

Annual Report 2014-15

Emancipating, enriching, equalising and
empowering through the use of ICTs



COMMONWEALTH
TELECOMMUNICATIONS
ORGANISATION



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Welcome to the 2014-15 Annual Report of the Commonwealth Telecommunications Organisation

This report is also available in electronic format at www.cto.int

Disclaimer: Maps included in this report are not intended to reflect an accurate map of the world or regions and are provided for illustration purposes only.

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Chairman's message

The Commonwealth Telecommunications Organisation has long been involved in capacity development, research and consultancy as well as organising relevant events and conferences across Commonwealth countries to further develop and support the widespread adoption and use of ICTs.

Following the launch of its ICT4D initiatives in 2012, significant progress has been made in driving the realisation of carefully identified priority areas. These priority areas include access to broadband with particular focus on mobile broadband, building effective regulatory capacity and governance in regulatory environments across the Commonwealth, fostering synergy in cybersecurity and the prevention of cybercrime efforts, engendering skills and entrepreneurship in ICTs, facilitating the use of ICTs by people with disabilities as well as promoting the use of ICTs by youth. In 2014, the CTO continued to take steps towards the realisation of its ICT4D objectives by focusing on these priority areas in its activities, programmes and workshops.

The positive socio-economic effects of increased broadband penetration makes it pertinent for broadband access to be improved in countries across the Commonwealth. To make this possible, national broadband deployment strategies are crucial towards having coordinated broadband deployment in our

countries. In consonance with this, the CTO has assisted some of its members in developing national broadband strategies aimed at creating the platform for the eventual successful deployment of broadband services.

Developing the regulatory capacity of member countries and organisations is another priority area for the CTO. In support of this, the CTO periodically brings together key policy- and decision-makers from different Commonwealth countries to provide insights on models, regulatory practices and ICT trends, and the Organisation will continue to do that.

The protection of cyberspace to ensure its continual positive contribution to the socio-economic development of countries is crucial. In 2014, the CTO published the Commonwealth Approach for Developing National Cybersecurity Strategies; this followed the adoption of the Commonwealth Cybergovernance Model during the first biennial Commonwealth ICT Ministers Forum held in March 2014. Both documents highlight key principles Commonwealth countries may use in the governance of cyberspace.

The development of our youth to fully embrace the opportunities provided by the increasing use of ICTs across most sectors of our economies today will ensure the sustainable competitiveness of our countries. The CTO aims to showcase the use of ICTs to support skills development and entrepreneurship among young people. We will continue to focus on this area due to the potential positive impacts this can have on the development of the ICT ecosystem in the Commonwealth.

In the drive to ensure that universal access to ICT services is truly universal, the CTO has as one of its priorities facilitating the use of ICTs by people with disabilities. The CTO places great importance on championing the interests of people with disabilities, seeking to ensure that they are properly accommodated in the increasing expansion of ICTs across the Commonwealth in particular and the world in general.

The aforementioned 2014 Ministers Forum assisted

in providing a high-level political visibility for ICTs in the Commonwealth. The required focus given to broadband access, the governance of cyberspace and e-inclusion at the Forum has helped in pushing these to priority areas in several Commonwealth countries. It is hoped that the upcoming event in 2016 will provide similar momentum for other areas that may be addressed.

Challenges still exists though, especially in areas of Internet and broadband access across countries in the Commonwealth.

Continuous focus and drive is thus required to ensure that the momentum built is not only maintained but also leads to increasing access to our populations. The achievements

as stated in this report and the support of members for the secretary-general will ensure we move forward confidently to achieve the ICT4D objectives of the CTO.

I wish to note with nostalgia, that this is the last Council meeting that Professor Tim Unwin will attend as secretary-general of the CTO, as he has decided not to go for a second term. On behalf of the Council, I wish to appreciate Professor Unwin for his leadership, hard work and diligence in ensuring that the CTO works with other Commonwealth bodies in a cooperative manner that has proved so beneficial and in consonance with the interests of members. To members of the Executive Committee and the Secretariat, I thank you all for the unflinching support you have given to Nigeria as Chair of the CTO's Council.

Finally, I wish to announce that the Executive Committee was mandated to undertake the selection of a new secretary-general. Through due process, Shola Taylor has been recruited as the next secretary-general of the CTO, a decision to be ratified by the Council and with effect from 17th September 2015.

Professor Umar Garba Danbatta
Chairman

The protection of cyberspace to ensure its continual positive contribution to the socio-economic development of countries is crucial.

Promoting, facilitating and guiding members in using ICTs to deliver effective development interventions.





Professor Tim Unwin
Secretary-General

Secretary-General's message

It has been a great privilege to serve as secretary-general of the CTO over the last four years, and especially to have worked with and for so many enthusiastic and committed colleagues in our member organisations. As I reach the end of my tenure, I know I will miss all of the amazing people I have met, and I very much hope that my successor, Shola Taylor, will continue to enjoy the support and friendship that you have offered me.

The CTO has recently worked ever more closely with cognate Commonwealth and international organisations, so as to reduce duplication and overlap in delivering effective ICT interventions, and maximise the synergistic benefits available to our members. The year 2014-15 has seen real progress in this area, especially in terms of building relationships with the new senior management team at the Commonwealth Secretariat. Since convening the first Commonwealth ICT Ministers Forum with the Commonwealth Secretariat in March 2014 the CTO

The CTO can achieve nothing unless it has an effective, committed and skilled Secretariat. As secretary-general, I have placed absolute priority on ensuring that all of the work of the CTO is open, transparent, and as professional as possible.

has played an increasingly important role in coordinating the views of Commonwealth members on key matters of importance at international fora, and it has been good to have the support of the Commonwealth Secretariat in so doing. The CTO has played an important coordinating role in the Governmental Advisory Committee of the Internet Corporation for Assigned Names and Numbers, and is now beginning to do the same in the context of the Internet Governance Forum. We also have very strong relationships with the ITU, working together on several initiatives, and we seek to play a yet stronger co-ordinating role there in the future in line with ICT Ministers' wishes. It was a very great privilege to be one of the first heads of an international organisation to visit the new top management team of the ITU in Geneva in January 2015, and I am enormously grateful to them for the spirit of collaboration and cooperation that they have showed towards the CTO.

The CTO can achieve nothing unless it has an effective, committed and skilled Secretariat. As secretary-general, I have placed absolute priority on ensuring that all of the work of the CTO is open, transparent, and as professional as possible.

Any change in organisational culture is difficult, but we have made great progress over the last four years in key areas such as employee remuneration and engagement. We are also placing increasing emphasis on enhancing diversity and on staff training, and I very much hope that we will indeed become widely recognised in the future as a learning organisation that is always concerned with improving the skills and

capacity of our staff.

The current Strategic Plan was designed to increase the CTO's membership, and to offer enhanced services through the additional revenue that this would generate. It is thus with pleasure that I note that the Seychelles has rejoined the CTO



Professor Tim Unwin during the opening of the Commonwealth Cybersecurity Forum 2015 (April 2015, London).

in this operational year, and that membership from industry continues to grow. To enhance this growth, a new initiative this year has been the launching of a programme to create regional offices, hosted by our member governments. It is, though, with regret that after four years of substantial effort, we have not been able to bring back into the CTO fold some of the members who have left in previous years. This ambition was central to our Strategic Plan, and I remain frustrated that we have not yet been able to convince these countries of the very real benefits of CTO membership.

Capacity development and training have long been at the heart of the CTO's work. The creation of a new training facility on the ground floor of our headquarters building, supported by our ICT Sector Member Promethean, is offering us many new and important training opportunities. The exciting week-long training programme that we now offer new members of boards of regulatory agencies in this facility is growing from



Professor Tim Unwin calling for a Sustainable Development Goal for universally accessed and used ICTs, during the World Summit on the Information Society Forum 2015 (May 2015, Geneva).

strength to strength, and shows the considerable potential for us to deliver similar courses and workshops in the future. An important part of our wider capacity development is also the provision of information through our website (www.cto.int), particularly on good practices in the delivery of initiatives in our six priority areas.

Many of our activities are delivered through partnerships, and some of our most effective workshops and capacity development initiatives have explicitly been delivered collaboratively with partners, as with cybersecurity, the use of ICTs for people with disabilities, and on skills development and entrepreneurship. Likewise, we have been an active member of several multi-stakeholder partnerships, such as the Commonwealth Cybercrime Initiative.

The level of activity across the CTO's six different priority areas varies considerably. Our work in cybersecurity has been particularly successful, and 2014-15 also saw two

valuable workshops on ICTs for people with disabilities in the Caribbean, held in Antigua, and on the use of ICTs to support skills development and entrepreneurship among young people, held in Trinidad & Tobago. Our work in the field of broadband has been reflected especially in the first Commonwealth Broadband Forum held in Nairobi, and our priority emphasis on regulatory environments has been addressed not least through the high-level workshops we are delivering for new members of regulatory boards, as well as the wide range of programmes delivered through our Capacity Development & Training Division.

I am delighted to hear from colleagues across the ICT and telecommunications sector that they feel that these new developments have led to a considerable enhancement of the CTO's reputation. This reflects positively on our capacity to deliver effectively, as well as the way in which we are now responding more robustly to the needs of our members. Our

focus on six priority areas has also given greater clarity to our deliverables, and we are beginning to be recognised as an established leader in several of these fields. An increase in our reputation has also been a direct response to the way in which we are now serving members and other countries across the Commonwealth by co-ordinating Commonwealth-wide perspectives in major international forums.

Equally important, the CTO's financial position continues to improve; we have addressed years-long financial liabilities, such as our pension payments and the outstanding bad debts for which we have had to make provision. These actions provide a very strong platform that can be built on in the years ahead, and I am grateful to the Finance and Administration Department for their hard work in achieving this outcome.

Finally, I must say how grateful I am for the support that I have received from so many governments, regulators, companies and individuals across the Commonwealth as secretary-general of the CTO. It has been a very great privilege to work with them all. The CTO has an amazing remit, and I hope that in my tenure I have served the Organisation with professionalism, a passion for our work, a commitment to all of our members, a belief that we should serve the poorest and most marginalised in our societies, and a determination not just to talk, but to get things done. I wish all of my colleagues well in the future, and I look forward to seeing the CTO grow from strength to strength.

Thank you for the privilege of serving you.

Tim Unwin

Professor Tim Unwin
Secretary-General

About the Commonwealth Telecommunications Organisation

Who we are

The CTO is the oldest and largest Commonwealth organisation engaged in multilateral collaboration in the field of ICTs. Using our experience and expertise, we support members in integrating ICTs to deliver effective development interventions that emancipate, enrich, equalise and empower people within the Commonwealth and beyond.

The work of the CTO goes back to the Organisation's creation in 1901 as the Pacific Cable Board. Since then, the CTO has been at the centre of continuous and extensive international communications development funding, cooperation and assistance programmes. Since 1985, the Organisation has delivered to its members in Europe, the Caribbean, the Americas, Africa and Asia-Pacific over 3,800 bilateral and multilateral telecommunications and ICT capacity building projects in the form of policy, operational and regulatory training, and expert assistance. Moreover, the CTO has been at the forefront of generating cutting-edge knowledge through its research and consultancy services, as well as sharing ideas through its conferences and workshops held around the world. This long history as a development facilitator provides the Organisation with a unique and growing delivery capacity for ICT4D programmes and services.

Supporting ICT4D in the Commonwealth

The CTO seeks to work collaboratively with other Commonwealth bodies to build mutually beneficial synergies in the interests of its members. The CTO has a key role to play in leading ICT4D initiatives across the Commonwealth, and it is committed to working together with other Commonwealth entities to reduce overlap and replication of activities. The CTO welcomes the opportunity to offer Secretariat support to Commonwealth ICT initiatives that reflect the needs and interests of its members, especially in its six priority areas.

The CTO's priority areas

Cybersecurity and cybercrime

Read more
on page 15

Regulatory environments

Read more
on page 15

Broadband, especially mobile broadband

Read more
on page 16

ICTs and youth

Read more
on page 16

Skills and entrepreneurship

Read more
on page 16

ICTs and disability

Read more
on page 17

For information about the CTO's priority areas, visit cto.int/priority-areas

Our mission

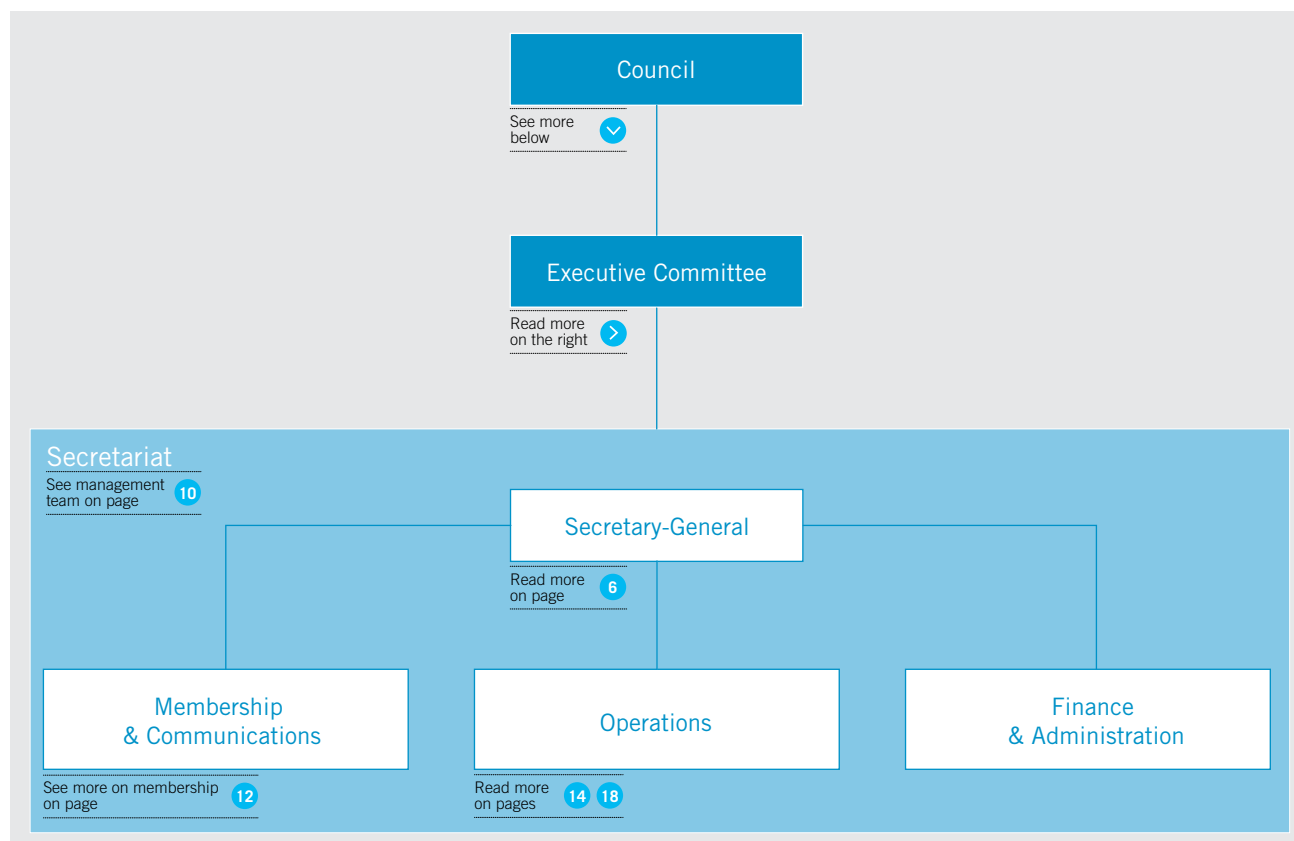
To promote, facilitate and guide members in using ICTs to deliver effective development interventions.

Our vision

To be the preferred partner organisation for governments, the private sector and civil society in delivering effective ICTs for development in the Commonwealth and beyond.



Governance structure



For more details about the CTO's governance, visit cto.int/about-the-cto

Council

Consisting of representatives nominated by Full Member Countries, the Council is the highest policymaking body of the CTO. It meets annually to examine the progress of the Organisation and to suggest future programmes. Council elects a chairperson, as well as the first and second vice-chairpersons who hold office for one year.

Commonwealth Telecommunications Organisation Forum

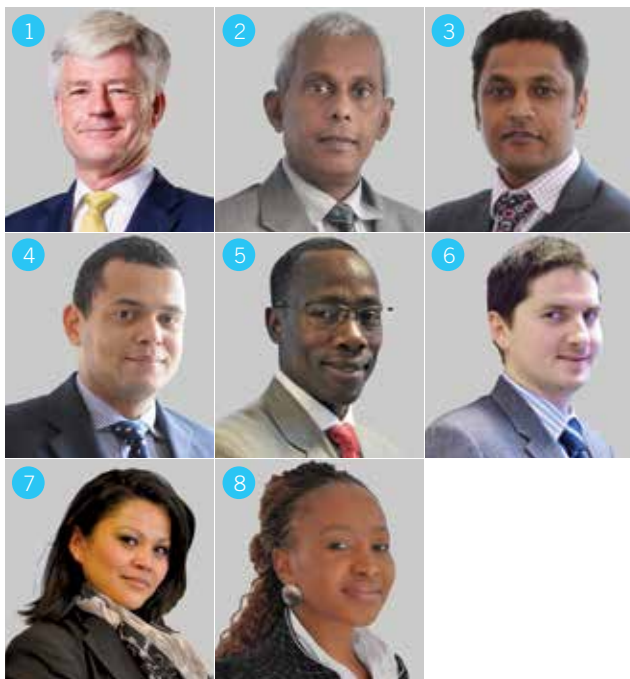
Held annually in a Full Member Country, immediately prior to Council's annual meeting, the Commonwealth Telecommunications Organisation Forum is the platform for ICT Sector Members to examine issues critically important to them. The Forum also elects the ICT Sector Members' representatives to the Executive Committee.

Executive Committee



- 1 Professor Umar Garba Danbatta, Chairman
- 2 Cris Seecheran, 1st Vice-Chair
- 3 Bhanoodutt Beeharee, 2nd Vice-Chair
- 4 Abigail Sono, Industry Members Representative
- 5 Juma Kandie, Immediate Past Chairperson
- 6 Jean-Louis Beh Mengue, Development Partners Representative
- 7 Peter Mate Crabbe, Chairperson, PDT
- 8 Professor Tim Unwin, Secretary-General

Management



- 1 **Professor Tim Unwin**, Secretary-General
- 2 **Lasantha De Alwis**, Director, Head of Operations/Corporate Secretary
- 3 **Rakesh Luchmun**, Director, Head of Finance & Administration
- 4 **Marcel Ambiana Belingue**, Senior Manager, Head of Membership & Communications
- 5 **Dr Martin Koyabe**, Manager, Research & Consultancy
- 6 **Robert Hayman**, Manager, Events & Conferences
- 7 **Marianette Violeta**, Assistant Manager, Finance & Human Resources
- 8 **Hilda Muchando**, Assistant Manager, Capacity Development & Training

Ambassadors



- 1 **N. K. Goyal**, Ambassador for South Asia
- 2 **Bob Horton**, Ambassador for Australia, New Zealand and the Pacific
- 3 **J. P. Morgan**, Ambassador for the Caribbean
- 4 **Bashir Patel**, Ambassador for the Middle East
- 5 **Richard Simpson**, Ambassador for Canada
- 6 **Marianne Treschow**, Ambassador for Scandinavia

Ambassadors are distinguished individuals in the field of ICTs and development who possess experience at a senior level in the public, private or civil society sector. Although not part of the constitutional structure of the CTO, the role of Ambassadors is to strengthen the Organisation's stakeholder engagement in different regions of the world.



To be the preferred partner organisation for governments, the private sector and civil society in delivering effective ICTs for development in the Commonwealth and beyond.

Full Member Countries

- ✓ Bangladesh
- ✓ Barbados
- ✓ Botswana
- ✓ Cameroon
- ✓ Fiji
- ✓ Ghana
- ✓ Grenada
- ✓ Guyana
- ✓ Jamaica
- ✓ Kenya
- ✓ Lesotho
- ✓ Malawi
- ✓ Malaysia
- ✓ Mauritius
- ✓ Mozambique
- ✓ Nigeria
- ✓ Pakistan
- ✓ Papua New Guinea
- ✓ Rwanda
- ✓ Seychelles
- ✓ Sierra Leone
- ✓ Solomon Islands
- ✓ South Africa
- ✓ Sri Lanka
- ✓ Swaziland
- ✓ Tanzania
- ✓ Trinidad & Tobago
- ✓ Uganda
- ✓ United Kingdom
- ✓ Vanuatu
- ✓ Zambia



Jamaica



Barbados



Trinidad & Tobago



Grenada



Guyana



United Kingdom



Sierra Leone



Nigeria



Ghana



Cameroon



Rwanda



Zambia



Botswana



South Africa

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. ICT Sector Members listed above include registered members between 1 April 2014 and 31 March 2015.

ICT Sector Members



COMMONWEALTH
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ORGANISATION

- Avanti
- Regulatory Authority of Bermuda
- Broadband Infracore
- Bofinet
- BT
- CRAN
- Eutelsat
- Galaxy Backbone
- GSM Association
- Intelsat
- Montserrat
- NITA
- Nominet
- POTRAZ
- Promethean
- PWC
- Safaricom
- Sentech
- SES Global
- South Sudan
- URCA (Bahamas)
- USAASA
- Vodafone



Pakistan



Bangladesh



Sri Lanka



Malaysia



Uganda



Kenya



Tanzania



Seychelles



Malawi



Mozambique



Mauritius



Swaziland



Lesotho



Papua New Guinea



Solomon Islands



Vanuatu



Fiji

Priority areas

Overview

The CTO's operational divisions help the Organisation fulfil its mission, which is to promote, facilitate and guide members in using ICTs to deliver effective development interventions. Our Research & Consultancy division acts as an important partner for both the public sector and the private sector to leverage the potentials of ICTs by generating new knowledge, providing advice, and offering practical support. The Capacity Development & Training division delivers training for a range of stakeholders, from board members and corporate management to operational staff, on diverse subject areas such as policy, regulation, technology and business management. Conferences, workshops and roundtables organised by the International Events division have become veritable platforms to advocate policy, share knowledge, showcase technologies and build relationships.

The strategic focus areas of the CTO help operational divisions coordinate their activities in such a way as to ensure high impact by offering a comprehensive bundle of benefits for ICT organisations. Cross-divisional cooperation has resulted in delivering training in the margins of events, contributing subject matter expertise for events, and leveraging events and training outcomes in consultancies. In this section, we report on progress in key strategic areas.

Cybersecurity

Governance of cyberspace, strategic planning and critical infrastructure protection 15

Regulatory environments

Effective regulatory capacity and governance 15

Broadband

Focusing on national broadband strategies 16

Youth and entrepreneurship

ICTs for skills development and entrepreneurship among young people 16

E-inclusion

Championing ICTs for people with disabilities 17

Governance of cyberspace, strategic planning and critical infrastructure protection

The CTO's cybersecurity programme has made impressive progress to place the CTO at the centre of the Commonwealth's cybersecurity agenda. Following the adoption of the Commonwealth Cybergovernance Model during the Commonwealth ICT Ministers Forum in March 2014 (the model includes key principles Commonwealth countries could adopt in the governance of cyberspace), the CTO drafted the Commonwealth Approach for Developing National Cybersecurity Strategies. Six regional workshops were held, with support from the UK Foreign & Commonwealth Office and host countries, to build the capacity of stakeholders to use this approach for the development of national cybersecurity strategies.



Participants at the CTO's East Africa regional workshop on cybersecurity (November 2014, Nairobi)

The CTO's regional workshops on cybersecurity

South Asian Regional Workshop

10 - 11 September 2014, Dhaka, Bangladesh
Host: Bangladesh Telecommunications Regulatory Board

Pacific Regional Workshop

22 - 26 September 2014, Port Villa, Vanuatu
Host: Government of Vanuatu

Caribbean Regional Workshop

17 - 18 November 2014, Georgetown, Barbados
Host: Ministry of Energy, Immigration, Telecommunications and Investment of Barbados

East Africa Regional Workshop

20 - 21 November, 2014, Nairobi, Kenya
Host: Communications Authority of Kenya

Central Africa Regional Workshop

24 - 27 February 2015, Yaoundé, Cameroon
Host: Ministry of Posts and Telecommunications of Cameroon

Southern Africa Regional Workshop

23 - 24 March 2015, Gaborone, Botswana
Host: Ministry of Transport and Communications of Botswana

For more details about the above workshops, go to cto.int/priority-areas/cybersecurity

Effective regulatory capacity and governance

Board-level regulatory programmes

Launched in 2013 with a workshop developed for the board of the Telecommunications Authority of Trinidad & Tobago, this successful programme evolved in 2014 with a highly acclaimed workshop held in London in October which brought together newly appointed board members, chief executives of regulatory agencies, and parliamentarians from Cameroon, Kenya and South Africa who discussed key regulatory concepts, models and trends in ICTs. Facilitated by members of the CTO management team and a number of industry experts, this programme was enhanced with the participation of the UK and global regulatory member stakeholders, including the BBC, Ofcom, BT, and Microsoft.

National capacity development and advisory services

Once again, the CTO's Capacity Development & Training and Research & Consultancy divisions have been instrumental in helping member countries and member organisations in developing in-country regulatory capacity and regulatory strategic planning, with programmes such as:

- Mobile number portability (Seychelles, Mauritius; see pages 36 and 37)
- Consumer protection (Cameroon; see page 36)
- Strategic planning for ICT regulatory agencies (Namibia, see page 27; Cameroon, see page 37)
- Broadband pricing (Jamaica; see page 38)
- Costs and tariffs (Ghana; see page 40).



ICTs for skills development and entrepreneurship among young people

A key issue facing many governments is the need to ensure that their citizens have the necessary skills, not only to ensure sustainable economic activity, but also to help shape a harmonious society. To this end, much attention has been given to finding ways through which ICTs can support skills development and entrepreneurship. The CTO is therefore working with its members and partners to develop and share guidance on good practices in the use of ICTs for education, particularly focusing on skills development and entrepreneurship.

To celebrate the 10th anniversary of the Telecommunications Authority of Trinidad & Tobago, the CTO helped deliver a workshop in Port of Spain, on 19 - 20 August 2014 in Port of Spain. Organised in partnership with the Omar Dengo Foundation, the aim of the two-day workshop was to assist young people to develop entrepreneurial skills and find innovative ways of doing business in the ICT arena in Trinidad & Tobago. This event attracted 100 participants, and it is hoped the event could become a model for the CTO to deliver future work more widely throughout the region.



A session of the workshop on entrepreneurial skills (August 2014, Port of Spain)

Focusing on national broadband strategies

According to the Broadband Commission Report of 2014, broadband and indeed high-speed broadband is no longer just cutting-edge technology for an elite few; instead, the steady march of connectivity among the broader population is slowly but surely transforming our society with new ways of accessing services and information. At the CTO, we recognise that broadband does not just comprise infrastructure; today, widespread broadband connectivity offers the prospects of new services and an information revolution in the wider society, with proven economic and social benefits. In 2014-15 the CTO embarked on a number of key projects as part of a wider strategic research agenda in broadband. These areas include projects in Sierra Leone and Liberia, research engagement with ICT Sector Members of the CTO and the involvement of researchers in broadband-related areas.

Liberia

In October 2013, the West African Regional Communications Infrastructure Project – Liberia commissioned the CTO and its partners Incyte Consulting to establish a universal access fund (USF) for Liberia which would contribute to broadband roll-out, working with the Liberia Telecommunications Authority. The CTO has presented a number of deliverables including the USF demand study that has been formally accepted this year by WARCIP. [More on page 30.](#)

Sierra Leone

In December 2013, the CTO received funding from the German government through their development agency GIZ, to assist Sierra Leone in developing a national broadband strategy.

Working in consultation with key stakeholders in Sierra Leone, including the Ministry of Information and Communications, and telecommunications regulator National Telecommunications Commission (NATCOM), the CTO developed the strategy for the West African country. The project was successfully completed and the strategy document was delivered to Sierra Leone's government and NATCOM for implementation, with the continued support of the CTO. [More on page 31.](#)

Research fellowships

Through the Commonwealth Professional Fellowship scheme, the CTO engaged two professionals from member countries as part of our 2014-15 fellowship programme to carry out research on broadband. Key outputs were developing a national broadband strategy for Barbados and compiling a compendium of mobile broadband value-added services in Nigeria, both projects leading to recommendations on facilitating policy and regulatory frameworks. [More on page 35.](#)

Future plans

The CTO plans to develop a broadband strategies framework for member countries, particularly for small island states who do not have a strategy. According to a 2014 Broadband Commission report, the following countries were yet to have a broadband strategy: Barbados (strategy now being developed by CTO), Cameroon, Dominica, Kiribati, Maldives, Nauru, St. Lucia, Seychelles, Sierra Leone (also being developed by CTO), Solomon Islands, Swaziland, Tuvalu and Vanuatu. In all cases, the CTO also aims to provide implementation support.

Championing ICTs for people with disabilities

Global commitments to ensuring universal access to digital technologies and the Internet have all too often failed to address sufficiently the specific needs of people with disabilities. The CTO is therefore committed to championing the interests of people with disabilities, seeking to ensure that they are not further disadvantaged by the increasing expansion of ICTs across the world.

In August 2012 the CTO hosted a ministerial summit on e-accessibility in collaboration with the UK's Department for Culture, Media & Sport. The summit provided a platform for delegates to discuss how countries can turn the rhetoric of their policies into practical actions that will make a difference to the lives of people with disabilities, and concluded with agreement around eight action points that are necessary for taking this forward:

- The inclusion of e-inclusion on the CHOGM agenda;
- Policies and practices so that people with disabilities should have equal access to ICTs and accessible information, without having to pay a premium for it;
- An e-inclusion champion in every Commonwealth country;
- An e-inclusion policy in every Commonwealth country;
- The sharing of examples of existing good practice in the Commonwealth and beyond;
- Government and business use of ICT procurement to encourage inclusive design;
- The Accessible Technology Charter; and
- Effective training programmes on e-inclusion for governments, the private sector and civil society.

The Commonwealth ICT Ministers Forum held in London in March 2014 endorsed these recommendations and further emphasised that universal service funds are an important vehicle

through which funding can be provided to support the use of ICTs by people with disabilities.

In 2014-15, the CTO has continued to champion the use of ICTs by people with disabilities, particularly through profiling at events such as the Commonwealth Digital Broadcasting Switchover Forum 2015 held in Johannesburg, South Africa, in February 2015, and the Commonwealth E-government Forum 2015 held in Kigali, Rwanda, in March 2015.

In addition, the CTO convened a regional workshop for

The CTO is committed to working collaboratively with other international and regional organisations, and we were delighted that colleagues from the ITU and the Caribbean Telecommunications Union were also able to contribute.

the Caribbean in Antigua in February 2015 with support from the Government of Antigua & Barbuda's HEART initiative and operator LIME, which was designed to engage with a wide diversity of stakeholders, and especially people with disabilities, to explore what needs to be done in the region to turn well-meaning rhetoric into practical reality. Representatives from some ten Caribbean countries participated, with about one-fifth of those attending being people with disabilities. The CTO is committed to working collaboratively with other international and regional organisations, and we were delighted that colleagues from the ITU and the Caribbean Telecommunications Union were also able to contribute. The workshop was graced by the presence of the Honourable Melford Walter Nicholas, Minister of Information, Broadcasting, Telecommunications and Information Technology for Antigua & Barbuda, as well as Dr Aubrey Webson, Antigua & Barbuda's Permanent Representative to the United Nations.

The workshop identified five main groups of challenges



Participants at the Antigua workshop, February 2015.

faced by people with disabilities seeking to use ICTs effectively: training in how to use the technologies; funding to provide assistive technologies; the mindsets of people and the will to make a difference; the problems associated with bureaucracy and existing policies; and the technology currently available. Delegates identified a range of approaches tackling these challenges, which again fell into five categories: extensive capacity development among all relevant stakeholders; the need for governments to play a key role in driving forward such initiatives; extensive public awareness and media campaigns about the ways in which ICTs can transform the lives of people with disabilities; the provision of appropriate hardware and software; and the need to collect good data to support evidence-based decision-making.

The CTO hopes to convene such regional workshops in other regions of the Commonwealth in the year ahead, and to support countries in delivering on this important agenda.

International and regional events

Overview

The CTO's international and regional events are a balance of knowledge sharing, influencing policy and networking. They are designed to reflect the CTO's strategic focus areas, as well as more generic topics. These events are often organised in conjunction with our members including governments and regulatory authorities. They are based in all countries of the Commonwealth, across the continents of Africa, Europe, the Americas, Asia and the Pacific region.

In this section, we report on events held during 2014-15.

Commonwealth Domain Name System Forum 2014	19
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Commonwealth E-Governance Forum 2015.....	25



Commonwealth Domain Name System Forum 2014

19 - 20 June 2014, London, United Kingdom

This first Commonwealth Domain Name Systems Forum took place in London in June 2014. The collaborative event, a project by the CTO, the Internet Corporation for Assigned Names and Numbers (ICANN), the Public Interest Registry (PIR) and Nominet, took place in the margins of ICANN 50. After the first day's high-level plenary session, the Forum consisted of parallel streamed workshops focusing on security and safety, investment and innovation in DNS, and collaboration and multi-stakeholder partnerships through highly interactive panel sessions and engaging presentations by key stakeholders.

The event attracted 150 delegates from 35 countries from

the Commonwealth and beyond, with ministerial representation from Bangladesh, Pakistan, Jamaica, Tuvalu and Montserrat. In addition to generating a Commonwealth identity in the DNS sector, the event also helped cement the CTO's position in the cybersecurity field. In her welcome address, the Honourable Anusha Rahman Ahmad Khan, Minister of State for Information Technology of Pakistan, recognised the pivotal role the CTO plays in cyber governance and called for the Commonwealth Cybergovernance Model to be adopted globally.



Commonwealth Telecommunications Organisation Forum 2014

8 - 10 September 2014, Dhaka, Bangladesh

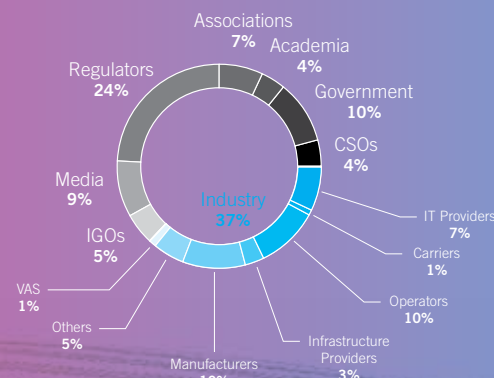


COMMONWEALTH
TELECOMMUNICATIONS
ORGANISATION
FORUM 2014

8 - 10 SEPTEMBER 2014, DHAKA, BANGLADESH

Jointly hosted by the Bangladesh Telecommunication Regulatory Commission and the Ministry of Posts, Telecommunications and Information Technology of Bangladesh, the Commonwealth Telecommunications Organisation Forum 2015 took place in Dhaka, under the theme "ICTs for Development - From Access to Inclusive and Innovative Services". Around 230 delegates, representing governments, regulators and industry from over 30 countries, attended the event. Over three days, speakers discussed key aspects of ICT access and use, including ICT development and connectivity, policy and regulation, mobile technologies, the m-commerce revolution, cloud computing for development, and big data. Other issues included empowering women through ICTs, ICT accessibility for people with disabilities, the integrating of ICTs in education, and protecting the young and the vulnerable.

Participants breakdown by sector



The opening of the CTO's 54th Council meeting on 11 September 2014 in Dhaka.



International and regional events

Commonwealth Human Resources for ICT Forum 2014

3 - 4 November 2014, Mumbai, India

ICT human resource management executives from 18 countries met in Mumbai, India, for the Commonwealth Human Resources for ICT Forum 2014. Countries represented included Bangladesh, Botswana, Cameroon, Ghana, India, Jamaica, Kenya, Mauritius, Mozambique, Nigeria, Rwanda, Seychelles, South Africa, Sri Lanka, Swaziland, Tanzania, Trinidad & Tobago and the United Kingdom. Over two days, the participants discussed how HR professionals should face the challenges of the ICT age. In particular, they recognised the importance, reach and

agility offered by online social networks in sourcing local and international talent, and they developed a framework for integrating the use of online social networks in their organisations.

The conference was followed by the annual meeting of Liaison Officers of the Programme for Development & Training, the Commonwealth's ICT capacity development programme where they elected a new management committee to oversee and guide the development of future programmes.



**COMMONWEALTH
HUMAN RESOURCES
FOR ICT 2014**

3 - 4 NOVEMBER 2014, MUMBAI, INDIA

ICTs have rapidly evolved from being a mere means of communication, to a total enabler of virtually all facets of human existence.

Francis Wangusi, Director-General, Communications Authority of Kenya

Commonwealth Broadband Forum 2014

18 - 20 November 2014, Nairobi, Kenya

The Connecting Rural Communities series of events, which had run annually from 2006 to 2012, was replaced by the CTO's new Commonwealth Broadband Forum series, in line with our strategic priorities on broadband. The inaugural event, which was hosted by the Communications Authority of Kenya, took place in November 2014 in Nairobi, on the theme of "Broadband for Accelerated Growth". Over 130 delegates from Commonwealth countries and beyond took part in the three-day event. They examined many aspects of broadband, including mobile technologies and their impact on driving innovation and growth. The Nairobi forum had representation from the African Telecommunications Union and the International Telecommunication Union.




Honourable Zunaid Ahmed Palak, State Minister, Ministry of Posts & Telecommunications, Bangladesh and Professor Tim Unwin, Secretary-General, CTO (November 2014, Nairobi).



COMMONWEALTH
BROADBAND
FORUM 2014

18 - 20 NOVEMBER 2014, NAIROBI, KENYA



ICTs and Parliamentarians: Caribbean, Americas and the Atlantic Region

2 - 3 December 2014, Port of Spain, Trinidad & Tobago

The CTO, in partnership with the Commonwealth Parliamentary Association, held a workshop entitled “Information and Communication Technology and Parliamentarians: Caribbean, Americas and the Atlantic Region” on 2 - 3 December 2014 in Port of Spain, Trinidad & Tobago. During the two-day joint event hosted by the Parliament of Trinidad & Tobago, parliamentarians from Commonwealth countries and territories of the Caribbean, Americas and Atlantic regions examined their role in developing ICTs and the ways in which technology could help parliamentarians link with their constituents. Attended by parliamentarians of Anguilla, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Grenada, Jamaica,

Montserrat, Nevis Island, St Lucia, the Turks & Caicos Islands and Trinidad & Tobago, the two-day workshop examined how to legislate effectively on ICTs and how to use ICTs for the parliamentary process.

Views from various stakeholders were presented to the delegates, including those from the Caribbean Telecommunications Union, the Ministry of Science and Technology and the Telecommunications Authority of Trinidad & Tobago, Telecommunications Services of Trinidad & Tobago, Columbus Communications, the Legislative Assembly of Ontario, the Internet Corporation for Assigned Names and Numbers, the Caribbean Association of National Telecommunications Operators, Microsoft, and Digicel.



Commonwealth Digital Broadcasting Switchover Forum 2015

17 - 19 February 2015, Johannesburg, South Africa



COMMONWEALTH DIGITAL
BROADCASTING
SWITCHOVER FORUM 2015

17 - 19 FEBRUARY 2015, JOHANNESBURG, SOUTH AFRICA

The 10th annual Commonwealth Digital Broadcasting Switchover Forum took place in February 2015 in Johannesburg, South Africa. Four months before the agreed international digital switchover deadline for Region 1, the Forum brought together key stakeholders to examine the most pressing issues of digital switchover. Delegates took part in discussions on a range of topics that examined the current state of play in digital migration, next-generation entertainment and local content, spectrum allocation, and digital inclusion. One hundred broadcasting policymakers and industry executives attended the event, which was

aimed at contributing to the global digital switchover efforts. In addition to government and civil society representatives from 21 countries, a wide range of organisations also took part in the event, including international and regional organisations (e.g. International Telecommunication Union, International Finance Corporation, Southern African Development Community) and major carriers (e.g. Intelsat, SES and Eutelsat). The conference was opened by the Honourable Faith Muthambi, Minister of Communications for South Africa, who addressed the challenges many countries face in meeting the deadline for switchover and urged

the region to work together to address these challenges. She highlighted the need for good communication to raise awareness of the process and ensure citizens are empowered to gain the benefits of digital switchover. The event was also attended by the Honourable Tshenolo Arithur Mabeo, Minister of Transport and Communications of Botswana, and Dr Stephen Mncube, Chairman of the Independent Communications Authority of South Africa.



International and regional events



Commonwealth E-Governance Forum 2015

24 - 25 March 2015, Kigali, Rwanda



COMMONWEALTH
E-GOVERNANCE
FORUM 2015

24 - 25 MARCH 2015, KIGALI, RWANDA

The Commonwealth E-Governance Forum 2015 took place in March 2015 in Kigali, Rwanda. With the theme “Smart Governance through a Networked Government”, the event explored means of using ICTs as a tool for effective service delivery. Over 170 participants from 14 countries attended the event. The CTO secured the contribution of the United Nations Department of Economic and Social Affairs (UNDESA) which supported the participation of five countries at the event.

In addition, UNDESA led a United Nations ministerial discussion focusing on e-government readiness in view of the imminent 2016 United Nations E-Government Survey. Speakers included the Honourable Jean Philbert

Nsengimana, Minister of Youth and ICT, Rwanda; Honourable William Nyombi Thembo, Minister of State for Information and Communications Technology, Uganda; Honourable Tharcisse Nkezabazizi, Minister of Telecommunications, Information, Communication and Relations with Parliament, Republic of Burundi.

For the Honourable Nsengimana, Rwanda is currently working to leverage the latest ICT capabilities such as analytics, social media and mobility to deliver citizen-centric and accountable governance.

“We must make governance work for the next generation. However much one might have accomplished in driving e-governance, the road ahead is still too long. Issues like

child online protection emerged as an important element from our discussion in this Forum.” Honourable Nsengimana said.

Research and consultancy

Overview

The CTO's Research & Consultancy division undertakes research and consultancy projects for CTO members and non-members. Over the last decade 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.

In this section, we report on on-going or completed projects during 2014-15.

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Revision of Namibia's ICT Policy and Implementation Plan, and Strategic Plan Initiative

Duration: 2013 to 2014

Client: Communications Regulatory Authority of Namibia

In June 2013, the CTO was commissioned by the Communications Regulatory Authority of Namibia (CRAN) to assist with the revision of Namibia's ICT Policy and Implementation Plan. The objectives were:

- revising and updating the 2009 Namibian ICT policy;
- updating CRAN's 2012-14 strategic plan;
- drafting CRAN's 2014-16 strategic plan, and delivering a five-day training course on ICT Regulatory Ethics, Leadership and Professionalism to CRAN's management team and board of directors.

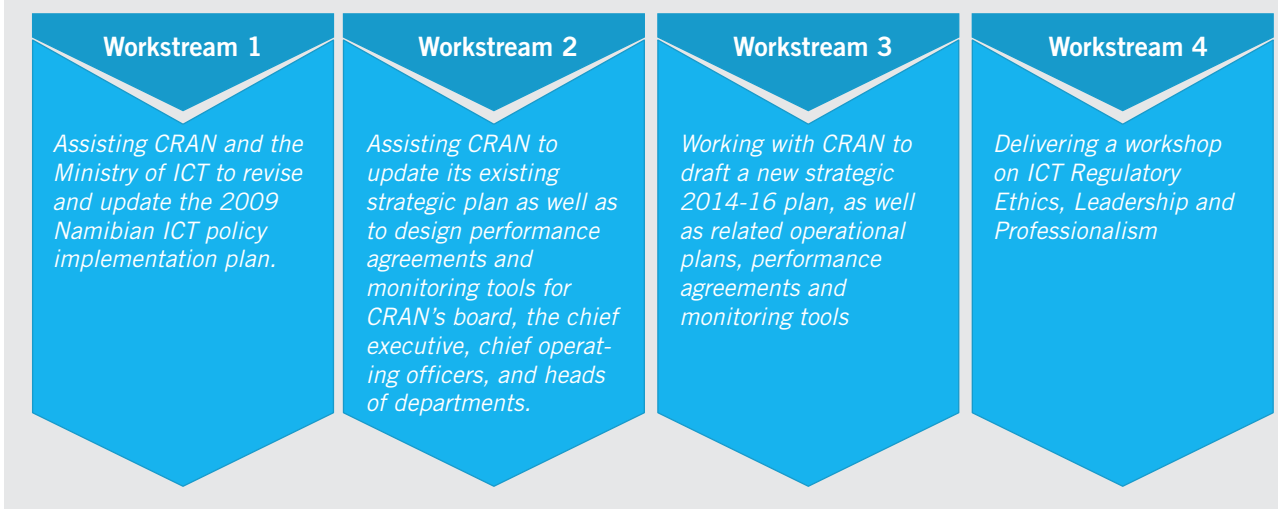
The consulting team undertook two in-country missions to Windhoek (April and July 2014) for consultations with CRAN management and board directors as well as officials from the Ministry of ICT to discuss the revised ICT policy that had been submitted in September 2013, and also begin developing CRAN's 2014-16 strategic plan.

In the last quarter of 2014, the CTO delivered the final reports to CRAN on developing a new strategic plan for 2014-16, with related operational plans, performance agreements and monitoring tools.

Some of the activities undertaken by the consulting team included:

- Undertaking stakeholder consultations involving operators, CRAN and other stakeholders in both the public and the private sectors to identify innovative and novel approaches that will help CRAN deliver on its mandate.

Four key workstreams for Namibia's CRAN



- Undertaking situational analysis of the Namibian ICT sector vis-à-vis policies, regulation and practices.
- Developing and recommending effective mechanisms to set up a reliable and ubiquitous communications infrastructure in Namibia.
- Recommending robust performance- and results-based systems for monitoring and evaluation.
- Identifying priorities, goals, constraints, concerns, and practical issues that may influence the success of the strategic plan.
- Evaluating findings to identify constraints, opportunities, impediments, bottlenecks and others in legal, policy and regulatory frameworks, institutional relations, objectives and targets, planning and results, decision-making processes, ability to synchronise with other sectors, and capacity building in regulatory governance.

The impact that should result from the successful completion of this project includes:

- Expansion of market growth and competition;
- Creation of an equitable, fair, just and competitive ICT environment based on principles of free market and open, unfettered access to products and services;
- Creation of a market structure that facilitates the reduction of international bandwidth prices through the establishment of competition in the telecommunications sector;
- Roll-out of services by operators in high-cost areas and providing an assessment of public institutions that can offer complementary services;
- Development of the broadband market, next-generation networks and next-generation access, and innovative services;
- Postal market reform and development;
- Increased access to converged ICT infrastructure, services and content to all under-served and unserved areas and populations of Namibia;
- More efficient use of spectrum;
- Support for cybersecurity policies and mandates.

we.learn.it

Duration: 2012 to 2015

Client: European Commission

In October 2012, a consortium including the CTO received €1.49 million funding from the European Union for we.learn.it, an initiative that aims to improve the use of ICTs for education. The we.learn.it project aimed to:

- Develop a living organisational building kit for learning innovation in schools.
- Develop the we.learn.it European network of living schools.
- Develop the complementary we.learn.it facilitators network.
- Develop Learning Expeditions (LE) by network members from ideas to action.
- Develop an open pool of ICTs, data sources and educational resources for schools.

As part of the project, the CTO worked with schools and students across Europe to promote the use of ICTs in education during 2013 and 2014. The CTO also participated in Steering Committee discussions/meetings on seed funding, continuously reviewed the we.learn.it portal and provision of comments and feedback to further refine and improve LE content monitoring and evaluation, and participated in LE workshops.

The team also developed scenarios of broadening the impact from existing LEs beyond the EU to achieve wider impact and address the following questions relating to monitoring and evaluation:

- *“Is the LE approach transferable beyond the EU on both conceptual and practical/implementation grounds? In what respects (e.g. rubrics of the LE description templates) would it have to be modified/adapted to achieve impact in other schooling contexts?”*

- *“How would we measure and evaluate impact in such other contexts? Could we rely on the same type of data and data collection strategies proposed for the evaluation of LEs in the EU, or would the framework/instruments/methods have to be modified (and if so, how)?”*

Overall, the quality of the results is high and outcomes have exceeded original targets in terms of participation in the pilot Learning Expeditions process.

European Union

The consortium conducted LE workshops both in Europe and Africa. During the Europe workshops, the we.learn.it partners together with participants (mainly from a range of European schools) analysed the LEs conducted during the project. The workshops also included discussions on how to transfer good practices from one LE to another.

In the case of Africa, the CTO conducted a we.learn.it workshop in Johannesburg, South Africa in February 2015. Over 20 teachers from over a dozen schools/districts and other education agencies attended the workshop, where the we.learn.it project and the LE concept were presented. Other presentations included the organisational toolkit, the technology pool toolkit, and the learning expedition template. During interactive sessions, teachers discussed the learning expeditions undertaken in other schools, designed their own LEs, and provided feedback on the applicability and transferability of the project to South Africa.

The project was successfully concluded in April 2015. Over the course of this project, the CTO continued to develop stronger working relationships with consortium partners and is currently exploring possibilities for future collaboration with relevant partners aimed at exploiting the project's results.

The project is expected to impact education and learning in



participating schools in future by:

- Promoting the creative use of ICTs in European education.
- Promoting problem-based or experiential learning.
- Enhancing collaboration in learning and in schools.
- Demonstrating that learning can be enjoyable and intrinsically motivating.
- Encouraging critical reflection in learning.

E-health sustainability in Sub-Saharan Africa

Duration: 2014 to 2015

Client: European Space Agency

In January 2014, the European Space Agency (ESA) commissioned a consortium in which the CTO was a member, to undertake a research project aimed at analysing and assessing the sustainability, liability and business aspects of satellite-enhanced telemedicine/e-health in Sub-Saharan Africa.

A number of organisations have successfully used ICTs (such as mobile technologies) to deliver e-health/m-health services over the past few years. The challenge is to replicate and scale up these services and ensure that they are sustainable for the benefit of their users.

The project also called on the consortium to assess the situation in Sub-Saharan Africa in terms of the readiness of countries to support the development and deployment of sustainable e-health services.

The project called on the CTO and other consortium partners to identify e-health/m-health initiatives around the world and investigate reasons for their success or failure, in the form of case studies. These case studies identified the critical elements for sustainability in the inception-to-project-execution lifecycle of the initiatives. The CTO team completed four studies on e-health/m-health initiatives in Nigeria, Vanuatu, India, and Pakistan.

Using the case studies as a basis, the consortium went on to develop an e-health sustainability model. The consortium also



identified and described business cases for e-health/m-health applications or projects, highlighting the critical elements for sustainability.

The project also called on the consortium to assess the situation in Sub-Saharan Africa in terms of the readiness of countries to support the development and deployment of sustainable e-health services delivered by satellite. The final results of the project were presented and accepted by ESA.

The CTO is currently exploring ways to ensure that the online tools and applications that have been developed in the project are accessible to CTO members. This will enable many countries (especially from the Commonwealth) to have access to the tools and framework with a view to implementing satellite-based e-health solutions.

Establishment of a universal access fund for Liberia

Duration: 2013 to 2015

Client: West African Regional Communications Infrastructure Project

In October 2013, the West African Regional Communications Infrastructure Project (WARCIP) commissioned a consortium in which the CTO was a partner to establish a universal access fund (UAF) for Liberia, working with the Liberia Telecommunications Authority and WARCIP Liberia. This project has the following main objectives:

- Develop an environmental analysis of the rural and low-access telecommunications market to provide options and advice on the appropriate strategy for implementing universal access policy.
- Determine the appropriate legal, regulatory and institutional arrangements for establishing and managing the universal access fund.
- Establish the mechanisms by which the private sector can participate in the delivery of sustainable telecommunications services in universal access areas.
- Determine the costs of implementing the universal access programme and the mechanisms for subsidising these costs through the UAF.

To achieve these objectives, the consortium is undertaking the following activities:

- Review of international best practices and experience to document lessons learned in other countries and applicable to Liberia in stimulating telecommunications in under-served and unserved areas.
- Describe a broad overview of supply and demand

characteristics in remote and rural areas, including the business, economic and regulatory environment, the status of infrastructure and the potential user requirements for telecommunications services.

- Review Liberia's existing sector policies and regulations with the objective of preparing a strategic roadmap to harmonise arrangements with respect to the implementation of universal access.
- Undertake a legal and regulatory due diligence analysis to ensure that the proposed approach is consistent with existing legal instruments and/or draft amendments to policies and regulations in order to smooth the implementation of universal access.
- Propose viable operational parameters and institutional options for the establishment and operation of the UAF, based on international experience and assessment of local conditions, including an operational manual for the UAF.
- Undertake a demand study which is an assessment of demand based on a thorough analysis of representative locations and their telecommunications needs.
- Design a pilot project: from the designated areas assessed in the demand study, which project should be selected, and designed to demonstrate the potential of the UAF, and act as a forerunner of future projects.

The CTO has delivered a high-level strategy report, conducted a universal access fund demand study report and a report on the operational parameters and institutional options for the UAF. These deliverables have been formally submitted to, and accepted by, WARCIP.

The project was expected to be completed by June 2014; however, this was not possible due to the impact of the Ebola crisis in Liberia.

Broadband strategy for Sierra Leone

Duration: 2013 to 2014

Client: Government of Sierra Leone

Despite the socio-economic benefits of broadband, many countries, including many Commonwealth countries, struggle to derive the benefits of broadband because they do not have the necessary national broadband policies or strategies in place. It is against this backdrop that, in December 2013, the CTO received funding from the German Government through their development agency GIZ, to assist Sierra Leone to develop a national broadband strategy.

For this purpose, the CTO and GIZ deployed a project team of international experts to collaborate with a steering committee

Working groups, which included additional representatives from relevant sectors and organisations, were tasked with evaluating the needs and options for various components of the strategy.

led by Sierra Leone's National Telecommunications Commission (NATCOM) and develop the country's national broadband strategy.

The CTO project team proposed, and officials of NATCOM along with participating operators and other stakeholders agreed, to adopt a strategy planning approach to be internally managed through the formation of a National Broadband Strategy Steering Committee. The committee is constituted by representative stakeholders and has taken the lead role in overseeing the research, analysis, planning and negotiations that entered into the strategy development process.

Working groups, which included additional representatives from relevant sectors and organisations, were tasked with evaluating the needs and options for various components of the strategy. These working groups developed the main input to the overall strategy, while the steering committee coordinated and integrated their input into the final document. Throughout this process, the CTO has served as technical advisor to the steering committee and working groups, and contributed materially to the drafts and final strategy reports.

The main components of the project, which were undertaken sequentially, were split into two phases of work:

- Phase 1 - Inception and Sector Analysis, which consisted of establishing the steering committee and working groups, and undertaking an analysis of the sector in Sierra Leone to ascertain the current status of broadband in Sierra Leone.
- Phase 2 - Broadband Strategy Development, during which the steering committee and the working groups brought together the findings from Phase 1, consultations and other study inputs, to produce a recommended High-level Broadband Strategy.

The project has been successfully completed and the final report on the Sierra Leone Broadband Strategy was delivered to the Ministry of Information and Communication and NATCOM, and the CTO will continue to support the Government of Sierra Leone as it moves to implement its new strategy. The Ebola outbreak which occurred immediately after the report was finished has unfortunately delayed the implementation.

Cameroon's digital broadcasting switchover

Duration: 2014 to 2017

Client: Government of Cameroon

In early 2014, the CTO and two consortium partners were selected to assist Cameroon's digital broadcasting switchover committee (CAM-DTV), the body responsible for overseeing the country's migration to digital broadcasting. The consortium's overarching objectives are:

- To produce, in consultation with CAM-DTV, broadcasters and the government a tender pack, processes and criteria for procuring services to design, build and roll-out the digital terrestrial television infrastructure and transmission network in accordance with CAM-DTV's remit; and
- To support CAM-DTV to deliver the National Strategic Plan in accordance with their Terms of Reference.

As part of this project, the consortium is expected to help facilitate specifying and documenting the following:

- The detailed requirements specification to be used as tender documents for the selection of a strategic implementation partner with CAM-DTV to enable the switchover to happen in Cameroon as per the technical objectives;
- To help CAM-DTV to conduct the selection procedure of this partner and help produce the final selection report;
- To help facilitate CAM-DTV's project management and quality control/audit of the work during the implementation of the digital network, helping to ensure that the entire project goes according to plans.

Capacity development and training

Overview

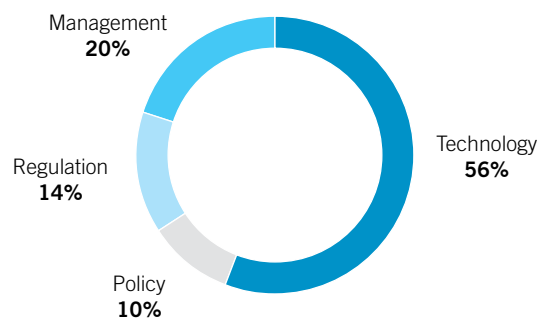
During 2014-15, the CTO's Capacity Development & Training division delivered 42 professional training courses in 16 countries, in a wide range of topics, mainly through its well-established Programme for Development & Training. In this section, we provide an overview of the PDT; general data about the CTO's capacity development and training programmes; and descriptive information about courses delivered in the 12-month period.

Included in this section:

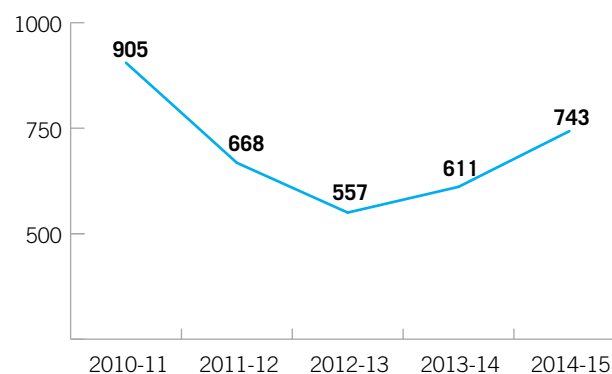
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Capacity development and training at a glance

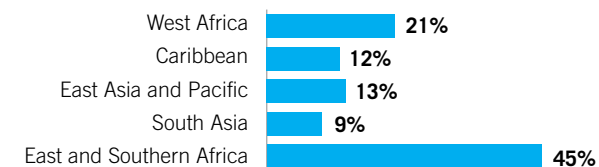
CDT's programme areas



Number of beneficiaries, 2010 to 2015

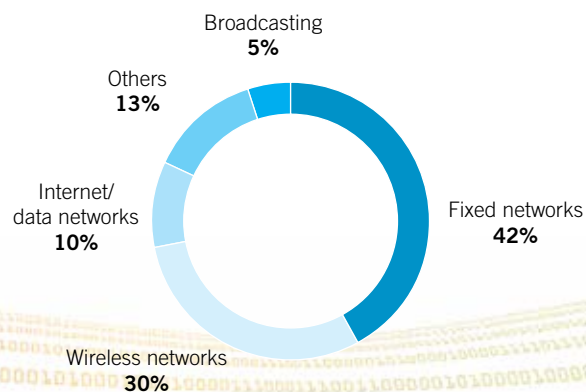


CDT's regional delivery

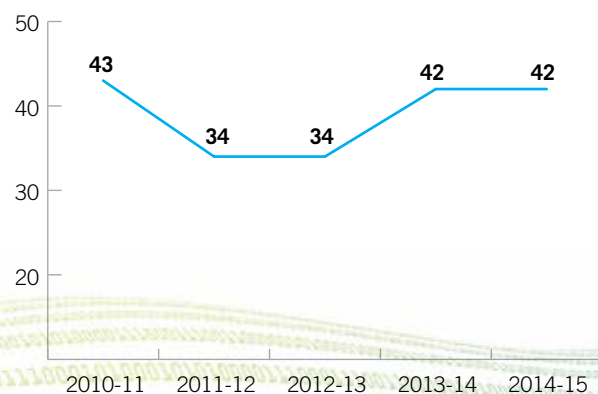


Data provided as averages over the past four years.

CDT's technology programmes



Number of courses delivered, 2010 to 2015



Programme for Development & Training

The Programme for Development & Training (PDT) is a programme designed to assist member ministries, regulatory agencies and operators in four areas: policy development and implementation, regulation, technology, and management. Operating as a corporate membership programme, the PDT provides members with access to over 200 ICT consultants across the Commonwealth and beyond. PDT membership is divided into two categories: Requesting Partners and Offering Partners. Each PDT member appoints a Liaison Officer, and projects are approved through pooled procurement that helps access global expertise at low cost. Most activities reported in this section were implemented as part of the PDT.

PDT's governance structure



PDT's Management Committee

Elected annually among Liaison Officers, the role of the PDTMC is as follows:

- Divide the financial resources available for multilateral and bilateral programmes proportionately among members of the PDT;
- Review the recommended bilateral programme by the CTO Secretariat each year and match offers to requests;
- Consider areas where it may be more cost-effective to meet the requirements outlined in any request through the development of shared bilateral or multilateral activities;
- Consider whether to reduce the value of the bilateral programme to any requesting partner that is significantly behind with payment of its membership contributions;
- Adopt, once established, its own internal operational procedures with regards to its chairmanship and internal governing procedures, the roles and responsibilities of members, frequency and locations of meetings, reporting mechanisms amongst its members and to other PDT partners.

PDTMC's members for 2014-15 were:

- **Peter Crabbe**, Vodafone Ltd, Ghana (Chair)
- **Patricia Kerrets-Kemei**, Communications Authority of Kenya (First Vice-Chair)
- **Sharon Maziya**, Swaziland Posts & Telecommunications Corporation (Second Vice-Chair)
- **Zakir Khan**, Bangladesh Telecommunications Regulatory Corporation
- **Sherry-Ann Sealey**, Telecommunications Authority of Trinidad & Tobago
- **Busisiwe Mtsweni**, Independent Communications Authority of South Africa
- **Helen Mokum**, Telecommunications Regulatory Board, Cameroon
- **Professor Tim Unwin**, Secretary-General



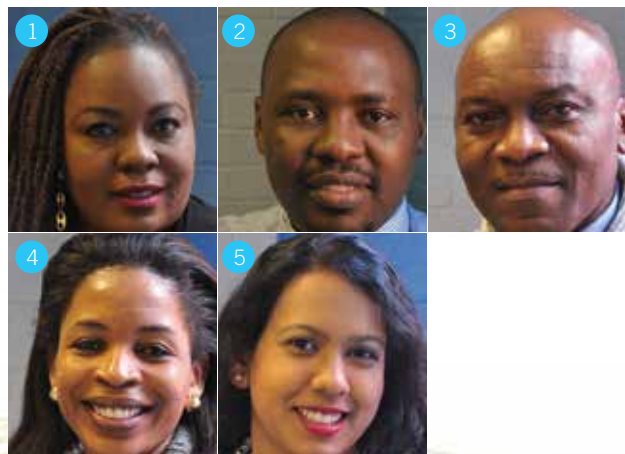
A meeting of the PDTMC, February 2014, London.



2014-15 fellowship programme

The CTO offers opportunities for suitably qualified professionals to benefit from the experience of working in an international organisation, whilst also contributing significantly to our work in supporting the delivery of effective ICT4D interventions across the Commonwealth. We have been particularly supported by the Commonwealth Scholarship Commission (CSC) since 2004, in providing placements for Fellows with tailored programmes in the field of ICT4D. These fellowships have been specifically designed to benefit the fellows, their organisations and ultimately their home countries.

In 2014-15, working once again in partnership with the CSC, we were honoured to host five Commonwealth Fellows from member countries. Each joining the CTO Secretariat for a period of three months, they were assigned to existing teams to help take forward our work in key priority areas, and gain relevant experience for their future careers.



- 1 **Aderonke Adeniyi**, Nigerian Communications Commission
Work programme: Mobile VAS and apps
- 2 **Stephen Gbaja Anthony**, Department of State Services, Nigeria
Work programme: CERTs
- 3 **Clifford Anderson Bostic**, Energy and Telecommunications Division, Prime Minister's Office, Barbados
Work programme: National broadband strategies
- 4 **Letang Kekwaletswe**, Botswana Telecommunications Corporation
Work programme: Capacity building
- 5 **Anita Sohan**, Ministry of National Security, Trinidad & Tobago
Work programme: National cybersecurity strategies

April '14

2014-15 completed programme

Mobile Number Portability

Victoria, Seychelles

Mobile number portability (MNP) is a complex process that affects virtually every area of an operator's business. This five-day course was designed to prepare the Seychelles' Department of Communications to initiate a mobile number portability project and, in collaboration with the mobile operators, ensure its successful implementation. Emphasis was placed on awareness of the implications of MNP and understanding of the key concepts and dependencies which are crucial for the successful completion of an MNP project.

May '14

Signalling over IP

Gaborone, Botswana

As operators migrate to an all-IP network, next-generation networks require new protocols to support converged networks. This five-day in-house course, attended by 24 participants from Botswana Telecommunications Corporation, provided basic knowledge of technologies and products used for voice over IP (VoIP). Participants evaluated existing VoIP and related services and discussed the key issues regarding quality of service and security.

Cryptographic Techniques for the Regulation of Electronic Communications with Respect to Cybersecurity and Cybercriminality

Yaoundé, Cameroon

With advancements constantly being made in telecommunications technology, businesses need to be aware of the many different ways in which communication between third parties can be secured (cryptography). This course provided staff from Cameroon's Telecommunications Regulatory Board with an understanding of the techniques, algorithms and protocols used in the process of cryptography in the aid of data security and fraud prevention. Participants gained a better understanding of the security needs, issues and challenges of the telecommunications sector in Cameroon and the cybercriminality battles the country is facing every day.

Electronic Communications Consumer Protection within a Convergent Environment

Buea, Cameroon

With most businesses now offering voice, video and data services, it is imperative that they have the correct policies and regulations in place to ensure that their customers and consumers are adequately protected. This ten-day course provided for Cameroon's Telecommunications Regulatory Board staff and also attended by staff from local operators reviewed and explained the rules, stakeholders and processes that govern e-consumer protection in Cameroon. The course also provided participants with knowledge regarding the regional and international standards and strategies relating to consumer protection.

June '14

Strategic Planning for ICT Regulatory Agencies*London, United Kingdom*

Much effort has been made internationally to promote strategies for the development of ICTs in emerging economies which, when properly implemented, will provide a foundation for social and economic development. This five-day course provided senior staff from Cameroon's Telecommunications Regulatory Board (TRB) with an overview of strategic planning, the key elements of effective strategic plans and the role of regulators, authorities and service providers. At the end of the workshop, delegates were able to apply the learning points to develop a comprehensive and effective strategic plan for TRB, with the CTO staff providing guidance.

Customer Service*Maputo, Mozambique*

Ensuring that customers have a good experience, every time they interact with a business is very important. This course explained best practices for customer service and illustrated various skills and attitudes and their outcomes. Participants gained a solid understanding of transforming customer experience by identifying and bridging expectation gaps.

Telecommunications Regulation*Port of Spain, Trinidad & Tobago*

With the current global economy in a state of instability, it is important for businesses to have a good understanding of the regulations that are in place to help support the growth of the economy. This programme introduced staff from the Telecommunications Authority of Trinidad & Tobago to the fundamentals of telecommunications regulations and the latest trends in the global telecommunications/ICT environment along with their impacts on regulators, authorities and service providers. Discussions on interconnection, spectrum management, licensing, pricing and numbering were also covered.

Quality of Service*Yaoundé, Cameroon*

Setting and enforcing service quality standards between networks as well as for consumers is a key mandate for regulators. This course provided the techniques used to monitor and enforce quality standards, from network transmission and interconnection to market intelligence gathering.

July '14

Mobile Number Portability*Port Louis, Mauritius*

Mobile number portability (MNP) is a complex process that affects virtually every area of an operator's business. The five-day course provided awareness of the implications of MNP and understanding of the key concepts and dependencies which are crucial for the successful completion of an MNP project. Staff from the ICT authority evaluated the different technical solutions towards implementing MNP and the administrative policies which are required to ensure a successful MNP outcome.

National Multi-hazard Early Warning Emergency Alert System*Port Louis, Mauritius*

Mauritius has periodically suffered from natural disasters including cyclones and flash floods resulting in loss of life and property with severe economic impact. Under the National Disaster Risk Reduction and Management Bill of 2013 the Government of Mauritius proposed to set up the Disaster Risk Reduction & Management Council to coordinate the implementation of the National Disaster Risk Reduction & Management Policy, the National Disaster Risk Reduction & Management Strategic Framework and the National Disaster Risk Reduction & Management Plan. The CTO assisted senior staff from the ICT Authority in the procurement process and shadowed the implementation of the project to ensure delivery on time and within budget.

Principles of Optical Multiplexing*Maputo, Mozambique*

Telecomunicações de Moçambique operates an extensive fibre optic network throughout the country as well as access infrastructure within major cities. This workshop, attended by 16 technical staff from various departments and regions covered optical multiplexing techniques from simple Optical Time Division Multiplexing (OTDM), Synchronous Digital Hierarchy Technique (SDH) to Wavelength Division Multiplexing (WDM) including Dense Wavelength Division Multiplexing and Coarse Wavelength Division Multiplexing (DWDM and CWDM respectively). It also explored the role of Fast Ethernet and Gigabit Ethernet in the fibre optic access network and PONs (Passive Optical Network) applications.

Fibre Optic Access Networks*Maputo, Mozambique*

This five-day workshop was specifically developed to provide an understanding of Fibre Optic Networks and Wavelength Division Multiplexing for TDM Mozambique staff. The workshop investigated principles and concepts involving optical fibre and data transmission over fibre, optical fibre access and transport networks design. Effective administration of optical fibre networks as well as fibre optics network management and maintenance were discussed.

August '14

September '14

Critical Information Infrastructure Protection*Dhaka, Bangladesh*

This workshop introduced the Commonwealth Cybergovernance Model and explained the need for a Commonwealth approach in developing a national cybersecurity strategy for member countries. The workshop also explored CIIP challenges and cyber security threats and discussed cloud computing protection scenarios.

Spectrum Management*Buea, Cameroon*

Developed for Cameroon's Telecommunications Regulatory Board staff, this course began with an introduction to spectrum as a limited and valuable natural resource, and discussed existing spectrum management methods, including the 'command and control' approach, unlicensed spectrum, spectrum trading, pricing and leasing, as well as the role of the regulator. The principle of the opportunity cost associated with spectrum, as well as spectrum pricing components were explained in detail. Spectrum auctions, different types of auctions and rules and procedures for auctions were reviewed with sample cases.

Quality of Service Monitoring*Port Louis, Mauritius*

Setting and enforcing service quality standards between networks as well as for consumers is a key mandate for regulators. The objective of this training was to develop understanding about quality of service framework for fixed line, mobile, Internet and broadband service. It also included regulation of quality of service (QoS), standard-setting process for obtaining key performance indicators, measurement methodology such as drive test, effective monitoring and enforcement mechanism.

Fibre Optic Access Networks*Accra, Ghana*

Attended by over 30 technical Vodafone staff from diverse backgrounds, this course addressed the underlying principles and concepts of local access technologies using optical fibre and data transmission over fibre. It covered access networks terminologies, concepts, architecture, topologies, PON services and standards/protocols and testing.

End-to-end Quality of Service for Fibre Networks*Port Louis, Mauritius*

The purpose of this course was to educate staff from Mauritius Telecom on the end-to-end quality-of-service mechanisms in the IP core and the FTTx networks. Key concepts were supplemented by presentation slides, discussions and real-time experiences.

Telecommunications Technologies*Honiara, Solomon Islands*

A course focused on the basic principles of communications systems and the architecture of future packet-switched networks.

Diploma in Telecommunications Management Studies*Olifantsfontein, South Africa*

Attended by a mix of delegates from Southern Africa's operating and regulatory organisations, this six weeks course was designed to provide 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 was adopted to enhance the learning experience and outcomes.

Building an Information Systems Security Policy*Nairobi, Kenya*

This course provided participants with perspectives on how to develop, maintain and enhance their departmental or corporate information security applications. As well as building a national systems security, which the relevant external participants in the industry can draw from, the course enabled IT staff to effectively advise on the state of security and conduct effective security audit and risk management in support of IT corporate objectives. Information security policies, standards, guidelines and procedures were discussed.

Critical Information Infrastructure Protection*Colombo, Sri Lanka*

For details, see 10 - 11 August.

FTTH Network Planning and Optimisation*Port Louis, Mauritius*

Attended by 30 technical staff from various planning departments within Mauritius Telecom, this course was designed to focus on the requirements of planning, installing and operating a fibre-to-the-home network, as well as application of specific technologies to maximise the access network deployment.

Cybercrime Management*Nairobi, Kenya*

Companies depend highly on information held on computer systems and other devices to do business. Most of these computer systems and devices are connected to the Internet. An effective counter-measure to protect this data and systems is paramount to the success of organisations. This course educated the Communications Authority of Kenya's participants on the growing trend in cybercrime and addressed the preventive and detective technology to minimise cybercrime.

Broadband Pricing*Kingston, Jamaica*

A highly successful programme, 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 explored throughout for various products and services.

IP/MPLS*Maputo, Mozambique*

This course, designed for technical staff of various departments at Telecomunicações de Moçambique covered the basics of IP as well as the TCP/IP protocol suite, MPLS and pseudowire tunnelling technologies. Transporting IPv4 MPLS traffic through an IPv6 network was covered with IPv6 addressing, neighbour discovery and link routing.

October '14

Marketing and Pricing of Next Generation Networks

Port Louis, Mauritius

The emergence of increasingly complex high-capacity networks brings both challenges and opportunities for operators. This five-day course developed for staff of Mauritius' Information & Communication Technologies Authority examined pricing options and models for next-generation networks. Pricing was discussed in the context of various licensing environments, including unified licensing, as well as for different operating models and more segmented markets.

Broadband Technologies and Multimedia Services

Chaguaramas, Trinidad & Tobago

With a diverse range of broadband technologies available for today's business requirements, it is important that organisations and engineers choose technologies that best fit their requirements. This course provided a comprehensive technical overview of 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.

IMS Fundamentals

Gaborone, Botswana

Botswana Telecommunications Corporation already has basic IMS functionality installed in their network to accommodate multimedia voice and video conferencing. This one-week course, attended by 25 technical and non-technical staff from marketing, operations, planning, billing and customer relations provided participants with an understanding of how an NGN IP multimedia subsystem (IMS) enables the network to carry triple-play and quad-play multimedia services. The course also covered IMS architecture and how it interacts with the NGN network, including quality of service policies and management.

Caribbean Regional Cybersecurity Workshop

Bridgetown, Barbados

This two-day workshop examined the approach to cybersecurity strategy and critical information infrastructure protection. The CTO presented the Commonwealth Approach for Developing National Cybersecurity Strategies and on Critical Infrastructure Protection. Two additional presentations were made by the Caribbean Telecommunications Union and ICANN on regional cybersecurity initiatives and securing the Internet, respectively.

Certificate in Telecommunications Management Studies

Yaoundé, Cameroon

This course provided participants with a broad and holistic view of the telecommunications industry and equipped them with the ability to adopt end-to-end approaches in tackling the key issues that drive value creation and performance in a highly competitive market place. Beyond an introduction to various new managerial tools, the course provided a forum to exchange ideas and experiences between managers with different backgrounds, roles and responsibilities.

ICT Regulation: Understanding the Big Picture of ICTs for Development

London, United Kingdom

This five-day workshop provided an introduction to the use of information and communication technologies for development for high-level decision-makers in policymaking and regulation. Attended by 26 participants from Commonwealth regulatory organisations, the workshop included industry visits to BT and other organisations where participants were able to learn, firsthand, regulation in practice. An alumni network for peer learning and coordination has been created for participants.

Human Resource Management and Finance

London, United Kingdom

Success in an organisation can only be achieved through the quality of its workforce. From this perspective, HR has a very important role to play in ensuring a company achieves its strategic goals. This course, delivered in French, trained Cameroon's Telecommunications Regulatory Board staff on best practices relating to HR and budgeting which they could apply internally.

Critical Information Infrastructure Protection

Nairobi, Kenya

Ensuring the security and resilience of the critical infrastructure is essential to a nation's security, public health and safety, economic vitality, and way of life. This workshop, delivered to telecommunications stakeholders within Kenya, introduced the Commonwealth Cybergovernance Model and explained the need for a Commonwealth approach to developing a national cybersecurity strategy for member countries. The workshop also explored critical information infrastructure protection workshop challenges and cybersecurity threats and discussed cloud computing protection scenarios.

November '14

December '14

January '15

Costs and Tariffs in Telecommunications*Accra, Ghana*

A popular course attended by 38 delegates from Ghana's National Communications Authority, the Ghana Revenue Authority, Vodafone, Glo Mobile, MTN and Airtel Ghana, this five-day programme provided participants with the basic concepts, methodologies and tools of tariffs policies, cost models and methods in telecommunications. On completion, participants were able to reliably demonstrate the ability to handle tariffs, costing and competition-related issues and requirements pertaining to regulatory and legal aspects.

IPv6*Accra, Ghana*

This course apprised participants about the drawbacks of IPv4, the need for implementation of IPv6 and its features, IPv6 addressing and address planning, routing in an IPv6 network, migration to IPv6 and related issues and basic configuration of IPv6 in a router. The course also included troubleshooting exercises and hands-on practice.

Certificate in Telecommunications Management Studies*Accra, Ghana*

The course was designed to enhance private sector managers' decision-making skills and provide them with latest best practices in the areas of network administration, rural telecommunications, service development, and overall management of a telecommunications organisation in a competitive environment. Beyond an introduction to various new managerial tools, the course provided a forum to exchange ideas and experiences between managers with different backgrounds, roles and responsibilities. Participants were drawn from Ghana's National Communications Authority, the Ministry of Communications, Ghana Investment Fund for Electronic Communications, Glo, Airtel, Millicom and the National Information Technology Agency.

February '15

Dense Wavelength Division Multiplexing Fundamentals

Gaborone, Botswana

As BTCL does not currently have a DWDM network project this course provided a basic overview of DWDM, its components and architecture and how DWDM integrates with other key strategic technology standards. Knowledge gained from the training will be beneficial for future strategic planning of transmission network and design of a DWDM network.

we.learn.it Workshop

Johannesburg, South Africa

we.learn.it is an EU-funded project that aims to innovate the use of broadband capability for education. This workshop provided participants, predominantly teachers, with an opportunity to learn more about the We.Learn.It initiative and the learning expedition pedagogic tool that was developed by the CTO in collaboration with other European partners. In addition to the workshop, the teachers were given an opportunity to understand and gain further knowledge on the use of ICTs for development and education.

March '15

Critical Information Infrastructure Protection

Gaborone, Botswana

Ensuring the security and resilience of the critical infrastructure is essential to a nation's security, public health and safety, economic vitality, and way of life. This workshop, delivered to telecommunications stakeholders within Kenya, introduced the Commonwealth Cybergovernance Model and explained the need for a Commonwealth approach to developing a national cybersecurity strategy for member countries. The workshop also explored critical information infrastructure protection workshop challenges and cybersecurity threats and discussed cloud computing protection scenarios.

Diploma in Telecommunications Management Studies

Abuja, Nigeria

This course provided staff from the Nigerian Communications Commission 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. The course was also attended by staff from Cameroon's Telecommunications Regulatory Board. A blended learning approach involving lectures, case studies and hands-on application of key concepts was adopted for the course to enhance the learning experience and outcomes.







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