



TATT BYTES MAGAZINE

VOL 8
ISSUE 1
JULY 2018

A PUBLICATION OF THE TELECOMMUNICATIONS AUTHORITY OF TRINIDAD AND TOBAGO

PIECING TOGETHER The Digital Age



Contents

Cryptocurrencies: A Financial
Sector Phenomenon

2

Piecing Together the Digital Age

5

The Critical Importance of a Resilient
Caribbean Communications Structure

9

Market Insight – Fixed Broadband Internet
Subscription Increase in Q3 2017

12



TATT - Building a Better Digital T&T!

13

Don't Break The Law

15

Tech Tips - Energy Saving Tech

16



CRYPTOCURRENCIES A Financial Sector Phenomenon

In October 2008, Satoshi Nakamoto wrote a white paper titled *Bitcoin: A Peer-to-Peer Electronic Cash System*, about a revolutionary technology that created the world's first genuine peer-to-peer and decentralised monetary system.

While the design and creation of bitcoins are attributed to Satoshi Nakamoto, there is uncertainty as to whether that name represents a person or group of persons.

Whether one person or several, it would be interesting to find out if, at the time of writing, Nakamoto anticipated that bitcoins would be one of the world's leading cryptocurrencies today and, furthermore, that cryptocurrencies would be traded on the New York Stock Exchange.

According to an article on BitcoinExchangeGuide.com, an entity dedicated to reviewing all of the major bitcoin exchanges, cryptocurrency is often described as a type of digital currency. Monies which do not exist physically are known as digital currencies.

However, cryptocurrencies are not the traditional digital currency with which most of us are familiar and which is also referred to as electronic money. Such digital or electronic money is held by individuals in financial institutions like banks

and credit unions. It can be converted to physical cash or accessed via a credit or debit card to spend on goods and services. These currencies belong to specific countries and are backed by legal frameworks for their establishment and usage.

Cryptocurrencies, on the other hand, are very different from traditional digital currencies in that their value is not determined by a known regulatory or financial institution but, for the most part, by the group of persons utilising the currency.

At the Telecommunications Authority of Trinidad and Tobago's (TATT) 28th ICT Open Forum on Thursday March 22, 2018, a range of issues related to cryptocurrencies was discussed. That Forum was titled *Cryptocurrencies: Implications for Trinidad and Tobago*.

The objective of the Forum was to initiate discussion on issues related to cryptocurrencies, including cybersecurity, global trading, central financial authority and legal considerations, and to provide accurate information on the technology that enables their use.

In his opening address at the Forum, Eric Butler, member of the TATT Board, noted that, as with most financial innovations, some level of security and financial concerns surrounding cryptocurrencies have arisen due to the potential risks.



1

1 Hadyn Gittens, Chief Executive Officer, Trinidad and Tobago Securities and Exchange Commission (TTSEC) addresses the audience



2

2 Member of the audience participates in the Forum





3

He told the audience that Symantec, one of the world's leading cybersecurity companies, in its March 13, 2018 report, had stated the following:

Symantec has seen an increase in threats and malware that mine cryptocurrencies such as Bitcoin and Monero...The creators and distributors of these threats use

commonly available mining software to take advantage of someone else's computing resources (CPU, GPU, RAM, network bandwidth and power) to generate cryptocurrency. This mining-related activity can cause unnecessary wear on hardware, increase network activity, increase costs and impact user productivity.

Mr. Butler's Welcome Remarks were followed by three dynamic and informative presentations.

Aaron Besson, founder of Morpheus Software Solutions Limited, explained that there are three types of cryptocurrencies:

- *Currencies:* primarily used for payments and/or store of value
- *Securities:* external tradeable asset class and usually involves rewards for ownership (e.g. dividends)
- *Utility tokens:* primarily used to access/unlock platform features

He shared that cryptocurrency companies have been/are looking at Trinidad and Tobago to "set up shop", as it is the second cheapest country in the world to mine bitcoins because of the low electricity costs. He revealed that it costs US\$1,190 to mine one bitcoin in Trinidad and Tobago. Venezuela is the cheapest location, at US\$531, compared with Egypt and Saudi Arabia where the cost is the US\$3,172.

3 Vashti Maharaj, Head of Legal at the Ministry of the Attorney General and Legal Affairs

4 Member of the audience makes a contribution

Head of Legal at the Ministry of the Attorney General and Legal Affairs, Vashti Maharaj, gave the audience an insight into the legal issues surrounding cryptocurrencies. She reminded attendees that the three supervisory authorities in Trinidad and Tobago's Financial Obligations Regulations 2010 are the Central Bank, Trinidad and Tobago Securities and Exchange Commission (TTSEC), and the Financial Intelligence Unit (FIU).

These three organisations, she emphasised, bear the responsibility for ensuring this country complies with the international legislative and regulatory requirements for anti-money laundering and combatting the financing of terrorism.

In her presentation, Ms Maharaj revealed that the potential use of digital currency for money laundering is the primary concern of regulators. She said regulators in this region ought to take careful note of the recommendations of the Caribbean Financial Action Task Force (CFATF). These recommendations set out a comprehensive and consistent framework of measures which countries should implement in order to combat money laundering and terrorist financing, as well as the financing of weapons of mass destruction.

Hadyn Gittens, Chief Executive Officer, Trinidad and Tobago Securities and Exchange Commission (TTSEC) also presented at the Forum and informed the audience of international developments regarding cryptocurrencies. He spoke about the International Organization of Securities Commissions (IOSCO) Securities Markets Risk Outlook 2016 and its January 2018 warning on Initial Coin Offerings (ICOs).

5 Member of the audience makes a contribution



5



4





6

The 2016 Risk Outlook had stated that cryptocurrency exchange platforms such as crowdfunding and the use of peer-to-peer (P2P) lending platforms are vulnerable to cyber attack, as these activities are conducted via the Internet. Furthermore, start-up companies in this field may have low budgets and limited resources available to put towards maintaining their own cyber resilience, leaving their clients' information vulnerable to cybercriminals.

The January IOSCO 2018 warning stated that ICOs are highly speculative and raise investor protection concerns. It noted that start-ups have begun issuing new digital currencies via ICOs that are sold to investors in return for cryptocurrencies such as bitcoins. The warning added that there are clear risks associated with these ICOs, as investors are putting their entire invested capital at risk.

Alongside these international developments, Mr. Gittens reminded the audience that the TTSEC had issued a Cautionary Statement on ICOs in February 2018. The statement made it clear that the TTSEC had not approved any ICO and that ongoing offerings were unregulated and speculative investments, with considerable risk to the investor.

Some of the risks identified were:

1. HEIGHTENED POTENTIAL FOR FRAUD

While some ICOs are floated by entrepreneurs with genuine and innovative ideas for new products and services, there is a risk that some issuers could seek to perpetrate fraud against investors.

6 Member of the audience participates in the Forum
7 Member of the audience

2. CROSS-BORDER DISTRIBUTION RISKS

As the issuer may also be operating the ICO from outside the investor's regulatory jurisdiction, following the money in the event of a collapse of the ICO, as well as recovering invested funds, may prove extremely difficult in practice.

3. INFORMATION ASYMMETRY

Due to the complexity of ICOs and the uncertainty around the rights or interests that an investor may be acquiring, many retail investors may not be able to understand the risks, costs and expected returns and/or the drivers of risks and returns arising from their investment.

4. LIQUIDITY RISKS

Like cryptocurrencies in general, tokens traded on virtual currency exchanges (or over-the-counter) may give rise to opaque and volatile pricing, often coupled with insufficient liquidity to support reliable trading and market-making activities. In some jurisdictions, the cryptocurrency exchanges may also be unregulated.

He ended by stating that the goal of a responsible regulator in the securities industry is to balance the need for innovation with the need for investor protection through regulation and consumer education.



7



Piecing Together The Digital Age

The wave of digital destruction wrought by fragmentation and OTT is repaired in an analysis of regulatory priorities.

by KIM MALLALIEU and NIEVIA RAMSUNDAR

The communications industry has come a long way: from fixed line, copper-wired telephony and free-to-air television and radio, to wireless telephony, cable TV and Internet radio. In the last decade, we have seen the rise of mobile telephones with rich data and computational capabilities; fixed and mobile computers with phone capabilities; and, most recently, networks of autonomous nodes that interact with the environment without human intervention.

It is clear that technology is moving faster than political will or regulatory reform.

The market as a whole has had its own natural disasters or “waves of destruction”. These waves have marked inflexion points, as in Joseph Schumpeter’s gale of creative destruction (from 1942) — the “process of industrial mutation that incessantly revolutionises the economic structure from within, incessantly destroying the old one, incessantly creating a new one”.¹ Each and every time, creative destruction has given rise to considerable market disruption in which industry players have had to reorganise business models, and regulators and governments have had to revise or construct new legal and regulatory frameworks.

This is not unique or new to the communications industry. Kenji Kushida speaks of the “rapid, radical reorganisation of industry leaders and business models”.² In the case of the communications industry, he recognises three waves of disruption:

- Initial liberalisation of the traditional telephony market, with the dismantling of national telecoms service providers (telcos) and introduction of new competitors
- The rise of the Internet as an open platform
- Growth of the mobile communications market and the consequential demise of the carrier controlled handset

¹ Schumpeter J (1942). *Capitalism, Socialism, and Democracy*. Harper & Bros.

² Kushida, KE (2015). The politics of commoditization in global ICT industries: a political economy explanation of the rise of Apple, Google, and industry disruptors. *Journal of Industry, Competition and Trade* 15: 49–67.

DISRUPTION AND TRANSFORMATION

Liberalisation was accompanied by harsh market disruptions, and the adoption of the Internet as the global information superhighway, or infobahn, brought with it profound market transformations. In today’s mobile communications market, the provision of products and services is no longer the sole remit of the mobile carrier but is facilitated through a complex value network comprising the carrier, device manufacturer, operating system developer and a burgeoning number of third parties that supply content, applications (apps) and a rich array of innovative over-the-top (OTT) services. The Organisation for Economic Co-operation and Development (OECD) defines OTT services as “video, voice and other services provided over the Internet, rather than solely over the provider’s own managed network”.³



NIEVIA RAMSUNDAR is Corporate Secretary at TATT.

KIM MALLALIEU is a senior lecturer at The University of the West Indies, Trinidad and Tobago, and Deputy Chairperson at TATT.

³ OECD (2013). *OECD Communications Outlook*.

Apps and OTT services, highly sought after by consumers, are largely enabled through the processing and computational capabilities of end-user devices, the increasingly open architecture of communications technologies, the explosion in open application programming interfaces (APIs) and open data, and the availability of cloud storage and computing. These enabling factors have introduced several degrees of freedom that stimulate and support a complex value chain of interacting agents that are as complementary as they are competing. The dynamic nature of the market, its technologies, products and services, make it impractical to say, “This is what you are, service”, “This is what you are, product”, and “This is how I intend to regulate you”. From a regulatory standpoint, this current wave is particularly challenging.

The reality is that, much to the chagrin of national telcos and other longstanding market incumbents, the market is characterised by a new level of fragmentation—and this fragmentation is not necessarily a bad thing. The development of the communications industry now sees the role of the telco as the creator and supplier of the national infrastructure upon which the open platform that is the Internet can rest.

The Japanese story is a clear example of the national telco, NTT, emerging as the winner in its own communications battle. With political and regulatory support for retaining limited competition against NTT and its revenue, savvy partnership agreements with content providers and carrier integrated billing, its model predated the application of these mechanisms by Apple’s iPhone and Google’s Android. Kushida observes that there are different winners and losers at each wave of disruption, depending on the political and regulatory processes which shape the industry in a particular jurisdiction at the time. Who emerges the winner or loser is not a uniform prediction in the global market.

HANDSETS, APPS AND OTT SERVICES BOOM

The liberalisation of the sector in the early 1980s and 1990s also saw the emergence and increasing relevance of a separate market for handset and equipment manufacture. While the “big three” European Union countries (France, Germany and the United Kingdom) grappled with getting liberalisation right, the Nordic countries swept into the research and development (R&D) market for equipment, with Nokia and Ericsson as the winners. These players were also critical on the global scene in the development of the GSM standard.

The development of technology at warp speed also led to the proliferation of numerous apps with downloadable software and upgrades completely exogenous to the mobile carrier. The US market focused its R&D on

content and services, with the onslaught of Amazon, eBay, Google, Yahoo and a host of others. Therefore the apps emerged the winners in this market.

OTT services and apps are now part of the value chain. They drive innovation and have led to the commoditisation of traditional services. Even the carriers are marketing smartphones with a shift to the provision of data services and packages bundled with OTT offers. At the same time, the prevalence of Wi-Fi has reduced the reliance on carriers. As a result, there is generally an increasingly disengaged customer base, lower thresholds of carrier loyalty and greater motivation to defect to other carriers when prices increase. Yet, the reality is that neither traditional nor contemporary services can run without infrastructure and the infrastructure is largely owned by the carriers.

REGULATING AN EVOLVING SECTOR

This infrastructure is clearly a cornerstone of the new wave of carrier business models. The corresponding regulatory burden is to ensure a dynamic regime which enables network operators to flexibly adapt their business models to respond to market changes while preventing the establishment of new barriers to entry into the evolving market.

It is futile to consider regulation of apps and OTT services in the same way as the regulation of traditional services. Among other things, OTTs are not specific to one country and therefore cannot be authorised in each country. The application of standard market definition and analysis tools is also largely irrelevant on account of the various dimensions and weightings of interdependence, complementarity and substitutability of traditional and contemporary services. The fit is unnatural, invalid and is often reduced to an unproductive war of semantics.

The creation of a level playing field must come from technologically neutral regulation applied to players similarly situated. The regulatory rhetoric, having already tried and failed to block OTT services, and then tried and failed to regulate them, should now turn to mechanisms that recognise apps and OTTs as legitimate components of the value chain while ensuring that the fundamental objects of regulation are realised in a fair, reasonable and nondiscriminatory manner (FRAND).



The regulatory solution should, therefore, be adaptive, flexible and fit for purpose, while avoiding strangulation of creativity and R&D. A two-tier approach in which regulation of infrastructure is separate from matters of services and products is inevitable.

Key considerations are as follows.

1. INFRASTRUCTURE

Without a doubt, this has always been and should always be the main concern for the political and regulatory will. Without infrastructure there is no access or push for R&D in the sector. Political will should, therefore, be focused on ways to encourage and enhance funding mechanisms for infrastructure rollout. Use of funding allocated for the provision of universal services is always a key component of infrastructure rollout, as well as consideration of tax and other incentives to cushion the cost to the carrier for the build out of this most expensive resource.

Additionally and critically, resilience measures, such as redundancy and backup access, are essential. For example, the Caribbean is reeling from the aftermath of numerous hurricanes and it is critical that there are adequate mechanisms in place, facilitated by governments, to avoid countries going dark for long periods after a natural disaster or even after an act of terrorism. For weeks following Hurricane Maria nearly half of Puerto Rican subscribers had no phone service. Dominica suffered unspeakable damage and, with it, the complete loss of communications with the outside world, save through amateur radio relay. Cyberhealth issues are also critical to the infrastructural aspects of the communications value chain.

2. REVENUE ENHANCEMENT

In Trinidad and Tobago, as in most of the world, there have been reductions in carrier revenue and subscriber numbers, in some cases without a transfer to other carriers. With the onslaught of OTTs, customers now have access, through a Wi-Fi connection, to free communications technology for voice and video, free instant messaging, and free or low-cost music and video content. The burden of

building, maintaining and enhancing infrastructure, along with operations, management and quality of service obligations, rest with the carrier. Carriers need to embrace this new wave, along with the transformation of the value chain, and enhance their revenue base by wooing customers to stay and become engaged while on their networks.

Many operators have entered into content sharing agreements with OTT players and implemented carrier aggregated billing. Bundling services with data and pricing to ensure average revenue per user (ARPU) goals are met may also be crucial. For example, MTC Namibia provides a package that simulates instant messaging by bundling a high number of texts (SMS) with voice and data, and 21 countries in Africa have partnered with Facebook to provide a Free Basics package on their platforms. Carriers can look to their access to big data and use that as a revenue earner, i.e., they can use the data to enhance and personalise the customer experience, increase operational efficiencies, partner with OTT players and extend their subscription revenues.

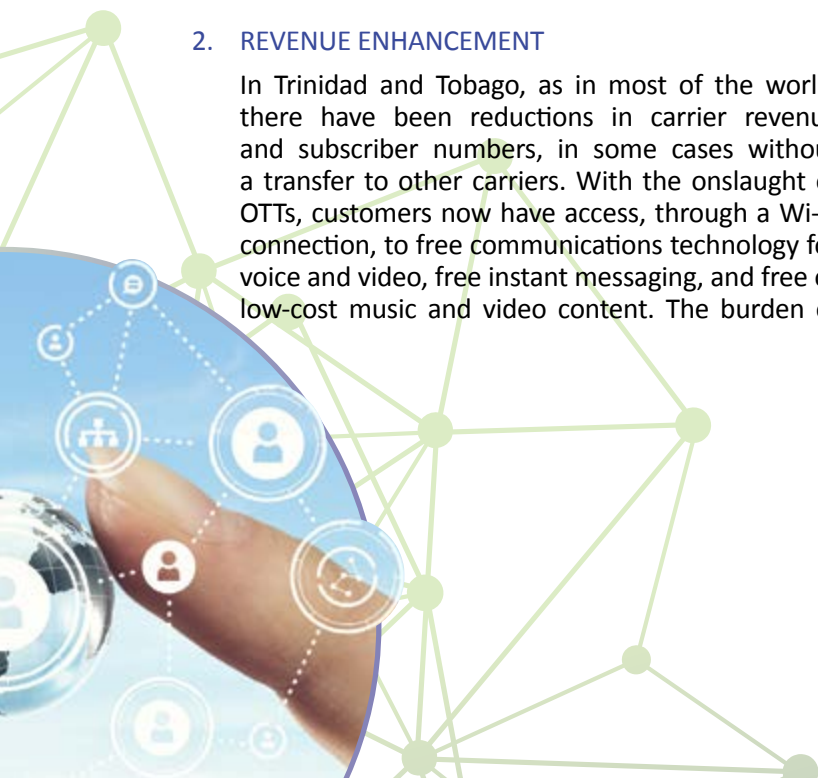
3. CONTENT

The main conundrum in addressing OTT is the authorisation of content. This is the major issue that requires action on a global scale, not just by the communications sector, but by the intellectual property (IP) sector as well. Emerging technology is premised on “whenever, wherever” and the ever popular “all you can eat” buffet. However, geo-blocking means that the customer who pays for a subscription in one jurisdiction cannot access her content when travelling in another region. It is perhaps time to consider a change in the way we look at IP rights and the creation of artificial scarcity of these products. The open platform that is the Internet does not support the creation of a product in one country being blocked from access in another.

The reality is that the technology, with all its technopirates and development of software-defined networks (SDNs), enables the customer to get what she wants, when she wants, no matter what. The creation of a system that addresses the no-barrier zone that is the Internet is now much needed.

4. COMPETITION

In 2011, the EU competition directorate approved the merger of Skype and Microsoft on the grounds that this Internet voice and data merger did not significantly impede competition. In 2014, it approved the acquisition of WhatsApp by Facebook. It concluded that, regardless of whether



Facebook introduced advertising on WhatsApp, or collected user data, the transaction would not raise competition concerns. The EU further relied on the fact that a large amount of Internet user data that is valuable for advertising purposes is not within Facebook's exclusive control. However, in 2017, Facebook was fined €110 million for submitting inaccurate information on whether it could link WhatsApp numbers to Facebook accounts. Apparently, it knew it could and, subsequent to the approval in 2014, did so.

Such merger activity shows the vibrancy of a sector that is here to stay and is supremely lucrative. But the need for effective competition regulation does not go away with the fact that a bunch of bright people have created a new dynamic frontier, and does not mean a "free-no-consequences-attached" play. Whether competition regulation is fused with sector regulation is a political decision, but for small and emerging economies, competition regulation is best placed with those who know the sector and are required to regulate it.

We are also seeing the merger of companies in the sector that have a significant amount of control of personal and other information about customers. The big data phenomenon can be a good revenue earner for carriers, but it raises other important concerns.

5. PROTECTION

In consumer and national security interests, the biggest cry of traditional operators is that of an unequal playing field. The argument is premised on the fact that they are authorised and subject to the standards of their authorisation and to fee and universal service requirements. However, it is the standards that are to be applied to OTT that should

take up most of the regulatory debate. Regulation is not there to protect a carrier that cannot adapt to the new era and cannot effectively compete. Rather, regulation should ensure that the game is set with no preference *vis à vis* who wins or loses, but for the protection of the customer no matter who wins the game. Therefore, global standards for the operation of OTT are required for quality of service, customer protection and privacy, cybersecurity and national security interests, and data security.

RULES ON A GLOBAL SCALE

Regulation is not obsolete—not yet. In a market that is ever changing, rules must be set and a watchdog appointed to ensure that the customer experience is a good one and that the policy objectives of governments are met through the market players. What is needed is a supplement to national-specific rulemaking, since the game is now set across the global stage and the players are not always within the jurisdiction of our own national sovereignty.

The key is to set global rules for players with respect to maintaining operable service standards, protecting data and privacy and procuring contracts and content authorisation. It is critical that, while OTT may not be the best subject for regulation, the players are still placed within a framework of governance that would provide the rules of the game while allowing them to continue to be the innovation drivers they have become.

At the same time, regulatory and political intervention is needed to ensure that carriers, which are the inevitable bearers of the infrastructural burden, are provided with the assistance and growth mechanisms needed to prevent a crash and burn of the industry as a whole.

A version of this article was first published in Issue 4, Volume 45 of Intermedia, the journal of the International Institute of Communications www.iicom.org.



The Critical Importance of a Resilient Caribbean Communications Infrastructure

The Caribbean region suffered its most violent hurricane season on record in 2017. Two of the hurricanes, Irma and Maria, developed into Category 5 hurricanes and were described as unprecedented, monster storms. In the wake of these hurricanes, the island of Barbuda became uninhabited, while others like Dominica and Puerto Rico suffered severe devastation, leaving millions of people without shelter, food, clean drinking water and electricity.

Millions of persons across the Caribbean were unable to communicate with family and friends, access emergency services, or even track or receive warnings and instructions on television or radio as events unfolded, because the telecommunications and broadcasting systems were so severely affected and, in some instances, totally destroyed.

From all indications, the Caribbean will continue to experience extreme weather conditions with increasing frequency, mainly due to the effects of climate change. Countries can expect more hurricanes, tropical storms and heavy rainfall that induce flooding and mudslides.

Additionally, this region is also an area where several land—and even undersea—volcanoes exist, the most active being the Soufriere Hills Volcano in Montserrat, and Kick ‘em Jenny, an active submarine volcano that has erupted at least 14 times since it was discovered in 1939.

In July 2015, Kick ‘em Jenny’s volcanic activity damaged the submarine fibre optic cables located on the sea floor between St. Vincent and Grenada. These cables are used to transmit international communications and affected customers in Trinidad and Tobago who experienced slow browsing speeds for landline, wireless and mobile Internet services.



From left: Avinash Singh, representing CANTO; Dexter Boswell-Inniss, Manager Networks & Standards at TATT and Daren Lee Sing, President of the Trinidad and Tobago Publishers and Broadcasters Association

Whilst earthquakes in the Caribbean have not generally been devastating in recent history—with Haiti being a tragic exception—the region is a very active area seismically and considered to be high risk for such disasters.

Natural disasters can adversely affect communications infrastructure such as fixed switching (including points of interconnection) and transmission networks, international gateways, outside plant facilities and buildings vital to the support of telecommunications and broadcasting services.

Specifically, infrastructure incidents such as fallen poles, disconnected aerial cables and damage to underground ducts and cables could all cause disruption to communications at the point when most needed. These can all be compounded by the loss of electricity.



Avinash Singh, Manager - Safety, Health and Environment, of Telecommunications Services of Trinidad and Tobago (representing CANTO)





Member of the audience participates in the Forum during the Question and Answer Session

The development and implementation of systems that are resilient and therefore able to withstand the effects of natural disasters and allow effective communications to take place, even in the midst of the most devastating disasters, is a matter that should consistently be on the front burner for regional governments.

This was foundational to discussions at the Telecommunications Authority of Trinidad and Tobago's (TATT) 27th ICT Open Forum titled *Resilient Communications: Staying connected during a disaster*, held on September 28, 2017. In her opening remarks at the event, Dr. Kim Mallalieu, Deputy Chairperson of the Board of TATT, said the "objective of today's Forum is to initiate a discussion on the need to enhance the robustness of public telecommunications and broadcasting networks so that they are resilient to both man-made and natural disasters".

Quoting from a consultation document on emergency communications prepared by the Trinidad and Tobago Office of Disaster Preparedness and Management in collaboration with TATT, Dr. Mallalieu told the audience



Aggrey Marsh, Software Developer and Consultant

comprising disaster agency officials, representatives of government and non-governmental agencies and members of the public, that "the failure of telecommunications and broadcasting infrastructure following natural or man-made disasters can seriously hamper relief operations".

When telecommunications infrastructure is damaged, network connectivity is disrupted or networks become congested. Response and recovery efforts are, therefore, delayed, and there is difficulty coordinating efforts, all of which affect the quality and timeliness of relief services. When broadcast transmitting infrastructure is damaged, disaster management agencies are severely handicapped in communicating alerts and updates to the public.



Member of the audience gives his points to the panel of speakers

Dr. Mallalieu pointed out that, internationally, emergency telecommunications and broadcasting facilities are constantly upgraded to employ new and/or retrofitted technologies to ensure resilience.

One of the crucial needs of persons in the midst of a disaster is access to information. For example, knowing when it is safe to go outside or which roads are flooded or blocked by fallen trees. In the event of an earthquake, persons will need to know whether main arteries have been affected or buildings have fallen on roadways. Very important as well is the need for information about the availability of, and proximity to, critical emergency relief services.

The average person would expect such information to be delivered via broadcasting services, as Daren Lee Sing, President of the Trinidad and Tobago Publishers and Broadcasters Association, pointed out at the Forum. Mr. Lee Sing also expressed concern about the ability of security officials and government officials to contact media houses to provide information to the public in the midst of



Dr. Kim Mallalieu, Deputy Chairman of the Board, TATT

a disaster if stations' infrastructure is damaged, and worse, if telecommunications systems have been destroyed.

The solution is to ensure that, throughout the Caribbean region, the focus is placed on resilient communications systems.

Avinash Singh, Manager - Safety, Health and Environment at Telecommunications Services of Trinidad and Tobago (representing CANTO), who also presented at the event, indicated that there is an increasing recognition for technology to be resilient even under catastrophic disaster scenarios as "people rely on communications in times of disasters".

Caribbean residents may recall the concern we all felt when very little news was emanating from Dominica shortly after Hurricane Maria. There was a desire to find out what was happening with our Caribbean brothers and sisters, whether or not we knew persons living on the island. One can then only imagine the horror experienced by residents of that island when faced directly with the reality of severed communications—*anxiety over the safety of loved ones and the feeling of being cut off from the rest of the*



Dexter Boswell-Inniss, Manager Networks & Standards, TATT

world while wrestling with destroyed homes, flooding, lack of food and potable water.

Resilient communications infrastructure must, therefore, continue to be a key goal in this region. The International Telecommunication Union, in its October 2017 online issue of ITU news, stated that "when disasters strike, information and communication technologies (ICTs) play a critical role in relief efforts. They facilitate the flow of vital information needed for early warning and monitoring as well as the coordination of food distribution, rebuilding and aid logistics".



Daren Lee Sing, President of the Trinidad and Tobago Publishers and Broadcasters Association

Dexter Boswell-Inniss, Manager, Networks and Standards at TATT, took the opportunity at the Forum to share with the audience TATT's current three-year plan for building resilient communications in Trinidad and Tobago. The plan calls for research to begin on technical standards for resiliency and robustness for mobile networks. A similar process will be undertaken in the development of technical standards for mobile networks, followed by work on broadcast networks.

These initiatives are in keeping with TATT's mandate outlined in the Telecommunications Act to facilitate the orderly development of a telecommunications system that serves to safeguard, enrich and strengthen the national social, cultural and economic well-being of our society and promote and protect the public interest.

Mr. Boswell-Inniss informed the audience that TATT's work in this area will be guided and informed by the ITU-T Recommendations, including Series K, G and L and the *Handbook on Telecommunication Outside Plant* (online edition 2013).



MARKET INSIGHT

Fixed Broadband Internet Subscription Increase in Q3 2017

There was a minor increase in the number of fixed Internet broadband subscriptions in Trinidad and Tobago in September 2017 compared with to June 2017. There were approximately 249,000 fixed broadband Internet services subscriptions in Trinidad and Tobago, at the end of September 2017, taking penetration levels to 58 out of every 100 households in the third quarter of 2017.

This market has experienced quarter-on-quarter declines in the demand for fixed broadband Internet services from December 2016 to June 2017. Thus, the increase in subscriptions in the third quarter, albeit small, is welcome, as TATT expects this market to rebound in the near future.

58 OUT OF EVERY 100 HOUSEHOLDS

**FIXED
INTERNET**

A large graphic featuring the words 'FIXED INTERNET' in white, bold, sans-serif capital letters. The word 'FIXED' is on the top line and 'INTERNET' is on the bottom line. The background is a solid blue color. In the center, there is a large, light blue house-shaped outline. Inside the house, there is a circular icon representing a network or tree structure with several nodes. Below the text, there are several stylized human figures: a woman in a yellow top and purple pants sitting on the 'I' of 'FIXED' using a laptop; a woman in an orange top and blue pants sitting on the 'E' of 'FIXED' using a laptop; a man in a red shirt and black pants standing and looking at a smartphone; a woman in a brown dress standing and looking at a smartphone; a man in a blue shirt and black pants sitting on the ground on the left, looking at a smartphone; and a man in a purple shirt and black pants sitting on the ground on the right, using a laptop.

For more statistics on the performance of the telecommunications and broadcasting sector, please read the most recent Quarterly Market Report on TATT's website: <http://tatt.org.tt/ReportsStatistics/QuarterlyMarketReport.aspx>

TATT - Building a Better Digital T&T!

In a recent landmark Court of Appeal case, in Trinidad and Tobago, an individual was convicted for using radio-transmitting equipment without a licence from the Telecommunications Authority of Trinidad and Tobago (TATT). The Court imposed a fine of \$50,000 on the offender. The offender would have been imprisoned had the fine not been paid.

Section 36 of the Telecommunications Act (the Act), *inter alia*, prohibits persons from installing, operating or using radio-transmitting equipment without a licence granted by TATT.

The Act provides that a person who fails to comply with, or acts in contravention of, section 36 of this legislation commits an offence and is liable on summary conviction to a fine of up to \$250,000. That person can also face imprisonment of up to five years. In the case of a continuing offence, the person can attract a further fine of \$10,000 for each day the offence continues after conviction.

The offender was charged in March 2007 with operating radio-transmitting equipment without a licence, following investigations by TATT's telecommunications inspectors. TATT pursued the prosecution of the offender through the Magistrates' Court (where the offender was initially found not guilty) and subsequently to the Court of Appeal, which overturned the decision of the Magistrates' Court and convicted the offender.

TATT is empowered by the Act to manage the country's telecommunications and broadcasting sectors and this is one example of work done over the years in the areas of monitoring and compliance. TATT's monitoring and compliance initiatives are aimed at preventing and detecting breaches to the Act.

Another key area of TATT's focus is consumer protection. Since the organisation's inception in 2004, this activity has increased to match the growing complexity of the sectors, which includes providers and consumers of telecommunications services, including persons with disabilities (PwDs).

Consumer protection is obligatory, as section 18(1) (m) of the Act mandates TATT to "...investigate complaints by users, operators of telecommunications networks, providers of telecommunications and broadcasting services or other persons arising out of the operation of a public telecommunication network, or the provision of a telecommunications service or broadcasting service, in respect of rates, billings and services provided generally and to facilitate relief where necessary..."

From the very early days, consumers were provided with the option to have TATT represent their concerns with providers, towards the resolution of unsolved complaints. The initial facility allowed consumers to lodge complaints with TATT via a process of filling in a form, or writing a letter and getting it to TATT via email, post, fax or in person.

TATT's first Annual Report, covering the period July 2004 to September 2005 (i.e., the first 15 months of its operation), showed 138 valid complaints were received and 92 resolved within that same period.

The facility to lodge complaints with TATT has since been enhanced. This was achieved through a series of initiatives, including educating consumers about their rights and obligations during visits to communities, and media advertising advising the public about TATT's consumer complaints facility,

Additionally, in 2010, a more consumer-friendly process was instituted allowing for the submission of complaints via a toll-free consumer complaints line, 800-TATT. This is the primary mode for submitting complaints. However, persons may also submit complaints via TATT's

website www.tatt.org.tt. There is also the option to post complaints to TATT's offices at Gulf City, Lowlands Mall, Tobago or #5 Eighth Avenue Extension, off Twelfth Street, Barataria, Trinidad. Persons may also opt to visit TATT's offices to submit complaints. PwDs should note that both locations are wheelchair accessible.

FACILITATING CUSTOMER COMPLAINTS

In 2016, a customer relationship management (CRM) system was installed to electronically manage customer interactions and data throughout the customer complaint lifecycle.

In addition to improving efficiency within the process, these initiatives have increased public awareness of the consumer complaints facility and, thus, the number of complaints received. During the October 2016/September 2017 financial year, TATT acted upon a total of 587 valid complaints in relation to mobile and fixed line telephone, Internet and subscription television services. A total of 511 were resolved as at May 13, 2018.

The Act also mandates TATT to "...establish a consumer complaints committee to collect, decide on and report on consumer complaints, such reports to be included in the Authority's annual report..."

This committee, which was established in June 2008, is chaired by an individual external to TATT and includes members of the Board of Directors and staff.

During the current financial year, the committee commenced a series of individual meetings with chief executive officers/general managers of public telecommunications and broadcasting services, to discuss contemporary issues affecting consumers. These meetings have so far yielded very valuable fruit *vis à vis* TATT as well as the providers better understanding consumers' needs.

TATT continues to astutely manage Trinidad and Tobago's telecommunications and broadcasting sectors, which have experienced phenomenal growth over the last 10 years. Statistics gathered by TATT and recorded in its Annual Market Report and Quarterly Market Reports, reflect a substantial uptake of telecommunications

and broadcasting services between 2007 and 2017. While the latter part of that 10-year period reflected the country's moderate economic growth, overall subscription figures in the mobile phone and Internet markets have been notable. Most impressive has been the mobile telephone market in which the subscription figure for 2007 was recorded at 1,509,776. Since then, there was an approximate 35% increase, taking that figure to 2,036,000 at end of the third quarter of 2017, in a country with a population of just 1.3 million.

Subscriptions in the pay television and fixed line telephone markets have reflected the global trend of individuals' preference for Internet-based services that are consistent with "on-the-go" lifestyles. Thus, it is no surprise that the Internet market bears a pattern of increase over the years, having jumped from 81,721 subscriptions in 2007 to 962,900 by the end of the third quarter of 2017. Of this figure, 255,600 were for fixed Internet subscriptions and 707,300 for mobile.

In the fixed Internet market, quarter-on-quarter demand declined between December 2016 to June 2017. There was, however, a minor increase by the end of September 2017, resulting in 249,000 subscriptions for fixed broadband Internet services. For penetration levels, this means that approximately 58 out of every 100 households in Trinidad and Tobago had a fixed broadband Internet subscription in the third quarter of 2017.

THE SIGNS ARE POSITIVE

The increase in fixed broadband Internet subscriptions in the third quarter, albeit small, is welcomed and TATT expects this market to rebound in the near future.

As the uptake of ICT services expands, TATT continues to work assiduously to implement initiatives for underserved and unserved communities, including PwDs, to ensure digital inclusion.

The current financial year 2017/2018 will see TATT continuing its efforts at "Building a Better Digital T&T!"

For more statistics on the performance of the telecommunications and broadcasting sectors, please read our most recent Quarterly Market Report available at <http://tatt.org.tt/ReportsStatistics/QuarterlyMarketReport.aspx>.



Don't Break the Law!

Individual fined \$50,000 for operating radio-transmitting equipment without a licence

In February 2018, the Court of Appeal fined an individual \$50,000, to be paid within 90 days, for operating radio-transmitting equipment without a licence, contrary to Section 36 of the Telecommunications Act, Chap. 47:31 (the Act).

Radio-transmitting equipment generates radio waves for communication purposes and enables devices such as two-way radios and drones.

AUTHORISED USE OF RADIO TRANSMITTING EQUIPMENT IN TRINIDAD AND TOBAGO

The Act prohibits the installation, operation or use of any radio-transmitting equipment without a licence granted by the Telecommunications Authority of Trinidad and Tobago (TATT).

A person who fails to comply, or acts in contravention of section 36 of the Act, commits an offence and is liable,

on summary conviction, to a fine of up to \$250,000. The person can also face imprisonment of up to five years and, in the case of continuing offence, a further fine of \$10,000 for each day the offence continues after conviction.

IN BRIEF

In general, low power, short range, mass consumer market devices such as cordless telephones, cellular mobile handsets and garage door openers are class licenced by TATT and do not require persons to have an individual licence.

Persons are strongly advised to visit TATT's website at www.tatt.org.tt for further information on TATT's licensing process and the requirements to ensure conformance with the law.

Tech Tips

ENERGY SAVING TIPS

There is a lot consumers can do to save energy costs, which will also reduce environmental impact and help to make the world a better place for future generations to live in.

Here are some simple tips for managing energy costs.

Lighting:

- Turn off lights that are not being used.
- Use compact fluorescent light (CFL) or light-emitting diode (LED) bulbs.

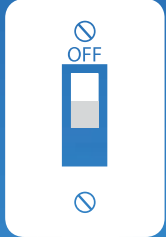
Cooling:

- Use a fan and an air conditioner together. This will create a wind chill effect, allowing you to increase the air conditioner's temperature without reducing comfort.

Appliances and Electronics:

- Unplug appliances and electronics that are not being used.
- Wash clothes in cold water when possible.
- Use drying cycle based on a moisture sensor rather than a timer.
- Hang clothes to air dry whenever possible.

These simple actions will cut your energy bill and preserve our beautiful planet.





***Interested
in learning more
about***

- ***Consumer Rights***
- ***Cyber Safety for Kids***
- ***Girls and Women in Tech***
- ***Seniors and ICTs***

Here's your chance!

FREE, NO CHARGE!



Simply send an email request to info@tatt.org.tt.

*For more information about the role and responsibilities of the
Telecommunications Authority of Trinidad and Tobago log on to*

www.tatt.org.tt

Complaints Hotline - 800 TATT (8288)



Telecommunications Authority of Trinidad and Tobago

5 Eighth Avenue Extension, off Twelfth Street, Barataria,
Republic of Trinidad and Tobago

T: +1 (868) 675-8288; +1 (868) 221-8288 | F: +1 (868) 674-1055

Complaints Hot-line: 800-8288

E: info@tatt.org.tt | W: www.tatt.org.tt

Tobago Office

Shop D48, Gulf City Lowlands Mall,
Lowlands, Tobago

T: +1 (868) 639-8288 (T/F)

f Telecommunications Authority of Trinidad and Tobago

t @TATT2004

YouTube Tattorg

