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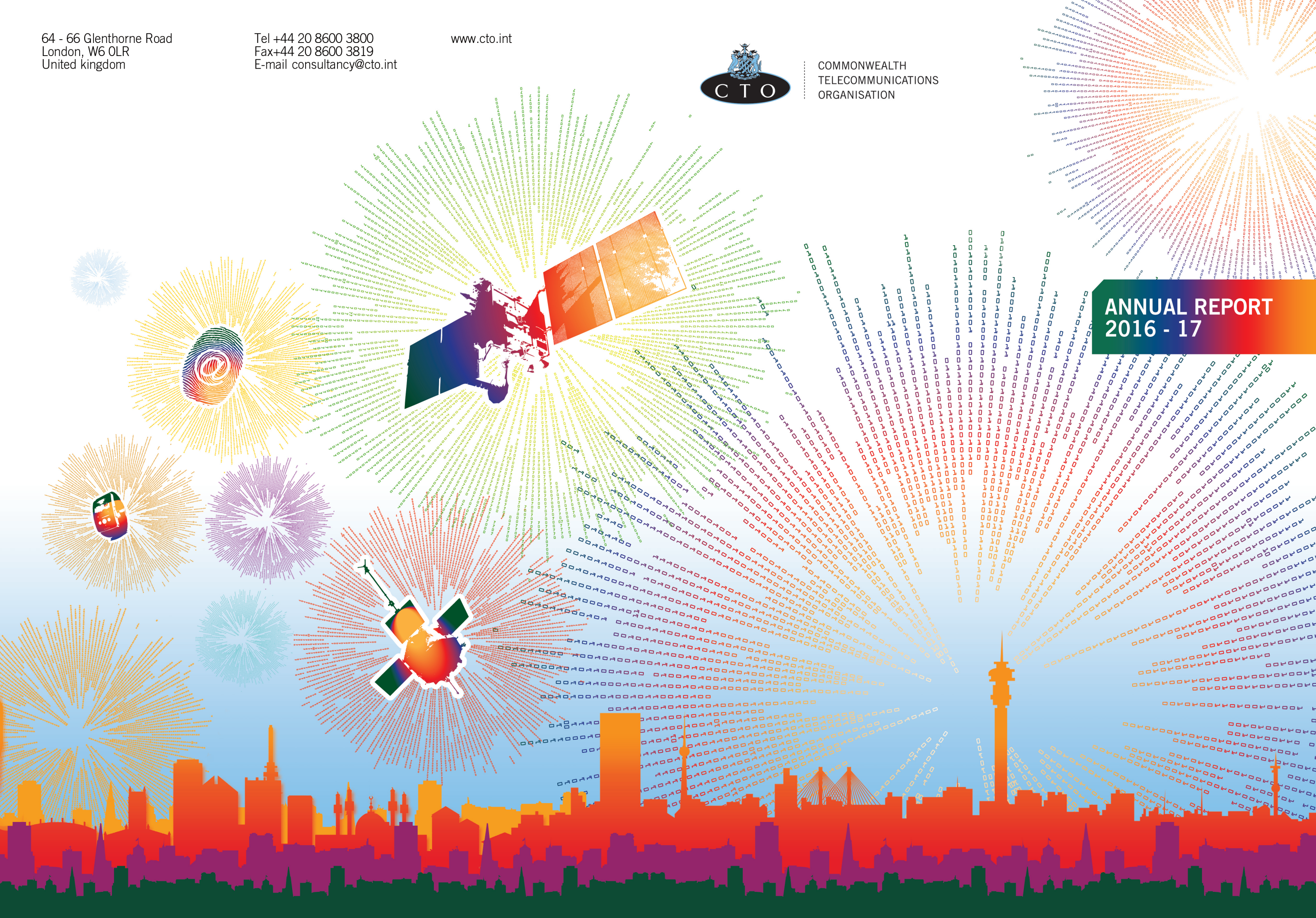
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COMMONWEALTH
TELECOMMUNICATIONS
ORGANISATION

ANNUAL REPORT 2016 - 17





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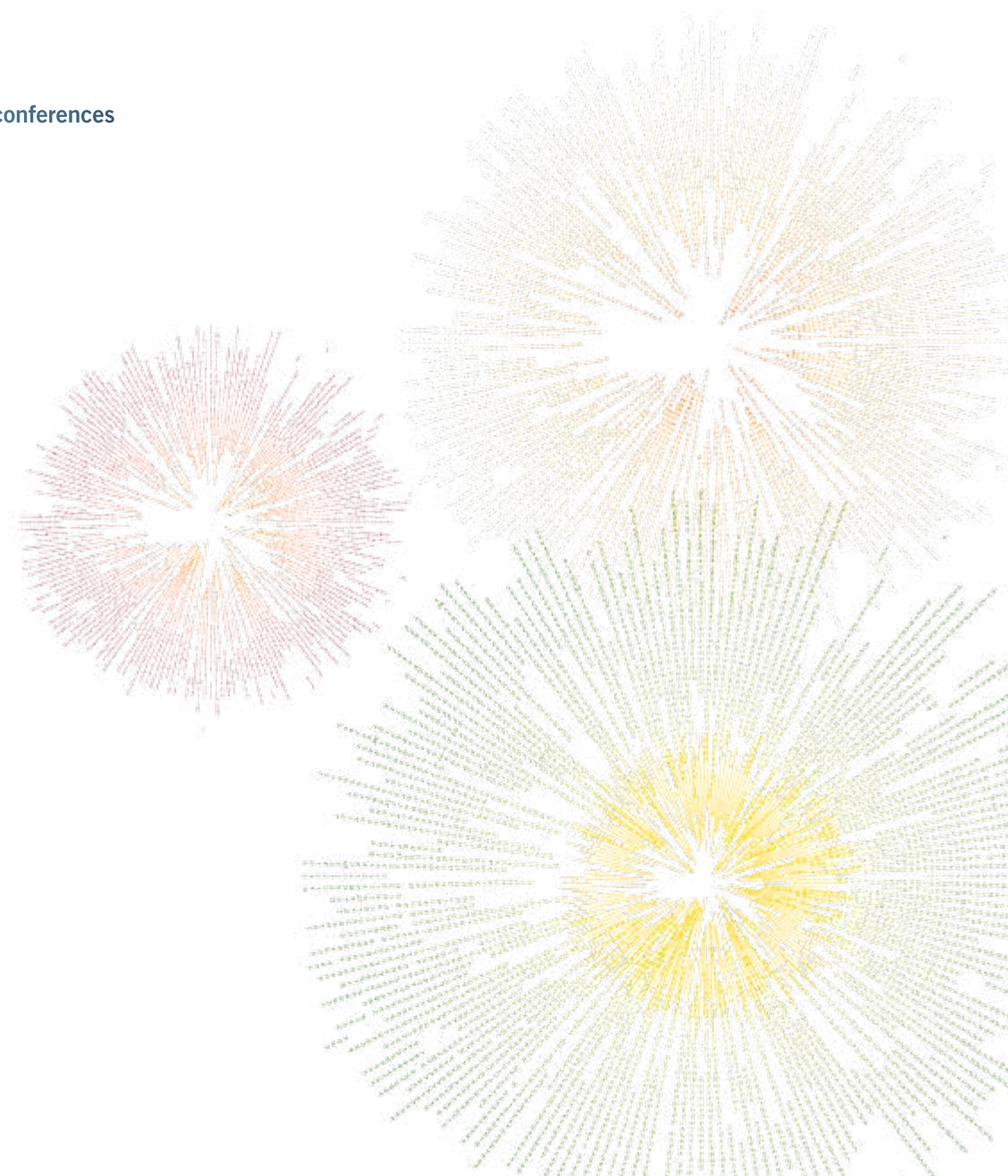
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Chairman's message



Gilbert Peterson
Chairman

With the era of Cloud, IoT, 5G and the increasingly prevalent, yet borderless cyberspace upon us, it is important that every Commonwealth country takes full advantage of the support organisations like the CTO can provide.

In the specific case of the CTO, now 116 years old, providing such support requires that the organisation remains as agile as possible, but also that its processes are focused on efficiency, and that its resources are used with the ultimate goal to deliver value for its members through the effective use of ICTs in their social and economic development plans.

It is in that context that, with the mandate of Council, I had the honour and responsibility to oversee the beginning of important changes to the organisation's Constitution and Rules of Procedure. I am pleased to see that this process has carried on as expected, and that amendments suggested by the Constitutional Amendments Committee have preserved our core shared values and the spirit of the Commonwealth, whilst extending country membership to self-governed territories of Commonwealth states through the new Affiliate membership category.

With small island states as a new focus area for the CTO, this constitutional change appears long overdue, and I would like to thank all those of you who have contributed to this process, and especially members of the Executive Committee.

Gilbert Peterson
Chairman

Secretary-General's introduction



Shola Taylor
Secretary-General

Dear members and partners,

I must start by thanking all of you for the prompt and constant support you provided during the development and adoption of our strategy plan for 2016 - 2020. At the outset, I committed to making this exercise as inclusive as possible, and I am delighted by the level of interest and input you all provided.

As you well know, one major challenge for any organisation is to remain relevant to the present, no matter how long it has been in existence for. Although the CTO has been in existence for over 115 years, it is not immune to this reality and, over time, its main purpose has had to change several times. And, with each transformation, the organisation became less relevant to some of its members and more relevant to others. In recent years, large, developed nations such as Australia, Canada, New Zealand and Singapore, and other equally important groups such as small island states like Samoa, Tonga and Tuvalu drifted away from the organisation, for a variety of objective reasons. One would think that with today's pervasive nature of ICTs and the stakes at play with the emergence of the global information economy and cyberspace, all Commonwealth countries have more in common than not. I am personally convinced that this gives us an opportunity to make the CTO relevant again to all Commonwealth countries and even beyond.

More than a look into the past, the development of the 2016 - 2020 strategic plan, together with celebrations of the CTO's 115th Anniversary throughout 2016, gave us an opportunity to focus our efforts on areas that can make the CTO relevant to all Commonwealth countries, hence my vision for making the CTO a trusted partner for sustainable development for all through ICTs. Guided by this vision, as well as the newly adopted Sustainable Development Goals, we focused our efforts on six strategic goals and, one year on, I am also pleased to report that we are making very significant and encouraging progress to achieve these goals.

Strengthening membership value

The rejoining of India, Samoa, Tonga, Tuvalu and Vanuatu as Full Member Countries is an early and strong indication that we are moving in the right direction, and it is good to see that these countries have resumed participation in our activities. They add to new additions such as Facebook and more recently Huawei as ICT Sector Members, which is equally encouraging. However, we must not take our members for granted, and so we must ensure that each and every one of our members derives value from their membership of the CTO.

In order to enable self-governing states linked to a Commonwealth member state, including overseas territories, to contribute to, and also benefit from our work, in September 2016 the Council approved the creation of a new category of membership: Affiliate Member Country. I am pleased to report that significant progress is being achieved in finalising the modalities of this category and I am convinced that these changes will provide a much wider reach and relevance to all members.

Enabling conducive regulatory environments

As market forces continue to evolve and new technologies and applications emerge, adopting the right national regulatory environment is a recurring challenge. Through a range of capacity development programmes, technical support and consultancy services and conferences, we have embarked on actively promoting and facilitating the development of modern regulatory frameworks, including for licensing, spectrum management, quality of service, digital switchover and over-the-top services, with the aim to create enabling national environments for investment and development.

Our well-established Commonwealth ICT Round Table had another successful year with participation from over 50 newly appointed board members and executives involved in ICT regulation. Because of the diversity and depth of



this programme, and also the growing role and scope of most regulatory agencies in member countries, I have no hesitation in recommending those who are yet to take part to consider doing so soon. In addition, through other capacity development programmes, including those delivered as part of the Programme for Development & Training, professional training was provided to over 600 regulatory professionals. Topics covered ranged from licensing, costs and tariffs and mobile money regulation to broadcasting content regulation and information security.

Separately, as part of our post-WRC-15 activities, the first Commonwealth Spectrum Management Forum took place in November 2016 in Yaoundé, Cameroon to address implementation issues faced by members and to start identifying areas of possible common positions for WRC-19.

You would also recall that the CTO was mandated by Commonwealth ICT ministers at their forum in June 2016 in London, to conduct a study on over-the-top (OTT) services in order to understand the market dynamics, as well as policy and regulatory issues of these services, both in the context of their impact on traditional business models and the opportunities for innovation and the potential of these services in stimulating economic growth. We undertook a survey of relevant stakeholders, and we believe that this provided the study with a balanced representation in terms of understanding the challenges and impacts of OTT services from the respondents' perspective, which was a key factor in this study. The report of this study will be published in 2017.

Universal and affordable broadband

With over half of Commonwealth citizens yet to be connected to the Internet, there is a long way to go to achieve universal access, let alone universal broadband access. In many of our member countries, liberalisation and privatisation policies have helped achieve much greater access, but nevertheless they are proving insufficient. More investment conducive policies, including for public investment, are needed and sensitising our member governments on the need for more innovative investment policies, frameworks and models was the purpose of the first Commonwealth ICT Investment Forum held in Dubai this year. I view public investment as one important solution to address the gap in Internet access, and it is my personal hope that this annual forum will help carve a role for government funding in both infrastructure and services.



Safe cyberspace

I am pleased to see frameworks being gradually put in place by our members to address cybersecurity. With the assistance of the United Kingdom, our direct involvement in working with some member countries to develop national cybersecurity strategies and also adopt and promote cyber standards has progressed well. In total, we have worked so far with ten countries (Botswana, Bangladesh, Cameroon, Mozambique, Malawi, Nigeria, Pakistan, Rwanda, Tanzania, and Uganda). In addition, I am also pleased to report that, thanks to funding from the Netherlands, we will be reaching out beyond the Commonwealth to work with Senegal on the development of the country's national cybersecurity strategy. In addition to funding from partners, we were also able to work directly with Fiji on national cybersecurity strategy development.

Beyond national strategies, fighting cybercrime most effectively to make cyberspace resilient and safe for all requires greater international cooperation, and I was honoured to welcome the Commonwealth Secretary-General, the Rt Hon Patricia Scotland QC, at the 2017 Commonwealth Cybersecurity Forum held in London. Together, we made a joint call for greater collaboration between Commonwealth countries, but also between Commonwealth countries and the rest of the global community. Prior to this, in late 2016, we were honoured to contribute to the Commonwealth Secretariat's awareness activities aimed at parliamentarians.

With the rise of new and cyberspace-distributed technologies, such as augmented reality technologies, the challenge of keeping cyberspace safer will inevitably grow and become more complex, and so we must not stop until all the necessary bridges are built and extended to facilitate this global collaboration.

Promoting a coordinated Commonwealth for ICTs

As a group of nations, the Commonwealth can give greater weight to its members' position during international treaty negotiations. During 2016-17, we successfully convened Commonwealth meetings around the ITU's World Telecommunication Standardisation Assembly 2016 as well as meeting of the Internet Corporation for Assigned Names and Numbers (ICANN) and the Internet Governance Forum, as part of the CTO's mandate to coordinate Commonwealth views during international meetings to ensure the CTO and the wider Commonwealth network of sister agencies fully play their part in



achieving the Sustainable Development Goals.

In addition to Commonwealth coordination meetings, I was privileged to take Commonwealth positions to fora such as ITU Telecom World in Bangkok and GSMA's Mobile World Congress.

Linking ICTs to SDGs

Whilst our efforts are targeted at the most pressing challenges, such as universal access or cybersecurity, our ultimate challenge is to see ICTs applied effectively in all those areas of social and economic development where

they can make a difference. This is why we launched the Commonwealth ICT Applications Forum in early 2017, with the kind support of Rwanda. It is my hope that this event will now be a useful forum for our member government officials beyond ICTs to keep abreast of the possibilities technology offers in areas such as business, health, education or the environment. Naturally, where the opportunity arises to contribute to initiatives by other stakeholders, such as with the Smart Sustainable Development Model initiative led by the ITU's Telecommunication Development Bureau, we are delighted to contribute.

A more efficient Secretariat for the CTO

Finally, in addition to the above strategic areas, it is clear to our Council that the CTO must continue to adapt to changes in its wider technological, economic and institutional environment. That is why we have embarked on a number of changes, including a change to the Constitution of the CTO to introduce Affiliate Member Country and Academia membership categories. In addition, the appointment of regional advisors is proving to be a useful means to ensure more regular knowledge of, and also more regular presence in, regions such as the Pacific and the Caribbean.

Separately, and as already reported last year, it is of critical importance that we work with our members to ensure the long-term financial stability of the organisation. I am glad that measures such as the new unit of membership contribution – designed to improve members' financial contributions to the CTO – are being implemented, and we are beginning to feel the difference they make to the organisation.

I would like to express my profound gratitude to all members of Council, the Executive Committee and all members for their support over the past year.

Shola Taylor
Secretary-General

About the CTO

The CTO is the oldest and largest Commonwealth intergovernmental organisation in the field of information and communication technologies (ICT). Being fully involved in the development and use of ICTs for social and economic development, the management of the organisation recognise that it must stay at the cutting edge of ICT developments in order to deliver significant benefits to its members. The history of the CTO can be traced back to 1901, while the organisation's present form as an intergovernmental treaty organisation came into being in 1967. The CTO has a diverse range of members including developed countries, developing countries, least developed countries, small island developing states and landlocked developing countries. Therefore policies, decisions and actions must cater to the needs of this wide range of countries, and our programmes are implemented in a manner to reflect the changes in both the Commonwealth as well as the global telecommunications/ICT community.

Our mission

To provide result-focused ICT leadership in the Commonwealth and beyond.

Our vision

A trusted partner for sustainable development for all through ICTs.

Strategic goals

Under our new Strategic Plan for 2016 - 2020 our six strategic goals are:

- ▶ Enhance the value of the CTO membership and expand the CTO's membership base, including through Member Action Plans which define clear programmes and activities for each member.
- ▶ Promote enabling regulatory environments in key areas such as licensing, spectrum management, quality of service and over-the-top operators.
- ▶ Promote affordable universal and high-quality broadband connectivity via enabling policies and regulatory measures that facilitate the rapid roll-out of broadband infrastructure.
- ▶ Promote a culture of cybersecurity and effective cyber governance through the establishment of cybersecurity frameworks, standards and guidelines.
- ▶ Promote the development and use of ICT applications for socio-economic development e.g. e-governance, e-health, e-education and e-agriculture, among others.
- ▶ Ensure effective coordination of Commonwealth countries at international ICT conferences and meetings.

Services to our members

Capacity development and training

With our network of telecom, IT and broadcasting specialists, we assist our members in a variety of ways to suit their specific needs. Services include:

- ▶ Bespoke in-country programmes
- ▶ Over 50 open courses each year
- ▶ A pooled procurement service for training
- ▶ Fellowships and secondments



ICT research

Through our research services, we support policymaking and regulatory bodies, specialised agencies and the private sector in understanding the challenges and opportunities new technologies bring and facilitate evidence-based decisionmaking. Recent studies completed have addressed a wide range of issues, from access, to quality of service, to e-health sustainability.

Technical support, consultancy and advisory services

The CTO undertakes consultancy projects for members and non-members. In recent years, the division has become an invaluable resource for a wide range of stakeholders, including multilateral and bilateral development partners, operators, government ministries, communications regulators, civil society organisations and various industry associations.

Events and conferences

The CTO's events and conferences gather ICT policymakers and their advisers, private sector executives and civil society leaders to help establish environments that are conducive of more effective adoption and uses of ICTs in national development. National and global initiatives in areas such as universal access, cyber governance, privacy and e-applications are presented and discussed in depth, turning each event into a unique learning experience.

Governance

Executive Committee



Gilbert C Peterson SC
Chairman, Trinidad & Tobago



Shivnesh Prasad
1st Vice-Chair, Fiji



James M Kilaba
2nd Vice-Chair – United Republic of Tanzania



Professor Umar Garba Danbatta, FNSE
Immediate Past Chairperson, Nigeria



Juma Kandie
Chairperson, PDT Management Committee



Philémon Zo'o Zame
Development Partners' Representative, Telecommunications Regulatory Board, Cameroon



Joseph Mofokeng'
Industry Partners Representative, Telkom South Africa



Shola Taylor
Secretary-General

Management



Shola Taylor
Secretary-General



Lasantha De Alwis
Director, ICT Development, & Corporate Secretary



Marcel Ambiana Belingue
Senior Manager, Membership & Communications



Dr Martin Koyabe
Manager, Technical Support & Consultancy



Robert Hayman
Manager, Events



Hilda Muchando
Manager, Capacity Development



Marianette Violeta
Deputy Manager, Finance & Pensions

Regional Advisors

Gisa Fuatai Purcell, Regional Advisor for the South Pacific

Dr Marianne Treschow, Regional Advisor for Scandinavia & Northern Europe

Philip Cross, Regional Advisor for Americas

CTO celebrating 115 years: from subsea to cyberspace

2016 marked a year of celebration for the CTO as the organisation celebrated its 115th anniversary. Originally established as the Pacific Cable Board to manage the Pacific telegraph cable connecting Australia and New Zealand with Canada and hence the British Empire, the CTO has undergone a number of transformations to become the technical knowledge sharing organisation it is today. Focusing on the provision of training and the exchange of knowledge and experience in the management

of telecommunications, the CTO is now focused on sharing experience and expertise as telecommunications revolutionize to ICTs with the development of the Internet and cloud technology posing new challenges and opportunities for CTO members and the international community. What remains unchanged over the last 115 years is the CTO's focus on connecting the unconnected. Following the official launch of the celebrations in January 2016, two special events were arranged to mark the anniversary.

Commonwealth ICT & Industry Awards

The first Commonwealth ICT & Industry Awards took place on 14 June 2015 in London and saw the award for Best Universal Access Initiative go to the Botswana Communications Regulatory Authority (BOCRA) for its wholesale Wi-Fi hotspots in key strategic public areas providing every citizen 30 minutes free browsing every day at a minimum speed of 2 Mbps.

Other awards went to the National Communications Authority of Ghana (Best ICT Policy and Regulatory Initiative for its billing feedback mechanism), Nigerian SME Courteville Business Solutions (Best ICT Application for its Regulated Products Administrative and Management Solution), and Etisalat Nigeria (Best Corporate Social Responsibility Initiative for its Telecommunications Engineering Postgraduate Programme).

Special recognitions were awarded to organisations in member countries for their contributions to the CTO in recent years:

- UK Foreign & Commonwealth Office for its support for cybersecurity

- Telecommunications Regulatory Board of Cameroon for its efforts in developing national ICT capacity
- BT for its support to board-level capacity development
- UK Ofcom for its support to ICT regulatory capacity development
- UK Department For Culture, Media & Sport for its support in Internet governance
- Government of Montserrat for its use of ICTs in volcanic eruption emergency communications.

Finally, two individuals were recognised for their special contributions to the CTO. Professor Tim Unwin, former Secretary-General of the CTO was presented with a Legacy Award, and Mothusi Lekaukau accepted a posthumous Lifetime Achievement award given to his late father, Cuthbert Lekaukau, former Chairman of the CTO Council and Executive Chairman of Botswana's BOCRA.



Commonwealth Youth ICT Applications Competition

Over 60% of the Commonwealth population of 2.2 billion is under the age of 30 and the CTO are committed to ensuring that ICTs can assist in harnessing the full potential of this youthful population. As part of the 115th anniversary celebrations, the CTO organised an ICT app competition across its member

countries to recognise excellence in e-commerce, e-education, e-agriculture and e-health. The winners were the GiftedMom app, an e-health solution from Cameroon, and Jaguza Livestock, an e-agriculture app

GiftedMom

Delivering SMS and voice solutions for maternal engagement

The GiftedMom app was developed to contribute to the Cameroonian government's programme to combat maternal and infant mortality. The app provides pregnant women and nursing mothers with SMS and voice messages to their mobile phone to remind them when to go for their next antenatal care session or baby vaccination.

"Despite the medical resources being made available by the government there are no adequate channels to educate pregnant women and new mothers, especially those in rural areas," said Dr Agbor Ako, Team Leader for the GiftedMom project. "We are leveraging the exponential penetration of mobile phones in Cameroon to empower pregnant women with stage-based, automated and life-saving messages."

A pregnant woman or nursing mother can subscribe to the service remotely or via a health centre, and women with health concerns can submit their question via the app and receive an immediate response from a medical doctor.

Jaguza Livestock

Powering livestock production to strengthen food security

The Jaguza Livestock project was created to assist farmers to monitor the health of their animals, and by doing so improve livestock production in Uganda and beyond. The technology monitors the health condition of every animal in the herd in order to detect sickness at an early stage and prevent it from spreading to other animals.

Alongside monitoring livestock, the app also tracks movement, links to a disease database, enables analytics of health, sales and produce and helps to market a farmer's products. Some of the features of the app can also be accessed via SMS, to assist farmers without the latest smart phone technology.



Coordination of Commonwealth efforts: a push for investment and safety



Commonwealth coordination for ITU conferences has proved to be very effective, both in helping Commonwealth countries achieve their objectives, and to help reach the consensus that is necessary for a successful conclusion to a world conference

Malcolm Johnson, Commonwealth ICT Ministers Forum, May 2016, London

Continued evolution in technology and market forces calls for new agreements in a range on areas, from standards and spectrum management to Internet governance. Achieving international consensus is often painstaking and time-consuming, and the coordination and promotion of Commonwealth views during international negotiations can be critical in ensuring that the CTO and the wider Commonwealth network of sister agencies fully play their part in supporting member countries in their participation at these negotiations.

WSIS

The World Summit on the Information Society (WSIS), the largest gathering of the ICT-for-development community which meets annually to track the progress of ICTs in meeting the UN Sustainable Development Goals. This was an opportunity for the CTO to outline plans to promote broadband, ICT applications and cybersecurity to deliver the benefits of ICTs to citizens.

In addition to working on broadband, applications and cybersecurity, we will also assist our members to create forward-looking regulatory environments that will encourage investment, facilitate innovation and maximise resources.

Shola Taylor, WSIS, May 2016, Geneva

Internet Governance Forum

The IGF 2016 held in December 2016 in Guadalajara focused on enabling inclusive and sustainable growth. It was an opportunity for member countries to learn first hand about CTO's progress in working on national cybersecurity strategies with countries such as Botswana, Cameroon, Fiji, Uganda Malawi, Mozambique and Tanzania, and also on capacity development against cybercrime with Nigeria, Bangladesh and Pakistan. However, the CTO's main message to Commonwealth stakeholders and the wider global community at the forum was

to promote multi-stakeholder Cybergovernance based on the CTO's Commonwealth Cybergovernance Model.

While the private sector is still being seen by many stakeholders as cash-rich, and therefore able alone to invest in the necessary infrastructure, we at the CTO do not share this view. For us, there is a long way to go for many countries, and those that are significantly behind must make a special effort to contribute public funds to the roll-out of broadband infrastructure and services to reduce their broadband gap.



Governmental Advisory Committee of the Internet Corporation for Assigned Names and Numbers

ICANN meetings are held three times each year in different regions to enable attendees from around the world to participate. ICANN meetings provide an opportunity for face-to-face discussions and airing of opinions for a stable and secure operation of the Domain Name System (DNS). They are often preceded by workshops and working sessions led by volunteer members of ICANN's supporting organisations and advisory committees. These meetings include ICANN's Government Advisory Committee meetings which provide

advice on public policy aspects of ICANN's responsibilities with regard to the DNS. Held in Helsinki (June 2016), Hyderabad (November 2016) and Copenhagen (March 2017), Commonwealth GAC (C-GAC) meeting have helped secure greater Commonwealth participation within the GAC framework and identify key member needs, including capacity development. C-GACs were also essential in successfully securing the UK candidacy as one of five GAC vice-presidents.

ITU World Telcom

Taking part in a high-level discussion on reaching another billion: understanding what works to stimulate ICT adoption, Secretary-General Shola Taylor highlighted those critical factors that must be considered by policymakers to extend access to the unconnected around the world:

- Policy formulation – policy formulation remains the most important factor in reaching out to the unconnected, and governments must assess access gaps and formulate clear connectivity objectives in response.

- Spectrum planning – better spectrum planning holds part of the solution to the challenge of universal access.
- Investment – many governments continue to perceive the ICT sector as profitable and use this as a reason not to invest in the sector's infrastructure. The CTO argued that those countries that continue to leave it to the private sector to invest in infrastructure may find themselves among the least attractive markets for investors in the long run.



We are all excited about 5G networks, and rightly so. But contrary to spectrum bands being earmarked for 5G networks, spectrum in the 600MHz and 700MHz bands have a far greater potential to reach out to rural and very remote areas where most of the unconnected live."

Shola Taylor, ITU Telcom World 2016

Our membership

The CTO is above all else a membership organisation committed to supporting its members across the Commonwealth and beyond in using ICTs in their development efforts. The CTO's 2016-2020 Strategic Plan puts emphasis on enhancing membership value for all members.

The CTO has four broad categories of members: Full Member Countries, Affiliate Member Countries, ICT Sector Members and Academia.

Full Member Countries are member states of the Commonwealth that have given an undertaking to make an annual financial contribution to the CTO; other Commonwealth countries, simply referred to as Member Countries, are all other member states of the Commonwealth not currently contributing financially to the CTO; these can still take part in CTO activities, but they have no voting right within the CTO Council.

Affiliate Member Countries are self-governing states linked to Commonwealth member states, including their overseas territories, and that join the membership of the CTO in order to benefit from the Organisation's programmes.

ICT Sector Members include the following:

- ▶ Regulatory agencies (telecommunication and broadcasting regulatory agencies and commissions) from any country;
- ▶ Specialised national agencies (universal access, IT, and cybersecurity agencies) from any country;
- ▶ Industry (carriers, fixed/mobile/data network operators, manufacturers, service providers);
- ▶ Civil society (professional membership bodies, industry associations, advocacy groups);

Introduced in 2016, Academia membership is open to universities and other tertiary educational institutions from any country. Academia Members are admitted just as ICT Sector Members are, but with a lower annual financial contribution. Prior to 2016, academic institutions were admitted as ICT Sector Members.

CTO ICT Sector Members

Regulatory Agencies

- ▶ Postal and Telecommunications Regulatory Authority, Zimbabwe

Specialised National Agencies

- ▶ Cameroon: Agence Nationale des Technologies de l'Information et de la Communication
- ▶ Montserrat: Government of Montserrat
- ▶ South Soudan (Republic of): Ministry of Telecoms and Postal Services
- ▶ Uganda: National Information Technology Authority – Uganda

Industry

- | | |
|-------------------------------|--------------|
| ▶ Avanti Communications Group | ▶ Gibtelecom |
| ▶ Bitek | ▶ Huawei |
| ▶ BOFINET | ▶ Intelsat |
| ▶ British Telecom | ▶ Promethean |
| ▶ Broadband Infracore | ▶ PwC London |
| ▶ Digital Bridge Institute | ▶ Safaricom |
| ▶ Eutelsat | ▶ Sentech |
| ▶ Facebook | ▶ SES |
| ▶ Galaxy Backbone Limited | ▶ Vodafone |

Civil Society

- ▶ GSM Association

PDT Partners

Governments and Government Agencies

- ▶ Ministry of Communications (Ghana)
- ▶ Ministry of Communications (Nigeria)

Operators

- ▶ Botswana Telecommunications Corporation
- ▶ Gambia Telecommunications Company
- ▶ Vodafone Ghana
- ▶ BSNL (India)
- ▶ Malawi Telecommunications Limited
- ▶ Mauritius Telecom
- ▶ Telecomunicações de Moçambique
- ▶ Cable & Wireless Seychelles
- ▶ Sierra Leone Telecommunications Company
- ▶ Solomon Telekom Company
- ▶ Telkom South Africa
- ▶ Swaziland Posts and Telecommunications Corporation
- ▶ Telecommunications Services of Trinidad and Tobago
- ▶ Uganda Telecommunications
- ▶ Telecom Vanuatu
- ▶ Zambia Telecommunications Company

Regulators

- ▶ Bangladesh Telecommunication Regulatory Commission
- ▶ Telecommunications Regulatory Board (Cameroon)
- ▶ Office of Utilities Regulation (Jamaica)
- ▶ Communications Authority of Kenya
- ▶ Information and Communication Technologies Authority (Mauritius)
- ▶ Nigerian Communications Commission
- ▶ Independent Communications Authority of South Africa
- ▶ Tanzania Communications Regulatory Authority
- ▶ Telecommunications Authority of Trinidad and Tobago

Others

- ▶ Modern Concepts Consultancy Services Inc (Canada)
- ▶ Ghana Investment Fund for Electronic Communications
- ▶ Eagle Photonics (India)
- ▶ Universal Service and Access Agency of South Africa
- ▶ Development Consulting Centre, Trinidad and Tobago

Disclaimer: The above map and any other map in this report are not intended to reflect an accurate map of the world and are provided for illustration purposes only.

Technical support

During 2015-16, the CTO completed specific in-country programmes, the majority of which were in the key areas of regulation, universal broadband, cybersecurity and applications.

Projects featured in this section:

17 National cybersecurity strategies

17 Malawi, Mozambique and Tanzania

18 Botswana, Cameroon, Rwanda and Uganda

18 Fiji

18 Partnerships to support parliamentarians

19 Cyber standards

19 Broadband

19 Dominica

19 Botswana

19 Regulatory environments

19 Commonwealth ICT Round Tables

19 Creating the legal framework for the unbundling of Swaziland Posts & Telecommunications Corporation

19 Over-the-top services



National cybersecurity strategies

Malawi, Mozambique and Tanzania

The CTO is assisting Malawi, Mozambique and Tanzania to develop new national cybersecurity strategies, based on the CTO's model national cybersecurity strategy. The following approach is used:

- ▶ Beneficiary countries are encouraged to form national steering committees that oversee the project and working groups with representation from the public and private sectors as well as civil society who will develop various components of the national cybersecurity strategy.
- ▶ The CTO teams undertake missions to these countries to train the national steering committee and the working groups on how to develop national cybersecurity strategies in alignment with the CTO model. Prior to the development of the strategy, the CTO team conducts an assessment of the cybersecurity posture of the country based on the cybersecurity maturity model (CMM) defined by the Global Cyber Security Capacity Centre (GCSCC) at Oxford Martin School, Oxford University.
- ▶ The CMM report is finalised in consultation with relevant stakeholders of the beneficiary country and provides guidance for strategy development.

- ▶ The working groups develop further the strategic objectives assigned to each group while the CTO provides expert and technical guidance including quality assurance from off-site. The CTO then undertakes missions to the beneficiary country to evaluate progress and to provide further support.
- ▶ The CTO finally undertakes a mission to finalise the national cybersecurity strategy development and to conduct a workshop on critical information infrastructure protection (CIIP), a key strategic task in the implementation of the national cybersecurity strategy.

The above approach is intended specifically to enable the beneficiary countries to own and develop their strategies based on their national needs and priorities.

In all the three countries, the cybersecurity maturity assessments have been completed and draft reports have been submitted for their approval. In addition, draft national cybersecurity strategies have been provided to the authorities of the beneficiary countries for stakeholder consultations.



Delegates at the CIIP Workshop in Jamaica.

National cybersecurity strategies

Botswana, Cameroon, Rwanda and Uganda

The CTO has provided support for the implementation of the national cybersecurity strategies of Botswana and Cameroon where workshops have been delivered on critical information infrastructure protection. The critical information infrastructure protection workshop for Uganda is planned for the second quarter of 2017. In addition, this support has been extended to Rwanda where the CTO is carrying out a cybersecurity maturity assessment with a workshop on critical information infrastructure protection planned to take place in 2017-18.

Fiji

In 2015, following the CTO's release of Commonwealth Approach to Developing National Cybersecurity Strategies, Fiji approached the CTO for technical support to develop a national cybersecurity strategy. The engagement with Fiji also involved Global Cyber Security Capacity Centre (GCSCC), Oxford Martin School, Oxford University, who conducted a cybersecurity maturity assessment for Fiji prior to developing the strategy. The strategy has now been completed and is being reviewed by the Fiji Government for adoption.

Partnerships to support parliamentarians

While cyberspace provides numerous and new opportunities for economic and social empowerment, citizens are also increasingly exposed to cybercrime, an area for which legislation is still in infancy in many countries. Engaging parliamentarians on ICT issues is necessary to ensure adequate and timely legislation is adopted to allow citizens to benefit from technological innovation. In November 2016, the CTO took part in a workshop on cybersecurity and cybercrime awareness was delivered for parliamentarians in Windhoek, Namibia organised by the Commonwealth Secretariat and the Commonwealth Parliamentary Association UK. The workshop was an excellent opportunity to reach out to members of parliament ICT committees from Commonwealth countries.



Delegates at the CIIP Workshop in Nigeria.

Cyber standards

Recognising the importance of standards in cybersecurity, the United Kingdom's Foreign & Commonwealth Office approved a project jointly proposed by the CTO and IASME, which is one of the accreditation bodies appointed by the UK Government to develop "Cyber Essentials", a mandatory security controls scheme for any entity that wishes to transact business with the UK Government. IASME is also an accreditation body to grant accreditation on Cyber Essentials. The project seeks to promote Cyber Essentials across the Commonwealth and to create a pool of local assessor organisations which will assess and grant Cyber Essentials accreditation in selected countries. This project is expected to promote pan-Commonwealth standards in cybersecurity which will lead to improving e-commerce and shared e-governance. The project is expected to be completed during 2017-18. So far, three capacity building workshops have been held in Botswana, Cameroon and Jamaica with five more national workshops planned before the end of the project.

Broadband

Dominica

Recognising the CTO's unique approach in developing national broadband strategies, the ITU requested the CTO to develop the national broadband strategy for the Commonwealth of Dominica. This assignment began with a CTO team conducting a broadband strategy development workshop for Dominica in April 2016. A range of stakeholders in the broadband ecosystem of Dominica attended the workshop. Participants were tasked with developing components of the strategy with the CTO team providing quality assurance and advice. The final draft strategy is now being reviewed by the Government of Dominica for adoption.

Botswana

In 2016, the Ministry of Transport & Communications of Botswana contracted the CTO to review and update the draft national broadband strategy. The CTO worked with the Ministry to provide further details on the strategic foundations of the draft National Broadband Strategy, examining the vision, mission, outcome-based strategic objectives and expected outcomes. The CTO made recommendations on strategies to be considered to promote access to broadband services and applications in Botswana. Following subsequent consultations and an in-country mission by the CTO team in October 2016, the final strategy report has been submitted to the Ministry of Transport & Communications.

Regulatory environments

Commonwealth ICT Round Tables

Interest in the Commonwealth ICT Round Tables series has continued unabated, with participation from parliamentary committees, regulatory agencies and governments from 27 countries taking part during 2016-17. The series has continued to evolve to address issues such as OTTs. Through a mix of facilitator-led sessions, site visits and private-sector discussions, challenges faced at institutional or national levels by participants were discussed extensively.

Creating the legal framework for the unbundling of Swaziland Posts & Telecommunications Corporation

The Government of Swaziland turned to the CTO to create the legal framework for unbundling of state-owned Swaziland Posts & Telecommunications Corporation (SPTC). The task involved assessing the current legislative framework, mapping the current legislative framework against public policy priorities that led to the decision to unbundle SPTC, identifying gaps that need to be addressed, and drafting the required legislative framework. The CTO successfully concluded this project with final deliverables submitted to the Government of Swaziland at the end of 2016.

Over-the-top services

The CTO was mandated by Commonwealth ICT ministers at the Commonwealth ICT Ministers Forum in London in June 2016, to conduct a study on over-the-top (OTT) services in order to understand the market dynamics, as well as policy and regulatory issues of OTT services, both in the context of their impact on traditional business models and the opportunities for innovation and the potential of these services in stimulating economic growth.

The CTO carried out a survey of relevant stakeholders based in different jurisdictions. This provided the study with a balanced representation in terms of understanding the challenges and impacts of OTT services from the respondents' perspective, which was a key factor in this study.

The report of the survey has been produced and is currently being reviewed before it is put to further national and regional consultations as part of the second phase of the project. Public release of the report is expected in the third quarter of 2017.

International events and conferences

Events held during 2016-17 reflected the CTO's new Strategic Plan for 2016 - 2020. With greater focus on key issues e.g. universal broadband access or cybersecurity, these events attracted participation from leading national, regional and global bodies.

Events featured in this section:

- 21 Digital Broadcasting Africa Forum
- 21 Commonwealth ICT Ministers Forum
- 22 Commonwealth Broadband Caribbean Forum
- 22 Commonwealth Telecommunications Organisation Forum
- 23 Commonwealth Broadband Forum
- 23 Commonwealth Spectrum Management Forum
- 24 Commonwealth Human Resources & ICT Forum
- 24 Commonwealth Transforming Telcos Roundtable
- 24 Applications Forum
- 25 Commonwealth Cybersecurity Forum
- 26 Commonwealth ICT Invest



Ed Vaizey Former Minister for Culture, Communications and Creative Industries, UK.

Digital Broadcasting Africa Forum

11 – 13 May 2016, Lagos, Nigeria

The Digital Broadcasting Africa Forum 2016 is a part of a series of events, started in 2005, designed to assist the broadcasting community transition from analogue to digital broadcasting. This regionally focused event provided an opportunity for participants to learn from each other about successes in the field of digital broadcasting, as well as the challenges posed for the future of the industry in Africa and achieving digital migration success. Renowned global experts discussed topics including broadcast technology trends, spectrum allocation, achieving digital inclusion and creation of local content alongside country representatives from Africa delivering progress reports on digital switchover in their countries.



Commonwealth ICT Ministers Forum

14 – 16 June 2016, London, United Kingdom

The CTO convenes the biennial meeting of Commonwealth ICT Ministers in order to discuss matters of common interest and pave the way for building Commonwealth consensus. This time the Commonwealth ICT Ministers meeting was followed by a two-day open forum, where ministers, industry and civil society discussed a wide range of issues affecting the current ICT environment, aimed at enhancing the Commonwealth through innovative ICTs.

The Commonwealth ICT Ministers Forum took place following the adoption of the UN Sustainable Development Goals in September 2015, which recognised the important role ICTs play in socio-economic development. This was also acknowledged in the formal declaration by the Commonwealth ICT Ministers adopted at the end of the closed-door session on 14 June, in which they recognised, "the proven, central role ICTs play in socio-economic development, which is recognised by the United Nations 2030 Agenda for Sustainable Development" and "the services the Commonwealth Telecommunications Organisation (CTO) has rendered in advancing and promoting the Commonwealth's ICT sector." The declaration also endorsed the CTO's Strategic Plan for 2016 - 2020.

The opening session of the closed-door ministerial meeting was addressed by The Rt Hon Patricia Scotland QC, Commonwealth Secretary-General, who highlighted the role of the CTO in assisting the development of ICT across the Commonwealth. The closed-door meeting also discussed ICT regulation, broadband development, the Commonwealth's engagement in the global ICT agenda, cybersecurity and ICT applications: the CTO's priority areas adopted in the Strategic Plan.

The evening of the first day was dedicated to the Commonwealth ICT & Industry Awards, recognising outstanding contributions to ICT development in the Commonwealth.

Enhancing the Commonwealth through innovative ICTs was the theme of the two-day open forum that followed, with addresses by ministers, regulators, experts, international organisations and industry who joined in discussions on a variety of topics, including spectrum management, over-the-top services, the digital society, cybersecurity, broadband and Internet governance.

We see value in meeting regularly with industry and civil society to gauge whether we are going in the right direction, and the Open Forum is a good opportunity for us to do that

Harin Fernando, Minister of Telecommunications and Digital Infrastructure, Sri Lanka

Commonwealth Broadband Caribbean Forum

14 – 15 July 2016, Port of Spain, Trinidad & Tobago

The Commonwealth Broadband Caribbean Forum built on the successes of the CTO's Connecting Rural Communities events and previous Broadband Forums in examining the key role that broadband plays in development.

This conference addressed the importance of broadband to Caribbean life in the 21st century, considering the possibilities for the future of broadband in social and economic development. The Forum looked at the policy, regulatory and consumer issues impacting on broadband rollout and utilisation as well as examining innovative technologies. Caribbean innovation was showcased throughout the agenda. Delegates addressed the particular challenges and opportunities for broadband in the Caribbean, and heard from speakers from the Caribbean and beyond on issues such as the role of broadband in accessing education, broadband roll-out, big data and financing broadband.

Because of its membership across regions and the driving ethos of the Commonwealth, holding such an event is one important role the CTO plays in securing understanding and goodwill across regions on key issues

Minette Libom Li Likeng, Minister of Posts & Telecommunications, Cameroon

The Rt Honourable Patricia Scotland QC, Secretary-General, Commonwealth Secretariat.

Commonwealth Telecommunications Organisation Forum

12 – 14 September 2016, Nadi, Fiji

The Commonwealth Telecommunications Organisation's Forum is the premier ICT conference of the Commonwealth, bringing together senior policymakers, regulators and industry leaders from across the Commonwealth and beyond to examine the most topical issues in the ICT sectors.

Over 150 speakers and delegates from 27 countries convened in Fiji to discuss ICTs for inclusive growth, a theme chosen to ensure that all citizens of the Commonwealth benefit fully from ICTs and the information revolution. A high-level panel of ICT ministers from Tuvalu, Kiribati, Samoa, Gibraltar and the Solomon Islands, the ICT ministries of Fiji and India, and the Secretary-General of the Asia-Pacific Telecommunity examined how government policy should leverage ICTs for inclusive growth.

Other panel discussions looked at ICTs and financial inclusion, connectivity issues, universal access, over-the-top services, innovation and youth and the latest technologies for inclusiveness. There were also sessions on ICTs in small island developing states and the role of ICT in climate change and disaster risk management – issues of particular importance to the Pacific region.

"Samoa is committed to making ICTs available to all its citizens and this Forum is proving useful in that we learn enormously from other countries' experiences in achieving universal access."

Afamasaga Lepuia'i Rico Tupa'i, Minister of Communications & Information Technology, Samoa.



Delegates at.

Commonwealth Broadband Forum

21 – 23 September 2016, Kuala Lumpur, Malaysia

The Commonwealth Broadband Forum 2016 followed the regionally focused Broadband Caribbean Forum to examine the role of broadband in connecting smart communities.

The event was attended by some 400 delegates representing ministries, regulators, international organisations, network carriers and operators and IT companies, who gathered to review how communities are connected, administered, and managed in order to achieve social, economic and environmental sustainability. A key focus was on national broadband plans with two sessions dedicated to examining the importance of a broadband strategy in national socio-economic development, with examples of national plans presented to delegates for discussion. The Forum also considered inclusion in the Internet economy, with presentations on ICT for smart villages and initiatives for inclusion and helping the unbanked with mobile money payments. Policy and regulatory issues, infrastructure solutions, digital services and e-governance and financing the roll-out of broadband were also discussed. The event concluded with a site visit to the One Malaysia Internet Centre, a universal service provision initiative by the Malaysian government to bridge the digital divide.

In today's world of digital services and apps covering almost the entire spectrum of the economy, there is a need for regulators to innovate and establish collaborative regulation with our counterparts from different sectors

Dato Sri Dr Halim Shafie, Chairman, Malaysian Communications & Multimedia Commission

Commonwealth Spectrum Management Forum

2 – 4 November 2016, Yaoundé, Cameroon

The inaugural Commonwealth Spectrum Management Forum took place in Cameroon in November 2016. The series was developed in order to facilitate a more efficient use of the radio spectrum frequency in order to assist national economic development efforts. Dedicated to examining the opportunities of the 5G ecosystem, delegates gathered to hear ministers, regulators, spectrum experts and industry discuss the opportunities for mobile data communication, and the challenges involved in managing the greater demand for spectrum as a result. There were dedicated sessions on the World Radiocommunication Conference (WRC), examining how to implement the outcomes of WRC-15 and preparing for WRC-19, alongside presentations and discussions on spectrum's role in broadband development, spectrum auctions and the efficient use of spectrum for universal access



Commonwealth Human Resources & ICT Forum

21 – 22 November 2016, Kingston, Jamaica

This annual event for human resource professionals examines both the specialist human resources needed in the ICT sector and the use of ICTs in human resource management. The 2016 HR and ICT Forum explored human resources for the information age, examining how ICTs can streamline the recruitment process and assist with better employment engagement, the workplace ethics of social media, outsourcing and data.

"In this era of rapidly evolving technological developments this conference enabled participants to find practical applications for the topics that were discussed."

Maurice Charvis, Director General, Office of Utilities Regulation, Jamaica

Commonwealth Transforming Telcos Roundtable

26 – 27 January 2017, Johannesburg, South Africa

The Commonwealth Transforming Telcos Round Table series was designed to assist fixed-line operators manage the transition to the converged environment. The second round table focussed on the changing competitive landscape of the telecoms sector, examining topics such as restructuring, competition, technology evolution, opportunities in the digital economy and the changing regulatory environment. For operators to succeed in the new operating environment, it is necessary to improve and supply new offerings to retain and expand their market share. This event was hosted by BT, an incumbent operator which has successfully transitioned to an ICT company providing a range of services.



Name speaking at the Commonwealth Human Resources & ICT Forum 2016.

Commonwealth Applications Forum

15 – 16 February 2017, Kigali, Rwanda

The Commonwealth ICT Applications Forum was developed as part of a wider effort by the CTO and member countries to promote the use of ICT applications for socio-economic development in areas such as e-governance, e-health, e-education and e-agriculture. Over 150 app developers, policymakers and regulators gathered in Kigali to discuss how to leverage ICT applications for national socio-economic development. Topics covered included fostering innovation through policy and regulation, how to develop a local app industry and partnerships for prosperity. A highlight of the event was an interactive round table session to identify apps that can address needs where participants gathered to discuss commonly used apps, identify how they can be improved to deliver better value and what new apps they would like to see in both public and commercial services. Among the suggestions were a clothes- and food-sharing app and a location-based health care app. The event also offered inspiring ICT entrepreneurs, including the winners of the Commonwealth Youth ICT Awards 2016, the opportunity to showcase their solutions.

"The app economy means what? It means lives saved," said Honourable Nsengimana. "Apps are saving lives; farmers are being empowered, education is being improved, governments are being made to be responsive and responsible."

Hon Jean Philbert Nsengimana, Minister of Youth & ICT, Rwanda



Delegates at the Commonwealth Applications Forum 2016.

Commonwealth Cybersecurity Forum

21 – 23 March 2017, Kuala Lumpur, Malaysia

The CTO has a strong track record working to secure cyberspace in order to ensure that all citizens of the Commonwealth can reap the full benefits the Internet has to offer. Alongside developing the Commonwealth Cybergovernance Model and building the Commonwealth Approach for Developing National Cybersecurity Strategies, the CTO has run the Commonwealth Cybersecurity Forum since 2010 in order to build capacity and facilitate partnerships for cybersecurity.

The Commonwealth Cybersecurity Forum 2017 took place at the BT Centre in London, where over 170 delegates from 37 countries gathered to discuss how to move to implementing cybersecurity strategies. The predominant theme to emerge from the three-day conference was of the need for greater bilateral and multilateral collaboration between countries and international companies in the fight against cybercrime. Over the three days of the event, issues such as privacy and data protection, implementing national cybersecurity strategies, cyberspace and extremism and cyber standards were examined with the themes of collaboration and cooperation coming up many times.

The Rt Hon Patricia Scotland QC, Secretary-General of the Commonwealth, gave an opening address on the need and opportunities for collaboration between states. The Honourable Tarana Halim, Minister of State, Posts & Telecommunications Division, Ministry of Post, Telecommunications & Information Technology, Bangladesh, outlined international legal measures to improve cybersecurity, emphasising the need for these to be incorporated into national law. Hon Halim joined speakers from the opening ceremony in calling on the international community to collaborate in the fight against transnational cybercrime.

"When it comes to cybersecurity, we are only as strong as our weakest link," said Shola Taylor, secretary-general of the CTO. "The CTO is committed to assisting our members in developing and implementing their national cybersecurity strategies for the benefit, not only of their national ICT sectors, but also the international community. The Commonwealth Cybersecurity Forum is another strand to the CTO's work in enhancing cybersecurity and protecting cyberspace."

"When it comes to cybersecurity, we are only as strong as our weakest link. The CTO is committed to assisting our members in developing and implementing their national cybersecurity strategies for the benefit, not only of their national ICT sectors, but also the international community. The Commonwealth Cybersecurity Forum is another strand to the CTO's work in enhancing cybersecurity and protecting cyberspace"

Shola Taylor, Secretary-General, CTO



Chris Disspain, Board Member, Internet Corporation for Assigned Names & Numbers (ICANN).



Helen Musgrove, Deputy Director of Cyber Growth, UK Department for Culture, Media and Sport.

Honourable Tarana Halim, Minister of State, Posts & Telecommunications Division, Ministry of Post, Telecommunications & Information Technology, Bangladesh.

Commonwealth ICT Invest

10 – 12 April 2017, Dubai, United Arab Emirates

April 2017 saw the CTO launch a new series of conference events – the Commonwealth ICT Investment Forum. The inaugural Commonwealth ICT Invest '17 took place in Dubai, UAE, on 10 – 12 April 2017.

This series was introduced to explore ICT investment opportunities and the initiatives needed in order to combat the significant gaps in access to the Internet between Commonwealth countries caused by insufficient investment in ICTs and, in particular, in affordable technologies. ICTs play a crucial role in national socio-economic development and in achieving the aims of the Sustainable Development Goals (SDGs) and so ICT Invest was convened, not only to discuss opportunities for investment, but also to facilitate partnerships and collaboration.

ICT and finance ministers, ICT and finance regulators, telecom operators, investment bankers, lawyers, consultants, infrastructure and technology providers, international bodies and Investment promotion agencies all gathered in Dubai to discuss potential partnerships for connecting the next billion to the opportunities created by ICTs.

Key topics discussed at ICT Invest included:

Key topics discussed at ICT Invest included:

- ▶ ICTs for socio-economic development
- ▶ National development plans and the role of ICTs

- ▶ Financing by multilateral donors and development banks
- ▶ Role of commercial lenders in financing ICTs
- ▶ Leveraging investment funds to finance ICTs
- ▶ Role of venture capital
- ▶ Creating innovative financing packages

Following the opening ceremony, the first item on the agenda was on investing in ICTs to meet the SDGs and Shola Taylor, Secretary-General, CTO, highlighted to delegates the potential for technology to enable access to remote education or healthcare, enhance gender equality, reduce energy consumption and increase food production. Following sessions discussed how innovative investment mechanisms and secure policy and regulatory frameworks can enable technologies to achieve their full potential. Specific opportunities and challenges in areas such as spectrum management and cybersecurity were also examined and there were a number of project showcases demonstrating ICT projects ready for investment.

“Investment in the ICT sector is what is most lacking when it comes to ensuring that people around the world benefit from the Internet,” said Gilbert Patterson, Chairman, Telecommunications Authority of Trinidad & Tobago and Chairman of the CTO Council. “This event enabled us to explore together ways to attract and encourage investment in ICTs and affordable access. We all stand to gain from a world of universal access.”

In today's world of digital services and apps covering almost the entire spectrum of the economy, there is a need for regulators to innovate and establish collaborative regulation with our counterparts from different sectors.”

Dato Sri Dr. Halim Shafie, Chairman, Malaysian Communications & Multimedia Commission

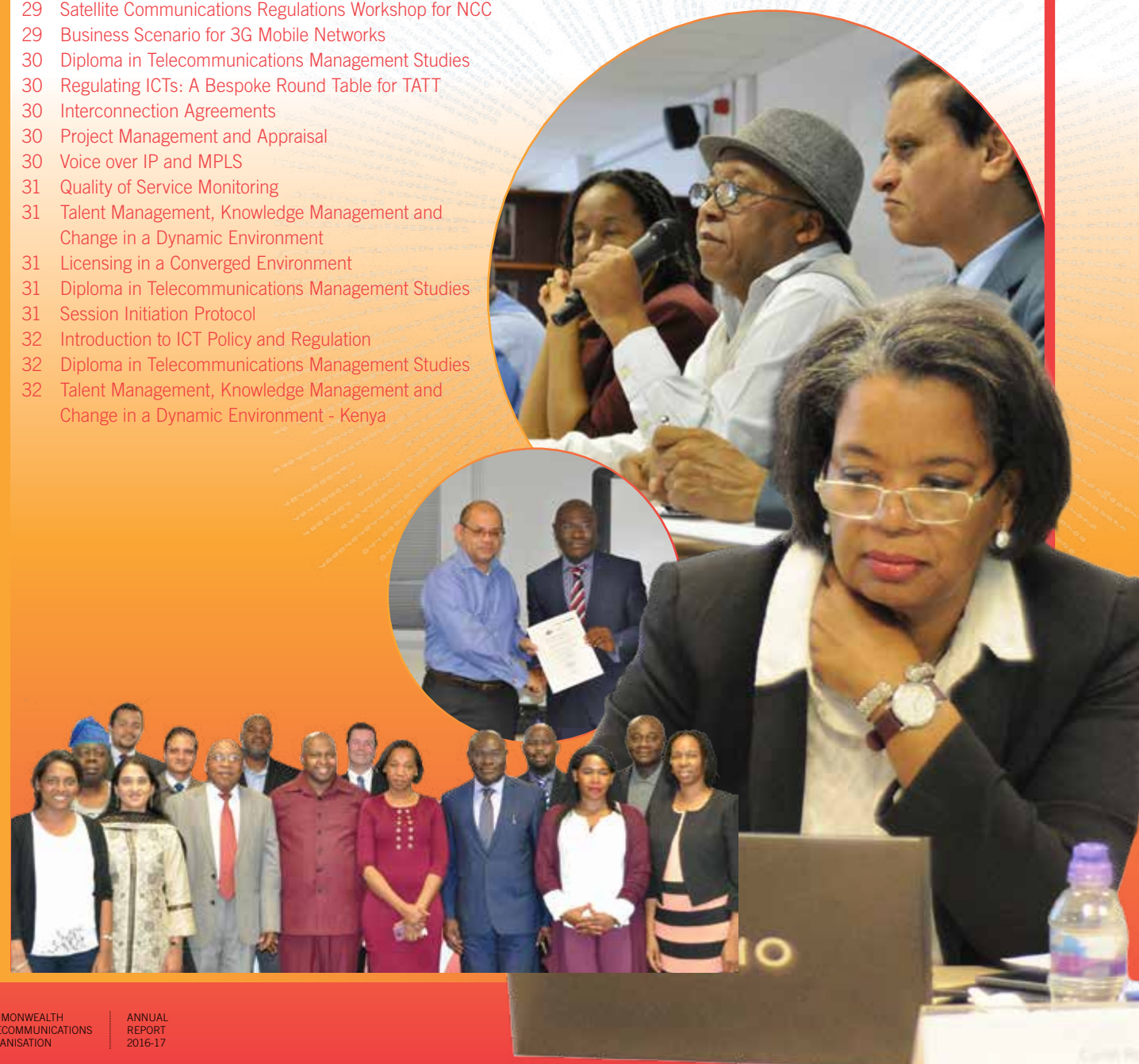


Capacity development

For our members, ICT capacity development is a key priority. During 2016-17, 30 courses were delivered, mainly through the Programme for Development & Training.

- 32 Talent Management, Knowledge Management and Change in a Dynamic Environment - Swaziland
- 32 Enterprise Security Management
- 32 Network Planning and Management
- 33 Broadband Pricing
- 33 Frequency Planning and Spectrum Management
- 33 ICT Policy and Regulation
- 33 Broadband Technologies & Multimedia Services
- 33 Performing a Regulatory Impact Assessment

- 28 Commonwealth ICT Round Table Series
- 29 Competition Regulation in the Telecommunication Industry
- 29 Cloud Technology and Solutions
- 29 Broadband Pricing, Cameroon
- 29 Telecommunications Business Process Re-engineering
- 29 Satellite Communications Regulations Workshop for NCC
- 29 Business Scenario for 3G Mobile Networks
- 30 Diploma in Telecommunications Management Studies
- 30 Regulating ICTs: A Bespoke Round Table for TATT
- 30 Interconnection Agreements
- 30 Project Management and Appraisal
- 30 Voice over IP and MPLS
- 31 Quality of Service Monitoring
- 31 Talent Management, Knowledge Management and Change in a Dynamic Environment
- 31 Licensing in a Converged Environment
- 31 Diploma in Telecommunications Management Studies
- 31 Session Initiation Protocol
- 32 Introduction to ICT Policy and Regulation
- 32 Diploma in Telecommunications Management Studies
- 32 Talent Management, Knowledge Management and Change in a Dynamic Environment - Kenya



Showcase

Commonwealth ICT Round Table Series

Interest in the Commonwealth ICT Round Tables series has continued unabated, with participation from parliamentary committees, regulatory agencies, governments and operators from 27 countries. Five successful workshops took place this financial year, four at the CTO headquarters in London and one in Port of Spain, Trinidad & Tobago. The October 2016 round table alone had a total of 15 countries participating: Bangladesh, Botswana, Cameroon, Cayman Islands, Ghana, Jamaica, Malawi, Mauritius, Montserrat, Nigeria, Seychelles, Sierra Leone, South Africa, Swaziland, and the United Kingdom.

These bespoke workshops are designed for board members and other senior staff members of national regulating authorities. They also provide other high-level delegates in ICT, such as members of parliamentary committees on ICTs, with an opportunity to better understand ICT regulation. The programme focuses on addressing current issues participants and their organisations face and includes presentations and discussions on areas such as Internet governance, spectrum management and national broadband strategies. Experts from the ICT sector work with delegates to identify the key challenges faced by the sector and develop solutions that can be easily implemented.

The events held in London also include industry visits to organisations such as the UK regulator, Ofcom, GSMA, Facebook, BBC and BT. The visits give delegates an overview of the work of

these organisations and the opportunity to learn about the latest policy, regulatory and compliance initiatives they are developing.

"This round table series is a key pillar of our four year strategy to assist member countries in their efforts to improve their regulatory environments for ICTs."

Minette Libom Li Likeng, Minister of Posts & Telecommunications, Cameroon



Delegates at the ICT Round Table October 2016.



"I am most grateful to the CTO for tailoring this course specifically for our organisation as I and my fellow delegates have learnt much that we can take back to apply in Ghana."

**Kofi Datsa, Director,
Regulatory Administration at NCA**

2016 Courses

Broadband Pricing, Cameroon

23 - 27 May 2016

Cameroon

This course explained broadband technologies and their applications, including multimedia services, as key-drivers of bandwidth demand. Broadband access and broadband service portfolio management were covered extensively, followed by discussions about competitive strategies and regulatory constraints. Pricing methodologies and scenarios were discussed throughout, including application pricing and packet-based pricing.

Competition Regulation in the Telecommunication Industry

11 - 15 April 2016

Nigeria

As telecommunications technology constantly evolves and progresses, those involved in the regulation of the industry must also adapt and progress. This bespoke course was designed to provide delegates from the Nigerian Communications Commission with a more thorough understanding of competition policy and the role of regulatory organisations within the telecommunications sector and was interactive and dynamic with sessions being adapted to the varying needs of the participants. The course addressed basic aspects of competition policy in the telecommunications industry, theory and practice of competition, the rationale for the competition and its principles, anti-competitive agreements, abuse of dominance and merger control and compared the relative advantages of the ex-ante and ex-post regulation.

Business Scenario for 3G Mobile Networks

1 - 5 August 2016

Cameroon

This course provided participants different scenarios for service and business models related to high-speed packet access, general packet radio service, enhanced data rates for GSM evolution and wireless local area networks and mobile Internet.

APRIL MAY MAY JUNE JULY AUGUST

Satellite Communications Regulations Workshop for NCC

25 - 30 July 2016

United Kingdom

Today satellites provide a key element of communications for not only the landlocked countries and island states, but also for countries to connect dispersed populations. With the proliferation of satellite communications, its regulation is becoming increasingly important. Participants gained a deep understanding of regulating satellite communications, through classroom learning as well as experienced satellite communications regulation in practical settings and environments.

Cloud Technology and Solutions

2 - 6 May 2016

Cameroon

This course talked about Cloud computing delivery of computing as a service, where resources are shared, and software and information are delivered as a metered service over the Internet. This course aimed to redefine the economics of IT and Cloud and enable new levels of agility and cost reduction.

Telecommunications Business Process Re-engineering

20 - 24 June 2016

Ghana

This course provided an overview of the structure of telecommunications businesses in a globalised industry, and effective methods to identify typical symptoms of business process dysfunctions. Discussions focused on the need for business process re-engineering and the role of automation, showing participants how to maximise service quality and customer satisfaction by matching process design to customer needs. This resulted in delegates constructing a model for reengineering a business process.

2016 Courses

SS7 Signalling and Applications in Mobile

29 August - 2 September 2016

Botswana

Participants were provided with an understanding of the structure of Signalling System No. 7 (SS7) including an overview of its use in public switched telephone network, intelligent network and mobile networks. The course focuses on the fundamental SS7 protocols, media transfer protocol and integrated services digital network, their functions, messages and signalling flows in various situations.

Diploma in Telecommunications Management Studies

15 August - 14 September 2016

South Africa

This bespoke four-week programme, delivered to 32 employees, was designed to enhance delegates' ability to master the changes in their business and technical environment in order to ensure operational and business success in their organisations. The course provided participants with an in-depth knowledge of the essential principles, theories and frameworks that underpin technology deployment, regulation /competition and the challenge of value creation through enterprise and applied management. A blended learning approach involving lectures, case studies and hands-on application of key concepts has been adopted for the course to enhance the learning experience and outcomes.

Project Management and Appraisal

12 - 16 September 2016

South Africa

This five-day course discussed the principles, tools and techniques as well as best practices for successful project management and appraisal.

Regulating ICTs: A Bespoke Round Table for TATT

18 - 22 August 2016

Trinidad & Tobago

This bespoke in-country workshop, was specifically tailored to meet the needs of Board Members at Telecommunications Regulatory Authority of Trinidad & Tobago. Based on the CTO's ICT Regulating Roundtable series, this was specifically designed to give delegates a better understanding of ICT regulation. High-level discussions on areas such as internet governance, spectrum management and national broadband strategies were included as part of the agenda.

Voice over IP and MPLS

19 - 23 September 2016

Mauritius

This course provided basic knowledge of technologies and products used for voice over IP (VoIP). Both media transport (audio and video) and signalling methods were discussed. This course examined, in detail, the benefits and drawbacks of this new and potentially 'killer' application and how to approach the deployment of VoIP within the organisation.

Interconnection Agreements

5 - 9 September 2016

Botswana

This course was attended by 15 technical staff from Botswana fixed and mobile operators. The course addressed the regulatory obligation of the dominant network operator to interconnect with competing networks. It covered the technical aspects of interconnections, and the commercial opportunities, as well as the regulatory requirements and their limitations.

2016 Courses

Talent Management, Knowledge Management and Change in a Dynamic Environment

3 - 7 October 2016

South Africa

This course examined the ongoing processes needed to be proactively managed and review talent management. It examined types of planning organisations need to identify for internal employees as potential candidates for filling future internal vacancies and start training them well ahead of time to perform those roles.

Session Initiation Protocol

7 - 11 November 2016

Botswana

Session Initiation Protocol training course by Telkom SA provided an overview of SIP, its components, and how it works. It covered data networking principles to telecom engineers and signalling principles to IP engineers. SIP course also outlined SIP implementations on the market in the form of single-line gateways, proxy servers, media gateways, toolkits, encoders/decoders and session authenticators.

Diploma in Telecommunications Management Studies

11 November - 9 December 2016

Trinidad & Tobago

This course was designed to enhance delegates' ability to master the changes in their business and technical environment in order to ensure operational and business success in their organisations. The course provided participants with an in-depth knowledge of the essential principles, theories and frameworks that underpin technology deployment, regulation /competition and the challenge of value creation through enterprise and applied management. A blended learning approach involving lectures, case studies and hands-on application of key concepts were adopted for the course to enhance the learning experience.

Quality of Service Monitoring

3 - 7 October 2016

Mauritius

Setting and enforcing service quality standards between networks as well as for consumers is a key mandate of regulators. This course provided the techniques used to monitor and enforce quality standards, from network transmission and interconnection to market intelligence gathering. All areas that affect quality of service at the access or transmission level were covered in detail.

Licensing in a Converged Environment

17 - 21 October 2016

Mauritius

This five-day training program showcased the participant's different drivers and perspectives of convergence, how regulators have dealt with convergence including international case studies, price regulation, and real licensing in a converged environment.

2016/2017 Courses

Talent Management, Knowledge Management and Change in a Dynamic Environment

23 - 27 January 2017

Kenya

This course examined the ongoing processes needed to be proactively managed and review talent management. It examined types of planning organisations need to identify for internal employees as potential candidates for filling future internal vacancies and start training them well ahead of time to perform those roles.

Introduction to ICT Policy and Regulation

7 - 11 November 2016

South Africa

This course provided an understanding of the basic trends in telecommunications reform, their drivers, and their implications nationally and internationally. Participants discussed the key process of how policies and regulatory models were developed, and the roles and functions of different stakeholders in their implementation.

Talent Management, Knowledge Management and Change in a Dynamic Environment

20 - 24 February 2017

Swaziland

This course examined the ongoing processes needed to be proactively managed and review talent management. It examined types of planning organisations need to identify for internal employees as potential candidates for filling future internal vacancies and start training them well ahead of time to perform those roles.

Diploma in Telecommunications Management Studies

1 January - 24 February 2017

Nigeria

Was designed to enhance delegates' ability to master the changes in their business and technical environment in order to ensure operational and business success in their organisations. The course provided participants with an in-depth knowledge of the essential principles, theories and frameworks that underpin technology deployment, regulation /competition and the challenge of value creation through enterprise and applied management. A blended learning approach involving lectures, case studies and hands-on application of key concepts has been adopted for the course to enhance the learning experience and outcomes.

Network Planning and Management

27 February - 3 March 2017

South Africa

The course examined how telecommunication networks architectures are changing to meet new requirements for a number of services/applications. Participants looked at different solutions/ network architectures that can be taken into account for a smooth transition from existing network infrastructures towards a next-generation network as a result of the convergence process leading to different applications/services sharing network infrastructures. The course looked at planning tools capable of dealing with some new traffic cases.

Enterprise Security Management

6 - 10 February 2017

Kenya

This course highlighted the importance of understanding the digital storage of information to maintain efficient business functions. Procedures for securing data as well as enabling data recovery were discussed in detail. This course was attended by network operators, data- centres, Internet service providers and other organisations heavily dependent on customer data management.

2017 Courses

ICT Policy and Regulation

13 - 17 March 2017

Kenya

This course provided an understanding of the basic trends in telecommunications reform, their drivers, and their implications nationally and internationally. Participants discussed the key process of how policies and regulatory models are developed, and the roles and functions of different stakeholders in their implementation.

Broadband Pricing

6 - 10 March 2017

Nigeria

This course explained broadband technologies and their applications, including multimedia services, as key-drivers of bandwidth demand. Broadband access and broadband service portfolio management were covered extensively, followed by discussions about competitive strategies and regulatory constraints. Pricing methodologies and scenarios were discussed throughout, including application pricing and packet-based pricing.

Performing a Regulatory Impact Assessment

27 - 31 March 2017

South Africa

The five-day in-house programme provided participants from ?? with the tools and methodology to perform ICT regulatory impact assessments (RIA). Licensing, consumer interests, quality of service (QoS), competition and other key regulatory areas were analysed and reviewed from a social and economic impact viewpoint.

Frequency Planning and Spectrum Management

13 March 2017

Nigeria

This course addresses the various areas required to manage spectrum, based on national requirements. Participants will be introduced to technologies requiring spectrum management principles, national spectrum planning, engineering analysis, and computer-aided techniques. In addition, the course will introduce technological and regulatory changes that affect spectrum management, such as digital broadcasting. Frequency assignment methods are emphasised and new market-forces, such as auctions, and spectrum fees and charges will also be presented.

Broadband Technologies & Multimedia Services

20 - 25 March 2017

Kenya

This course provided a comprehensive technical overview of transmission control protocol/internet protocol (TCP/IP) and broadband technologies, along with the practical experience required to configure a host, employ TCP/IP tools, use application services and access TCP/IP-based networks. The course discussed a structured approach to the concepts and principles of the broadband technologies using the TCP/IP protocol suite, and also identified protocol functions for multimedia applications.



