with the provision of Cable television services in St. Vincent and the Grenadines. One is not certain as to which service is regulated by the NTRC, Cabinet or ECTEL. The end result of these co-mingling and confusion is abuse.

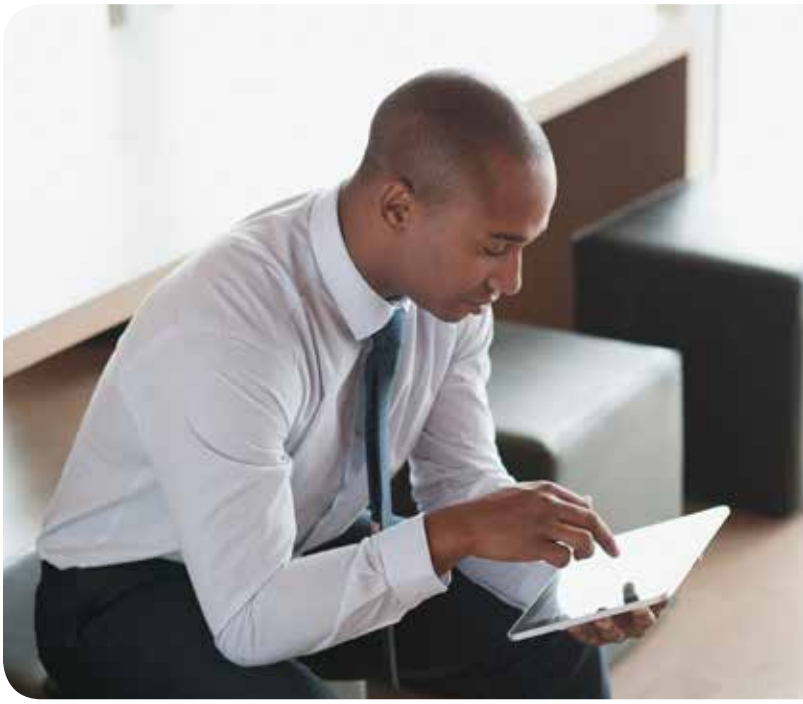
Another sour case has to do with the Radio Stations. The only role of the regulators is to issue licences and monitor compliance with the frequency provided. Their programming is unregulated and in many cases they are open to political manipulation and victimization. In this digital age where the world is so inter-connected we cannot allow service providers to restrict what content is critical to citizens. This is a right consumers must guard and protect at all times – Right to information. It is an affront on our democracy and independence as a people that service providers can consider blocking content referred to as Over The Top (OTT) services. If the global companies are unable or refuse to deal with their international colleagues who provide these services, the people of this sub region must not suffer. Why should consumers in the OCES not have access to Netflix, Whatsapp, Magic Jack, Skype and other similar services when the rest of the world continues to enjoy the benefits? Should we continue to be "colonial subjects"? We cannot allow this to happen in our space.

While I pointed to some critical things which can take commitment to broadband and open access to the next level, consumers are indeed pleased with the liberalization of the telecommunications sector which saw the entry of additional service providers since 2001. The efforts to break the back of the then existing monopoly is not only a victory to consumers, but to our civilization. To make broadband available through the Universal Services Fund is very commendable, although more work is required.

Consumer Rights must be protected and it is critical that open access facilitates investment in this sector, which is critical for our continued participation in the global economy. Minimum standards must be in place to ensure basic rights are enjoyed. Let us guarantee choice, affordable pricing, promote freedom of information and stop the collusion and price fixing.

Regulating the Sector in Antigua and Barbuda and Montserrat

Though not members of the Eastern Caribbean Telecommunications Authority (ECTEL), at present, Antigua and Barbuda and Montserrat stand to benefit from ECTEL'S work and operations. In fact, both States collaborate with ECTEL in a number of regulatory areas and have themselves put formal mechanisms in place to foster that relationship and strengthen their own telecommunications regulatory frameworks.



In the case of the Emerald Isle, the Montserrat Info-Communications Authority (MICA) is the Regulatory Agency for the Government. Established on the 1st August 2009 the agency is committed to restructure and integrate the Telecommunications, Information and Communications Technology (ICT) and the Broadcasting industries. This in order to form an Info-Communications Sector to serve as the main vehicle for the transformation of the island into "an intelligent Island with the necessary and sufficient socio-economic infrastructure to accelerate and sustain growth and development of the economy."

The MICA is governed by a Board of Directors, referred to as "the Board" and comprises three (3) members; namely a Chairman, a Legal Adviser and another Director. The Board appoints a Corporate Secretary and an Executive Manager to manage the affairs of the Authority on a day-to-day basis.

MICA's mission is to regulate the Info-Communications sector in Montserrat and to ensure fair competitive practices by all Info-Communications providers and to promote and maintain high quality Info-Communications services at fair and competitive prices for all concerned.

In the case of Antigua and Barbuda whose telecommunications laws are still informed by a 1951 bill, plans to develop a legal framework to formalize liberalization in the state are well underway. The new bill, which is patterned on the ECTEL model, is expected to go before parliament soon.

Meanwhile, ECTEL continues to collaborate with both Antigua and Barbuda and Montserrat in a number of areas including training, information sharing, frequency coordination and implementation of a Caribbean Telecommunications Union (CTU) driven regional spectrum plan.

Antigua and Barbuda signed a Memorandum of Understanding (MoU) with ECTEL in 2012. The Ministers with responsibility for telecommunications of Antigua and Barbuda and Montserrat have been sitting as observers at the regular meetings of the ECTEL Council of Ministers.

The increased collaboration in the area of telecommunications and ICT development is premised on the need to create a single telecommunications space among the Member States of the Organisation of Eastern Caribbean States (OECS).


ATLANTIC OCEAN
Goat I.
Codrington Lagoon
The Highlands
Codrington
Palmetto Point
Spanish Point
17°40'
17°33'
61°50'
61°43'


Long I.
Guiana I.
Green I.
Cedar Grove
New Winthorpes
Barnes Hill
V. C. Bird Intl Airport
ST JOHN'S
St. Johnston Village
Five Islands Village
Potters Village
Parham
Seatons
Willikies
Pares
Glanvilles
Jennings
Freemans
All Saints
Newfield
Freetown
Bolans
Swetes
Table Hill
Gordon
St. Philips
Boggy Peak 402m
Liberta
Bethesda
Falmouth
Johnsons Point
Urlings
Old Road
English Harbour Town
CARIBBEAN SEA
Guadeloupe passage
17°10'
17°03'
61°53'
61°50'
61°43'
61°40'


North West Bluff
Yellow Hole
St John's
Cudjoehead
Woodlands Bay
Trant's Bay
Blackburne Airport
CENTRE HILLS
Salem
Bethel
Harris
Cork Hill
SOUFRIERE HILLS
Chances Peak 914m
PLYMOUTH
Kinsale
Germans Bay
Morris
Landing Bay
Old Fort Point
Shoe Rock
CARIBBEAN SEA
18°33'
18°43'
62°10'

Increasing Broadband Access Through Strengthening of the Regulatory Framework

Winston George is the Project Officer for the CARCIP Project based at the ECTEL Directorate in Castries

The importance of ICT's and the telecommunications infrastructure to the economic and social development of the global population is well established. For example, the liberalisation and regulation of the telecommunications sector in the Organisation of Eastern Caribbean States (OECS) Economic Union has contributed to significant economic and social development, through increased investment by telecoms providers and increased access of the population to the Internet and social networks. Data on revenue and investment in telecommunications services in the Eastern Caribbean Telecommunications Authority (ECTEL) Member States for the period 2009-2013 indicate in the aggregate EC$3.682 billion and EC$500 million respectively. To further strengthen these gains and achieve greater returns, three ECTEL Member States embarked on the Caribbean Regional Communications Infrastructure Program (CARCIP).

CARCIP is an initiative funded through World Bank Credits of US$10 million to the Government of Grenada, US$6 million each to the Governments of Saint Lucia and St. Vincent and the Grenadines and a Regional Grant of US$3 million to the Caribbean Telecommunications Union (CTU). The development objective of the Program "is to increase access to regional broadband networks and advance the development of ICT-enabled services industry in the Caribbean Region." It is envisaged that this will significantly assist the region to achieve increased regional integration and social and economic development.

The Program has three components that are being implemented concurrently :

Component 1: Support for the development of the Regional Connectivity Infrastructure which is aimed at bridging the gaps in the regional broadband communications infrastructure, primarily the physical connectivity infrastructure as well as the enabling environment that will ensure Public Private Partnership (PPP) in the ownership and management of, and competitive access to the infrastructure.

Component 2: ICT-led Innovation through activities that will leverage the regional broadband infrastructure to foster employment as well as growth of the regional IT/IT Enabled Services (ITES);

Component 3: Implementation Support necessary for developing and strengthening the capacity of the governments to implement, coordinate and monitor the program at the national level.

In support of the "development objectives," and specifically Component 1-Regional connectivity, the Eastern Caribbean Telecommunications Regulatory Authority (ECTEL) is responsible for working with the participating countries on harmonized policy and regulatory frameworks and removing regulatory bottlenecks including the provision of technical assistance in project designs. Specifically, this involves the following:

a. Technical assistance to (1) improve the legal enabling environment to maximize the benefits of the infrastructure (National IXP, Subsea Fibre and National Broadband network) supported under the project; (2) strengthen the competitiveness of the telecommunications market in the medium term and knowledge transfer and capacity building to support effective sector regulation and development.

The Contract for the implementation of this component was won by the Consortium Great Village International Consultants, Bird and Bird and JIDCOM. Work commenced in June 2015 with several meetings with key stakeholders to

include ECTEL, NTRCs, Consumer Protection Associations, and Telecommunications Providers, to assess regulatory needs. The work is expected to culminate in May 2016 subsequent to the presentation and adoption of the updated regulations by the ECTEL Council of Ministers.

b. Technical support to undertake in collaboration with the NTRCs, studies related to the social and economic factors which are inhibiting the increase in broadband uptake.

Work is ongoing with an Individual consultant to assess the impact of broadband on economic growth in the ECTEL Member States. The objective is to develop an Economic model to assess and determine the impact over a period of five (5) years, and to apply the model to perform continuous assessment as access to broadband is increased in the ECTEL Member States.

c. Support for capacity building initiatives of ECTEL and the NTRCs to implement and enforce the revised legal and regulatory framework to realize broader project objectives.

Support in this regard included (1) the hosting of a workshop entitled "Broadband Regulatory Safeguards in the Era of Convergence" in St. Vincent and the Grenadines in January 2015. The workshop brought together several representatives of stakeholder organisations (ECTEL, NTRCs, CTU, National Consumer Associations, Ministries of ICTs and Consumer Affairs and CARCIP Project Coordinators) to sensitize and discuss critical safeguards necessary for improving access to broadband and by extension the digital economy.

(2) The production of radio and television public service announcements to build the general public's capacity to understand and respond to matters related to customer service and security as their access to broadband and internet use increases.

Other critical project activities at the national and regional levels include the following which are at various stages of development:

1. Under Regional Connectivity

a. Assessment and design of the broadband infrastructure and Public Private Partnership PPP framework for delivering subsea fibre.
b. Implementation of Internet Exchange Points (IXPs) in each CARCIP member country.
c. Implementation of a Unified Communications System for the Government in Grenada, Saint Lucia and St. Vincent and the Grenadines.

2. Under ICT-Led Innovation

a. IT skills assessment, development and certification.
b. Launch of ICT Business Incubator Projects for the establishment of IT/IT enabled services in each CARCIP Member State.

ECTEL looks forward to the successful implementation of all activities to facilitate increased access to broadband and the growth of the digital economy in the Member States.

MERGERS AND ACQUISITIONS OF TELECOMMUNICATIONS PROVIDERS WITHIN ECTEL STATES

by Deborah Bowers
General Counsel

WHAT HAPPENS WHEN TELECOMMUNICATIONS PROVIDERS MERGE?

Broadband, electricity and phones have become necessities in our societies. To the avid businessman they are the industries to control, like food, drink and clothing. What happens then when telecommunications providers merge and threaten monopolies? What can the regulator do when these things happen?

The Eastern Caribbean Telecommunications Authority (ECTEL) was formed to deal with just such eventualities. Telecommunications companies are issued with licences, which tell them what their obligations are. One of the obligations of a telecommunications provider is to notify the regulator that the shareholding in the company is changing. This duty to inform the regulator currently applies where up to 25% of the shareholding is affected. This happens where the current owners wish to sell or the company's current shares are being bought over by another company. This requirement ensures that ECTEL is able to determine how a change in the shareholding of a telecommunications provider is likely to affect the market.

The Telecommunications Act also gives the Minister in charge of telecommunications in all ECTEL Member States significant powers. The Minister has a mandate, which allows him to step in and protect consumers where that need arises.

Consumers have also been empowered to voice their concerns and complaints about a telecommunications provider with their local National Telecommunications Regulatory Commission (NTRC). Residents of ECTEL Member States need to ensure that they know the location and address of their local NTRC, in the event that the need to voice their concerns becomes necessary.

IS A MERGER OR ACQUISITION AUTOMATIC?

The answer is NO. Before a merger can be approved ECTEL is called upon to provide advice to the Minister. The process involves applications by both parties concerned in the merger or acquisition being made to ECTEL.

Once these applications are received, ECTEL will carry out an assessment of the legal aspects of the application, the financial, the technical, and impact of the merger or acquisition. What is of importance to ECTEL is the benefit to consumers, in terms of cost, value for money, choice, customer information and the delivery of customer service.

WHAT HAPPENS WHEN MONOPOLIES OCCUR

Prior to the advent of the Treaty establishing the Eastern Caribbean Telecommunications Authority, there was no one to protect the interest of consumers in ECTEL Member States. The Eastern Caribbean Telecommunications Authority (ECTEL) was established on 04th May 2000, to do just that. With its mandate to protect consumers, it can now in the event of a monopoly automatically regulate a telecommunications provider. For example if there is one dominant provider in the market providing landline or house and business phones, that provider automatically becomes regulated by ECTEL to protect the interest of customers.

What regulation means is that its prices for services are scrutinized by ECTEL which ensures that they are reasonably priced and reflect the cost of providing the service by the provider. This is called 'the Price Cap Plan.' In the absence of a regulator, there would have been no cap on the price which can be charged by a provider.

Further, a telecommunications provider who enjoys a monopoly or near monopoly is required to submit its customer terms and conditions to ECTEL for approval. This ensures that ECTEL is able from the outset to protect the interest of consumers and ask the provider to change its terms and conditions where they are adverse to consumers.

When there is a monopoly, the monopolist would do his/her best to keep others out of the market. ECTEL acts as a 'watchdog' to the telecommunications sector and ensures that there is open entry by any one who meets the requirements. It also ensures that new entrants are not priced out of the market by the monopoly.

Deborah Bowers has been General Counsel at ECTEL since September 2014. Prior to joining ECTEL she served as a Magistrate in the local judiciary in Saint Lucia.

Deborah Bowers
General Counsel

Open Competition on Over the Top Services

To Be Or Not To Be

THAT IS THE QUESTION

by Deborah Bowers
General Counsel

What are Over the Top Services?

Over the top services have been described as any service you receive which is not provided by your telecommunications provider. Examples of these are: Whatsapp, Netflix, YouTube, Viber, etc. If you have used any of these services, you have used an over the top service.

The Controversy

The world of telecommunications has changed and is changing daily. In the past to make a telephone call one had to dial up an exchange or an operator to be put through to a number, to contact the person on the other side. Today, you can make calls or contact people without a telephone, using any application, on any device, anywhere in the world.

This new ability to communicate without the need to use a service being provided by your local providers is causing a storm within the telecommunications industry. Some argue that it is wrong to allow people to access any service anywhere in the world, as some businesses are losing money since their connections are being used and these services are not paying for them.

How it all Began

The Internet, or 'World Wide Web' was founded by Sir Tim Berners-Lee. At that time, it was believed that this service would create opportunity for all as anyone from anywhere could upload information onto the Internet. This freedom to upload information and people's ability to access it once they had an Internet connect was given a name by Tim Wu. He called it 'Net Neutrality'. This led to the development of many applications which can be accessed anywhere in the world.

These new applications may not require customers to pay for them once the customer has Internet access like YouTube, Facebook, Whatsapp, or the customer may be required to pay sometimes as in the case of Skype. A whole new industry has developed, which has turned the world of telecommunications on its head. This has given rise to the question: "How does the regulator ECTEL treat such applications in a manner which protects the interest of consumers as well as providers?"

The industry now seeks solutions. How best can the regulator deal with applications, which are overriding network providers? Many of these applications are making money, which does not result in them paying any taxes to governments of ECTEL Member States. At the same time these applications provide a valuable, cheap service to consumers in ECTEL Member States. The question has now arisen. Should such applications be allowed to continue or should they be restricted?
If they are to be regulated, how do we go about regulating them when their businesses have not been set up in ECTEL States?

- Are these companies likely to submit to taxation in ECTEL Member States?
- Should telecommunications providers look for new ways to provide telecommunications, which compete with these over the top services?
- Would it be right to cancel or block such services when they provide such great benefits to consumers?
- How can we regulate or limit their impact on telecommunications providers?
- What are the options available to the regulator to address this ever- changing industry?
- What will they think of next?
- How does the regulator expect the unexpected and prepare for it?

These are among the many questions that will have to be answered as ECTEL moves forward into the next fifteen years.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