





Special Issue of TATT Bytes: Conferences and Event Foreword

Information and Communications Technology (ICT) innovation and creativity took centre stage at conferences and events in which the Telecommunications Authority of Trinidad and Tobago (TATT) participated and hosted over the last few months.

At these events, ideas on how to strengthen the local and regional telecommunications and broadcasting industries were discussed. Attendees were given unparalleled access to resources and information on how to maximise efficiency and growth within ICTs.

In keeping with the themes of the various events hosted, key note speakers delved into areas such as Data Quality, Big Data in ICT, licensing of content and the commercialisation of content, including broadcasting. Discussions on Mobile-finance, spectrum management and ICT entrepreneurism also took place as these events unfolded.

Involvement in these events reflects the heart of TATT, which is all about fostering "an open and competitive telecommunications and broadcasting environment to facilitate the use of ICTs for social and economic well-being". Thus, this organisation welcomed the opportunity for local, regional and international stakeholders to collectively explore and provide solutions to industry needs in areas such as consumer trends and the latest technological advancements such as "5G, convergence and connectivity".

Having gained so much valuable information from these events, TATT deems it a wonderful opportunity to share with our readers the highlights in this special issue of TATT Bytes. You are also encouraged to join in on all ICT related conversations by participating in TATT's ICT Open Fora and other events as they are advertised. They are open to the public

We hope you enjoy reading this issue.





"Broadband supporting life in the 21st Century," was the focus of telecommunications regulators, operators and players from around the region who attended the Broadband Caribbean Forum (BCF) 2016, held at the Hyatt Regency Hotel from July 14th to 15th.

Participants examined a slew of topics including Regulatory Initiatives, International Connectivity, Financing Broadband Rollout, Maximising Spectrum Utilisation, Big Data and Educational Access to All. The main objective of the BCF 2016 was to address the importance of broadband to Caribbean life in the 21st century, as captured in CARICOM's vision for the Caribbean Single ICT Space.

The possibilities for social and economic development were considered in the context of exploring the role of broadband in such areas as finance, education, broadcasting, entrepreneurship and social inclusion. The forum also looked at policy, regulatory and consumer issues impacting on broadband rollout and utilisation as well as innovative technologies.

The forum kicked off with an opening ceremony, featuring addresses from high profile persons such as Minister Darcy Boyce of Barbados, Minister Gregory Bowen of Grenada, TATT's Chairman Gilbert Peterson S.C. and CTO Secretary General Shola Taylor.

TATT's Chairman Mr. Gilbert Peterson S.C. noted Broadband Internet access "is undoubtedly a key driver for Information and Communication Technologies (ICTs) and aids in enabling socio-economic growth. It also serves as a vehicle for continuous access to a wealth of information, enabling technological and service innovations,

fostering a connected society and empowering people."

Mr. Peterson said, "TATT is dedicated to creating connective living — using broadband to connect people to things and improving what users are able to do. We are committed to the future of broadband — MOBILITY! Connectivity everywhere — on your phone, tablets, smart

devices ensuring the availability of big data and the internet of everything, driving growth in Broadband."

He noted that TATT's universal service initiatives were being developed in accordance with its Universal Service Framework and recently enacted regulations. These were expected to include access to mobile devices for persons with disabilities and the Government's national Wi-Fi initiative, both of which

will increase broadband availability to persons in the access gap.

TATT had two presenters at the forum; Ms. Nievia Ramsundar, Corporate Secretary and Mr. Kirk Sookram, Executive Officer – Technical Services & Development.

Ms. Ramsundar in her presentation titled "Defining the role of the regulator in a



changing ICT market" informed that the regulator had three major roles namely:

- 1) Market Manager to ensure efficiency and sustainability of players and market
- 2) Resource Manager to ensure allocation of national resources to effectively drive the market and
- 3) Consumer Protector to ensure effective safeguards are in place for prices, quality of service, data privacy and universal service.

She said that telecommunications' focus has moved from an information society to a knowledge based society, with the market developing into one that will be highly digitised, with convergence at new heights and resulting in a regulatory tug – of – war to protect fair market and consumer interests.

Mr. Sookram, who spoke on "Maximising Spectrum Utilisation" informed that we will need more spectrum in the future to support the demand for higher mobile broadband speeds. He emphasized the importance of capitalising on the digital dividend, which is the blocks of spectrum released after the transition from analogue to digital television, namely spectrum in the 700MHz Band. He stated that in the Caribbean this spectrum was viewed as the digital opportunity, since a significant quantity of this spectrum is already available. The benefits of the digital dividend include better in-building coverage, reduced cost in the deployment of networks and the employment of latest mobile technologies (LTE).

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Broadband supporting life in the 21st Century



Local and international attendees

Front row: left to right

Dr. Kim Mallalieu - Deputy Chairman, TATT; Bernadette Lewis - Secretary General, CTU; The Honourable Catherine Hughes, Minister of Public Telecommunications, Guyana; Cynthia Reddock - Downes - CEO (Ag), TATT

Middle row: left to right

Nigel Cassimire, Telecommunications Specialist, CTU; Eric Butler - Board member, TATT, Deoraj Seegobin - Board member, TATT; Shola Taylor - Secretary General, CTO; The Honourable Gregory Bowen, The Honourable Darcy Boyce, Nievia Ramsundar-Corporate Secretary, TATT

Back row: left to right

Gilbert Peterson, S.C. - Chairman, TATT, Kevin Connolly - Affordable Access Initiatives - Business Development, Microsoft; Oliver Elcock - Board member, TATT; The Honourable Melford Nicholas; Nikolaiski Ali - Board member TATT, Terrance Henry - Board member, TATT.

In addressing delegates, presenters and special guests at a welcome dinner, Minister of Public Administration and Communications, the Honourable Maxie Cuffie pointed out that millions are still not benefitting from the opportunities made possible by today's technologies, which he described as "the most powerful and pervasive platform in history".

He later assured there is no need to reinvent the proverbial wheel. "If we agree that we are all on the same path to ensuring that broadband access is critical to supporting life in the 21st century, then I am certain we can find the synergies amongst ourselves that would assist our governments in moving this from a Conference theme to a budgeted item".

"This conference presents us with an invaluable opportunity to learn from those who have already embraced broadband in their countries, so that

we can implement what worked as we see "Broadband Supporting Life in the 21st century" the minister added.

In her closing remarks Mrs. Cynthia Reddock-Downes, TATT's CEO (Ag) expressed the hope that Caribbean, governments, regulators and other ICT industry stakeholders will meet and continue the dialogue with a view towards making decisions on the way forward in many of the matters discussed at the BCF 2016.

BCF 2016 was organised by the Commonwealth Telecommunication Organisation (CTO), with the support of the Caribbean Telecommunications Union (CTU) and the Telecommunications Authority of Trinidad and Tobago (TATT) and was attended by approximately 120 persons, who heard from 40 speakers.





Exploring Innovation in Transactions& Financing in the Caribbean



"Exploring Innovation in Transactions & Financing in the Caribbean" was the theme of a three day workshop on digital financing held at the Hilton Trinidad & Conference Centre, from June 1- 3, 2016.

The workshop was held by the International Telecommunications Union (ITU) in partnership with TATT and the United Nations Economic Commission for Latin America and the Caribbean (UN ECLAC). Participants included regional policy makers in ICT and finance as well as representation from ICT advisors and businesses.

Feature Speaker, the Honourable Maxie Cuffie, Minister of Public Administration and Communications (MPAC), told the audience that the Government of Trinidad and Tobago is focussing its attention on expanding economic diversification in an attempt to make this country the financial capital of the region. Minister Cuffie also drew reference to a recent MasterCard study which evaluated the social cost of cash. This study reported that Trinidad and Tobago's economy can grow by 3.5% if there is greater use of electronic payment systems.

He noted that there are three areas on which Trinidad and Tobago needs to concentrate:

- Cyber security and information security toward building confidence in investors and the citizenry. He stressed the need for enhanced and increased applications to boost cyber security and transparency in the financial sector.
- 2) He added that there is a need for full promulgation of the Data Protection Act and Electronic Transactions Act, which are both currently key deliverables on the agenda of the Ministry of Public Administration and Communications.
- 3) The development of human capacity to provide skilled labour due to emerging ICTs. Minister Cuffie underscored the need for training in computer forensics and other related fields to complement the skills of law enforcement personnel, as he believes this would create new career paths for law enforcement professionals.



Exploring Innovation in Transactions & Financing in the Caribbean continued

The audience at the opening ceremony was also addressed by TATT's Chief Executive Officer (Ag.), Mrs. Cynthia Reddock-Downes, ITU's Area Representative at the ITU Area Office for the Caribbean, Mr. Cleveland Thomas, UN ECLAC's Deputy Director, Mr. Dillion Alleyne and the Caribbean Telecommunications Union's Telecommunications Specialist, Mr. Nigel Cassimire.

This workshop provided stakeholders from various sectors, who attended the event, with interactive sessions along the theme of utilising technology innovations towards improving financial transactions and financing arrangements.

Participants benefitted from information presented on some of the international trends toward improving efficiency and speed of transactions and the potential impacts of increased participation in the digital economy via the lowering of transaction costs and providing the means by which customers have hassle free business transactions.

The audience was introduced to concepts such as FinTech, Financial Innovation, Financial Inclusion, Digital Financial Services, electronic payments, mobile money, digital currency and improved capabilities to attract funding in this evolving landscape.





At the closing of this event, Mrs. Cynthia Reddock-Downes reminded participants that not only will there be demand for digital financial services by average citizens in the Caribbean region, but also business opportunities will begin to emerge for medium to large entrepreneurs.

She assured members that in spite of the general reluctance from financial services regulators in the region to engage digital currency issues; this three-day workshop should move countries into action in light of developments in exploration of transactions and financing in other developing nations across the globe.





Statistical Data Key to International Ranking

Strengthening the capacity of countries to produce national statistics on telecommunications and ICTs was the focus of a one-day workshop titled "ITU ICT Indicators" on Tuesday May 31st 2016 at the Hilton Trinidad and Conference Centre.

The workshop was held by the International Telecommunications Union (ITU) in partnership with TATT and the United Nations Economic Commission for Latin America and the Caribbean (UN ECLAC). Participants included regional policy makers, ICT advisors as well as partners responsible for data collection and production in ministries, regulatory agencies and national statistical offices.

Dr. Kim Mallalieu, Deputy Chairman of TATT, in her opening address, stated ICT indicators are an "essential instrument of social and economic developmental programming. This is not only so at a national level but so too at a global level in order for countries to benchmark themselves against their peers."

She noted that statistical data was used to determine countries' performance and international ranking. She added "We in Trinidad and Tobago have gathered and applied ITU-endorsed indicators for the purpose of, among other things, reducing the digital divide. For example, in 2007, the Digital Opportunity Index (DOI) and the Digital Access Index (DAI) were computed at the national level as well as at the geographically defined community level."

Mr. Sean O'Brien, Director of Statistics at the Central Statistical Office (CSO) of Trinidad and Tobago in his opening address stressed on the need for efficacy in gathering national statistics and the benefits of a robust system of timely and accurate data collection. Mr. O'Brien indicated that there are plans for the CSO to be strengthened and restructured into a body to be named the 'National Task Force'.





This restructure will allow for a national statistical system which derives data in keeping with international statistical standards.

Areas discussed at the workshop were wide ranging and included the presentation of the Measuring the Information Society (MIS) Report 2015, the ITU flagship annual analytical report on the state of ICT use, access and affordability worldwide and strengthening the capacity of countries to produce national statistics and indicators on telecommunications and ICTs.

The forum also briefly discussed Data Quality and Big Data in ICT and in overall development, as well as, the Internet of Things (IoTs) in the context of security and finance based mobile applications.

Ms. Annie Baldeo, Executive Officer in Policy, Planning and Market Economics at TATT presented a country case study on ICT measurements in Trinidad and Tobago. She explained that there had been a drastic increase in mobile Internet subscriptions in Trinidad and Tobago while fixed voice subscriptions have declined. Ms. Baldeo assured that while there are several challenges with the ITU's data collection process, TATT does all that is necessary to provide quality ICT data. Country case studies were also presented by representatives from both Suriname and Barbados.

Trust & Technology the World Economic Forum's Global Information Technology Report 2016

"We are at the beginning of a global transformation that is characterised by the convergence of digital, physical, and biological technologies in ways that are changing both the world around us and our very idea of what it means to be human. The changes are historic in terms of their size, speed, and scope...."

- Adapted Klaus Schwab. Fourth Industrial Revolution (2016)

Advances in technology have revolutionised the way the world communicates, does business and citizens experience their day-to-day lives. "The Information Age has peaked and is giving way to something else...the Experience Age", stated Mr. Trevor Libert, Chief Executive Officer of National ICT Company Limited (iGovTT) at the launch of the World Economic Forum's (WEF) Global Information Technology Report 2016 on Thursday 7th July at the UWI-Arthur Lok Jack Graduate School of Business (ALJGSB).

The 2016 WEF report revealed that Trinidad and Tobago's Network Readiness Index (NRI) was 67th amongst 139 countries. According to that document, the NRI "assesses preparedness to reap the benefits of emerging technologies and to capitalise on the opportunities presented by the digital revolution and beyond". The document goes on to state the NRI maps out the factors, policies and institutions that enable a country to fully leverage information and communication technologies (ICT) for shared prosperity.

Innovation Conundrum

The WEF report showed that in 2016, this country continued to marginally improve, rising from 70th in 2015, to 67th in 2016, highlighting the country's enhanced capacity to use ICTs for increased competitiveness and social well-being. This continued advancement is







Trust & Technology the World Economic Forum's Global Information Technology Report 2016 continued

A Question of Trust

Whilst delivering the feature address, the Honourable Maxie Cuffie, Minister of Public Administration and Communications, questioned whether the reluctance by government and businesses to use digital models was a trust issue.

The Minister noted that individuals are more technology savvy and ahead of both businesses and government. He stressed the challenge is what can be done to straddle this gap and address missed opportunities to attract the level of usage that has catapulted countries such as Singapore, Sweden and Finland to the forefront of the Report.

He posited that one step to overcome this issue and improve this country's performance is the development of "trust" amongst all stakeholders. He noted "there exists the school of thought that argues technology's power to connect us with each other, whether to do business, to interact socially, or even to explore new horizons in health care and social service delivery, is only one part of the story. The other more critical part is the human part".

Minister Cuffie added "there is no doubt that with each passing year, it has grown much easier and infinitely more convenient for persons, businesses and governments to communicate and interact with each other". "Largely because of this increased use of technology, the simple, though often overlooked element of human trust that must exist between users of this





technology, has become one of the most important attributes of the post-modern culture. Trust, we are told, is the lubricant that allows these technologies to work so efficiently".

"I want to suggest as well", the Minister added, "that one of the primary reasons why trust between technology users has become so evidently important, is due simply to the increase in transparency that attends the tsunami of interconnected social media and other electronic communications capabilities. We have truly never really lived in a world in which we are quite so exposed".

Passage and full implementation of the Electronic Transactions Act, the Proceeds of Crime Act, along with the Data Protection Act and the Cyber Crime Act, will go a long way to ensuring greater trust in the system, the Minister added.

The WEF Report

The Report is considered a critical instrument by policymakers, private entities and regulators alike according to WEF, as "over the past decade, the Global Information Technology Report series, has become the most comprehensive and respected international assessment of the preparedness of economies to leverage the networked economy. This research provides a unique platform for public-private dialogue on best policies and for determining what actions will further national ICT readiness and innovation potential".

Leadership Roundtable: Back to the Future -Taking Advantage of Digital Opportunities

A Smartphone Nation
Trinidad and Tobago is a smart phone nation evidenced by this country's approximately 1.5M mobile voice subscribers as at December 2015, all with the ability to access the Internet. So said Mr. Nikolaski Ali, member of the board of directors of TATT, during an address at the start of the organisation's Leadership Roundtable titled Back to the Future -Taking Advantage of Digital Opportunities, held to commemorate World Telecommunications and Information Society

This statistic, he noted, is recorded in TATT's recently published Annual Market Report 2015:

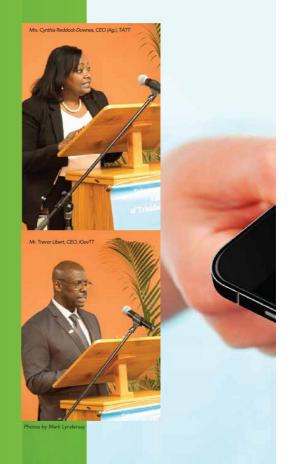
annually. This growth is important, he said, as access to broadband Internet has been recognised as an essential catalyst in the development of a nation's journey towards a digital economy and helps foster economic

The Bigger Picture
Reflecting on the "Back to the Future" theme of the Leadership Roundtable, Mr. Ali complimented TATT's focus on the bigger picture stating "we have a wonderful opportunity to recognise that we are the past of tomorrow's future". The future of healthy local ICT entrepreneurism ecosystems is significantly dependent on the decisions and actions of both

Also referring to the bigger picture was Mr. Trevor Libert, Chief Executive Officer, National ICT Company Limited (iGovTT), one of the presenters at the Leadership Roundtable. Mr. Libert told the audience "indeed one must look at the bigger picture" pointing out that in 2015, the United Nations launched a fifteen-year development agenda called the "17 Sustainable Development Goals (SDGs)". Amongst the SDGs is the 9th pillar - Industry, Innovation and Infrastructure. One of the targets is basic infrastructure like roads, information and communication technologies... the goal of which is to build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation. Mr. Libert added this can be a "useful and instructive benchmark on which we [Trinidad and Tobago] could centre and shape our own development agenda".

Crafting a robust ICT Infrastructure

Crafting a robust ICT Infrastructure
Mr. Trevor Libert, outlined the various
e-government programmes and Wi-Fi initiatives
that are available to the general public. He
described the ways in which access to e-services
such as the TTConnect portal, e-tax, tenders
online and ttbizlink, have paved the way to
providing ICT services for digital inclusion and
highlighted the growing importance of access to
services such as STAR.TT Access Centers, ICT for
Seniors and Wi-Fi on buses.





He also noted that e-services access and digital inclusion have contributed to the crafting of a robust ICT infrastructure to springboard ICT entrepreneurship.

Show me the Money

The Leadership Roundtable also touched on modern marketing tools like strategic content creation for social marketing strategies. Ms. Albertina Navas, Director of the Master's Programmme of Small and Medium Enterprises Management and Director of the Center for Social Media Studies at UWI-Arthur Lok Jack Graduate School of Business stressed, "Trinidad and Tobago has not capitalised on creating strategic content that will generate more clicks and revenue".

Presenting via Skype, Ms. Navas told the audience that in tandem with developing genuine content that will create trust and promote brands that will increase traffic, website design is also critical, especially for growing entrepreneurs. She pointed out that in the world

of ICTs and e-business, to take advantage of digital opportunities, a mobile user interface for the turbo charged web space was essential.

Ms. Navas also stressed that while there are a number of other ingredients that feed into the successful development and marketing of an app, the fact that Trinidad and Tobago has over 1.5M mobile subscribers there exists a profitable niche market for any budding entrepreneur.

The Future

During the panel discussion participants identified the need for more legislative and regulatory improvements. This concern led to discussion on the e-Transactions Act, of which Parts I, II, III, IV and VII have been partially proclaimed. Consensus amongst attendees was that full proclamation and implementation of this Act will strengthen e-business services and lead to further ICT sector development.



ICT entrepreneurship remains a key focus for TATT as this organisation continues to oversee the strategic development of this country's telecommunications and broadcasting sectors. Increased focus on entrepreneurship will lead to greater demand for broadband and other telecommunications and broadband services

This Leadership Roundtable was hosted by TATT in commemoration of the International Telecommunications Union's, World Telecommunications and Information Society Day (WTISD) 2016 celebration. For more information on this event and other upcoming events visit www.tatt.org.tt.





Broadcasting Licensing in the



Today's broadcasting environment has been enriched by revolutionary changes brought about by advanced technology and the conversion of telecommunication and broadcasting services.

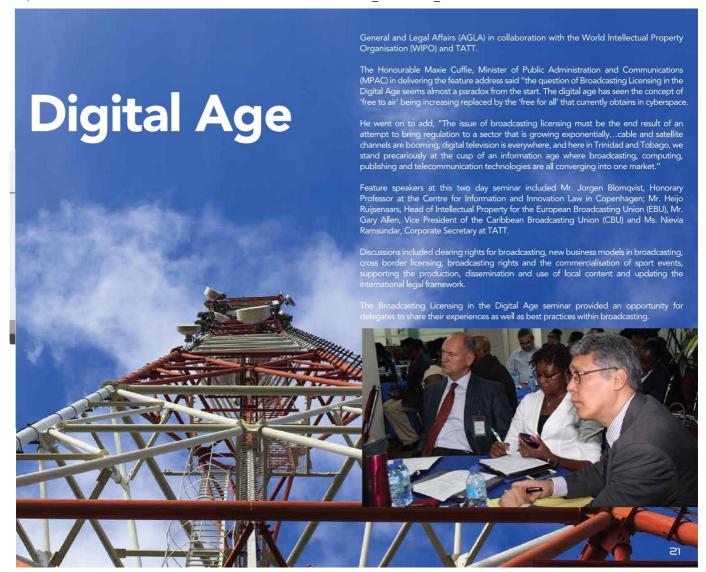
Audiences in this digital age, expect to view the broadcast of sports, entertainment, news programmes etc. across multiple devices and platforms on TV, radio and online with ease and mobility.

The smart phone, other new technology and conversion of services have introduced new challenges to regulators and the industry on the whole as new ways have evolved to easily copy and distribute copy-righted material effortlessly in this digital environment. This has resulted in the erosion of long term TV market value and threat to Intellectual Property Rights (IPR) protection. According to Carole Croella, Senior Counsellor in the World Intellectual Property Organization's (WIPO), Copyright Law Division, "broadcasting is growing and is in full transition to provide more and more services which provide large benefits to society".

"Broadcasting industry is a creative industry and one of the largest copyright related industries, as evident by several economic studies, and it plays a key role in the economic development of countries, by its creation of jobs and revenues," stated Croella. "Broadcasting", she added "can also be seen as the engine of growth for both social and cultural development."

However, the issues of signal piracy and copyright infringement that stymie revenue generation and the promotion of sustainable growth of the broadcasting industry, remain an ongoing concern of high priority amongst government and regulatory agencies across the world. Other challenges within the industry include raising awareness and building capacity within the area of licensing, trading rights across borders in broadcasting and copyright licensing in the digital environment.

Carole Croella was speaking at the Regional Seminar on Broadcasting Licensing in the Digital Age to address such concerns in May 2016, hosted by the Intellectual Property Office (IPO) of the Ministry of the Attorney



Girls in ICT Day 2016

The Telecommunications Authority of Trinidad and Tobago (TATT) hosted activities both in Trinidad and in Tobago, as well as took part in the Ministry of Public Administration and Communications (MPAC) event, to mark Girls in ICT Day 2016.

In the first event, young women in Tobago benefitted from TATT's full day mini exhibition held at TATT's Tobago office, Gulf City Mall, Lowlands on Thursday April 28th 2016. A few weeks later TATT supported MPAC's "Girls in Coding Workshop" on May 4th 2016. During the summer vacation young female residents of St Mary's Children's Home benefitted from their own event; a "Careers in ICT and Role Model" presentation and workshop on August 12th 2016.

Exhibition in Tobago

Young women from the sister isle were given guidance on academic programmes they should pursue, based on their passions, skills and abilities. They were also able to access information on the various careers within the telecommunications and broadcasting industry of Trinidad and Tobago.

These young women were advised that rapid changes in technology, driven by demand, meant the creation of an increasing number of jobs requiring specific education and training. In this regard, they were advised to visit the three leading tertiary education institutions in Trinidad and Tobago to explore the programme options available related to Information and Communication Technologies (ICTs).

These young women were also motivated to fulfil their aspirations and capitalise on the opportunities

available to them by combining their passions with technology studies even though there were concerns about the ICT career and education programme options available in the sister isle, Tobago.

Girls in Coding Workshop

TATT participated in the exhibition hosted by MPAC's Girls in ICT Day event which included two introductory coding workshops for 15 second and third form female students and 10 female MPAC staff members. The aim of this event was to encourage the development of skills in computer programming amongst the participants.

All participants were provided with information concerning TATT, including its contribution to the development of Trinidad and Tobago's telecommunications and broadcasting industries as well as information on niche career areas in ICT.

Careers in ICT & Role Model Presentation

Residents of St. Mary's Home for Children had the opportunity to participate in a half-day workshop comprised of two presentations and a mini exhibition for 21 female residents.

This event was aimed at encouraging young girls and women, ages 9 to 18 to maximise the use of ICTs to achieve their academic goals and encourage them to pursue careers in this area although they currently face challenges.

The girls were delighted as Ms. Camille Denalli,



experiences with them on the challenges she faced while pursuing her career within a male dominated industry. During her very interactive presentation, Ms Denali told the girls that once she was able to cross that hurdle, the rest was easy, particularly in the area of application development. Her presentation provided inspiration for the girls.



The girls were able to meet with representatives from National Institute of Higher Education Research Science and Technology who provided an interactive session on robotics and computer programming as well as from the National Library and Information Services, on accessing e-resources from their online library.

The St Mary's Children's Home dates back to the year 1857 in response to a grave human need resulting from the awakening of the social consciences of three men who had connections with the Orange Grove Estates in the district of Tacarigua. The home is at the foot of Trinidad's Northern Range, on 25 acres of flat arable lands.

