COMMONWEALTH
TELECOMMUNICATIONS
ORGANISATION

Government of Samoa
Ministry of Communications
and Information Technology

Digital Transformation Centre Stage: Samoa

21 June 2023 (BST) / 22 June 2023 (WST)

Event report

Showcasing Samoa's successes in digital transformation

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DIGITAL TRANSFORMATION CENTRE STAGE: SAMOA

Executive summary

Many Member States of the Commonwealth Telecommunications Organisation (CTO) have had impressive successes in deploying Information and Communications Technology (ICT) solutions to overcome challenges and advance progress on their digital transformation journeys.

The CTO Secretariat conceptualised the Digital Transformation Centre Stage (DTCS) series of webinars to highlight and celebrate Members' successes in effective ICT adoption and showcase them to inform and encourage other CTO members.

The CTO convened the *Digital Transformation Centre Stage: Samoa*, on 21 June 2023 (BST) and 22 June 2023 (WST).

This was the second virtual meeting of the series, and the event was structured around two sessions with focus on Samoa's National Identification Project that is set to revolutionise government service delivery and the Maua e-commerce platform and payment gateway that is enhancing the growth of Samoa's digital economy.

Samoa's National Identification Project (NIP) will provide unique identity cards for citizen's and residents of Samoa. The card-based digital system, will be securely linked to government information databases, and is designed to support the formulation of national development plan for the benefits of all citizens.

The Maua digital service provides a complete e-commerce platform built around the realities of many Pacific communities.

Introduction

The CTO Secretariat conceptualised the Digital Transformation Centre Stage (DTCS) event series to highlight and celebrate Members' successes in effective ICT adoption and showcase them to inform and encourage other CTO members. Each edition of DTCS will put the spotlight on a specific member country and the transformative ICT solutions and innovations that have been deployed.

The DTCS series provides a platform for other CTO members, to learn about the ICT-enabled successes and to seek help from the featured member for adopting similar programmes in their countries.

The tagline for the event series is: *Showcasing Members' Successes in Digital Transformation.*

The event was open to Ministers of CTO member countries, senior members of ICT Regulatory Authorities, C-Suite representatives of the FinTech community and International Development Agencies.

Objectives

The objectives of this Digital Transformation Centre Stage are to:

Present members' successes in digital transformation;	Share insight, best practices on digital transformation; and	Facilitate support for members from the featured country.

Participants

Digital Transformation Centre Stage: Samoa generated significant interest with 108 delegates, from 30 countries, participating through the Zoom Webinar online platform. Countries represented:

American Samoa, Australia, Barbados, Bermuda, Cameroon, China, Cook Islands, Fiji, Gabon, Guyana, Jamaica, Kenya, Mozambique, New Zealand, Nigeria, Niue, Papua New Guinea, Philippines, Samoa, Solomon Islands, South Africa, Switzerland, Timor-Leste, Togo, Trinidad and Tobago, United Arab Emirates, United Kingdom, United States, Vanuatu, and the Virgin Islands (British).

Welcome, opening formalities and introductory keynote address

The opening session consisted of a welcome address from Secretary-General Lewis, CTO, a goodwill message from Mr Chuck Leota, Chief Executive Officer, American Samoa Telecommunications Authority (ASTCA) and a keynote address titled Samoa's Digital Pathway: Digital transformation strategy presented by Honourable Toelupe Poumulinuku Onesemo, Minister, Ministry of Communication and Information Technology, Government of Samoa and Second Vice-Chair of the CTO.

Welcome remarks

(Q) **Master of Ceremonies — Mr Leaso Ronnie Aiolupotea, Deputy Chief Executive Officer/Chief Cybersecurity Officer, Ministry of Communication and Information Technology (MCIT), Samoa**

Mr Ronnie Aiolupotea has been working for the Government of Samoa for 23 years. He is Deputy Chief Executive Officer/Chief Cybersecurity Officer, Ministry of Communication and Information Technology. He has managed projects in the areas of Information System, Telecommunication, Broadcasting, Finance and Human Resources. He setup the first ever Government Wide Area Network in Samoa for government financials, payroll and HR system.

Mr Leaso Ronnie Aiolupotea, Master of Ceremonies, on behalf of Honourable Toelupe Poumulinuku Onesemo, Minister of Communications and Information Technology enacted the opening formalities. Opening the meeting in prayer, he sought God's blessing and guidance for this important event.

MC Aiolupotea acknowledged the esteemed presence of Ms Bernadette Lewis, Secretary-General, CTO and Mr Chuck Leota, Chief Executive Officer, American Samoa Telecommunications Authority and CTO members in attendance.

He extended thanks, acknowledging organisations that assisted the delivery of the event. These organisations included the New Wine Worship Centre Christian Church, SkyEye Pacific Limited, Samoa Tourism Authority, the Coconet TV Channel, Pacifica, Food and Agriculture Organization (FAO) of the United Nations, and the Ministry of Agriculture of Samoa.

MC Aiolupotea subsequently introduced the CTO invocation and the National anthem of the Independent State of Samoa.

▶ Click **here** to view Mr Leaso Ronnie Aiolupotea's welcome remarks.

Welcome and introduction

🔴 Ms Bernadette Lewis, Secretary-General, CTO

Secretary-General Lewis has a wealth of experience in the public and private sectors and is knowledgeable on the ICT issues facing developing countries having worked in senior positions in national, regional, and international ICT organisations. Her pioneering work in ICT has won her recognition and awards.

Secretary-General Lewis confirmed her distinct pleasure in welcoming delegates to the second edition of the CTO's Digital Transformation Centre Stage webinar series.

The CTO is the oldest and largest intergovernmental information and communication technology organisation in the Commonwealth. The CTO is focused on supporting its members digital transformation programmes and having a measurable impact in the Commonwealth and Beyond.

Digital transformation is defined as a process that integrates digital technology in all areas of a nation, changing the operation of its people and systems to deliver value.

Secretary-General Lewis, confirmed on joining CTO in 2020, she reached out to every member of the organisation to understand how to better serve them, and a consistent theme of those discussions was the desire to learn of the work of other members and in response to this the CTO conceptualised these webinars to showcase and celebrate the successes of our members in effective ICT adoption.

The first webinar of this series was held in March 2022 and featured India and its digital ID system, the Aadhaar, as well as the Unified Payment Interface (UPI). There was learning and collaboration because of that event.

SG Lewis confirmed her delight in showcasing the Samoan governments plans, efforts, and successes in digital transformation. Attention will be given to the Vision, the strategy, the proposed National Identification Project (NIP) and the successes of the Maua e-commerce platform and payment gateway designed to support the digital economy in the Pacific.

SG Lewis called on participants to listen carefully, to see how the Samoan experience can help respective Commonwealth administrations, but also on how participants can further support Samoa's digital transformation journey.

▶ Click **here** to view Secretary-General Lewis' Welcome and Introduction.

Keynote address: Samoa's Digital Pathway — digital transformation strategy

Hon. Toelupe Poumulinuku Onesemo, Minister, MCIT, Government of Samoa and Second Vice-Chair, CTO

Hon. Toelupe Poumulinuku Onesemo is the Minister for Communications and Information Technology. He represents the Constituency of Falealili No. 1 and this is his first Parliamentary term.

Hon. Toelupe has over 15 years of work experience both in Government, private sector and the community. He served recently as the Chief Executive Officer of the Ministry of Works, Transport and Infrastructure and was an Assistant Chief Executive Officer for the Planning and Urban Management Division (PUMA) under the Ministry of Natural Resources and Environment.

Samoa is set to experience digital transformation with the development of *Samoa's Digital Pathway* a strategy that will transform the lives of citizens and residents of Samoa.

We are living in a time of unprecedented changes where digital transformation is starting to revolutionise lives across the world. As we enter this new digital era it's essential that Samoa also embraces the opportunities that come with digital transformation and leverage them to drive growth and development.

Digital transformation is more than just modernising technology systems it means using digital tools and platforms to fundamentally change business models and customer experience. The Samoan government moves to sanction changes that will embrace innovation, provide stronger collaboration, and will allow the government to be more agile in its operations.

Samoa faces many challenges, like that of other small islands developing states (SIDS), such as climate changes, natural disasters, and recently the pandemic that underlined the need to be better connected globally for socio-economic prosperity.

Samoa stands isolated, in the South-West Pacific Ocean but must join the global digital economy and take advantages of benefits that come with that, by embracing digital transformation. Digital Transformation provides an opportunity to create new jobs locally and remotely improve business competitiveness and enhance the quality of life for citizens.

There is a need to understand the priorities that will drive success from the outset, Samoa's priority is its digital infrastructure investment, infrastructure investment will help to improve the quality and the reliability of digital services and enable new digital technologies and tools to be utilised.

In the recent launch of communication sector plan the Samoan government has committed to redeveloping its fibre network across the Islands. The government initiative to have better connectivity locally, with the last mile connection seen as the most important part of this vision.

Secondly, a focus on digital literacy capacity and skills development is crucial, all Samoans must have the skills and the knowledge to fully participate in the digital economy by investing in the programmes that promote digital skills. There is a need to create a society that is more innovative and productive, and it is important to remember Samoa's diaspora around the world where they still need to access local Samoan products directly.

Thirdly, the Samoan regulatory framework needs to be modernised to reflect the rapid evolving digital landscape. There is a need to ensure policies and regulations established for a burgeoning digital economy are progressive. Samoa must make sure new stakeholders are protected online especially vulnerable people and children. The Samoan government is also making sure that national solutions are provided for marginalised groups, with regards to gender, disability, and social inclusion.

There is an elementary need for commitment from all stakeholders, for collaboration and partnerships to further drive digital transformation through public-private-partnerships (PPP), international cooperation, and local collaboration are key to unlock the full potential of digital transformation. The Samoan government advocates for a united approach in delivering this strategy, to ensure good preparation, as well as agility in dealing with habitual challenges and setbacks.

Finally, Samoa is investing in leadership, the government has shown this commitment by installing a sub-cabinet committee for ICT chaired by the Honourable Prime Minister. In conclusion, digital transformation is not a choice, but a necessity in an ever-changing world.

Samoa will seize this opportunity to embrace digital transformation, which will have significant economic social and cultural benefits, to work together to create a digital enabled Samoa that is fully equipped for the challenges of tomorrow.

▶ **Click here to view Hon. Toelupe Poumulinuku Onesemo's Keynote Address.**

Goodwill message

Mr Chuck Leota, Chief Executive Officer, American Samoa Telecommunications Authority (ASTCA)

Mr Leota has over 19 years of telecom experience combined. Shortly after joining ASTCA in 2017, he not only was a significant part of a cultural shift in doing business. In 2021, he become the Chief Executive Officer of American Samoa Telecommunications Authority (ASTCA) after leading the organisation as Acting CEO. Mr. Leota has made significant contributions in impacting American Samoa's social and economic conditions, especially during the COVID-19 pandemic.

In his first thirteen years in the sector at Blue Sky, he worked his way to Corporate Sales Manager. He achieved multimillion-dollar outcomes in telecom products and services with billing contracts across retail, corporate, and government business. He also holds Matai titles from the villages of Vailoa and Nua and Se'etaga.

Digital transformation requires a coherent strategy, it is essential to define how goals are to be achieved, to have collaboration and to add value to the proposition to gain support. Digital transformation is the process of using digital technology to change the way how organisation operates at the most fundamental level. An automation of processes, streamlining operations and increasing efficiency. An early example of digitalisation is the rise of ATM machines.

The benefits of digital transformation will be the improved efficiency, transparency and accountability for businesses and government services. Digitalisation will provide new revenue streams, increased productivity, and better customer service. There will be increased access to education services, healthcare and increased societal participation in the Samoan economy. Digital transformation will boost economic growth, create new jobs, and allow the islands of Samoa to be better connected to the global economy.

People now have access to unlimited information direct from their home. Local telecommunications service providers in Samoa, such as Digicel and Vodafone, provide mobile wallets and SkyEye Pacific Limited offers the Maua e-commerce platform. The Samoan government's National Identification Project (NIP) will greatly improve the delivery of government services to the people of Samoa.

The opportunities of digital transformation are recurrent, and this one solution provides an opportunity to improve, and digitalisation allows for the continued improvement of processes, a cycle that is unending.

Members of the CTO must ensure that everyone has access to digital technology and ensure technologies are used in a way that benefit all of people, in a form of digital equity ensuring inclusivity.

Digital transformation is a shared responsibility, the Samoan Islands thought leaders must ensure digitalisation evolves at pace. Stakeholders must communicate and collaborate to work together towards this goal.

Ingenuity in the private sector must be encouraged and harnessed and digital transformation programmes must encourage participants to share ideas to better develop the digitalisation journey.

Samoans worldwide must be worthy of the responsibilities that digitalisation entrusts. The trust given to the Samoan governments by the nation to lead the digital transformation must see continuous collaboration. Digital transformation policies and initiatives will improve Samoan lives and build a stronger and more profitable Samoa.

The people of American Samoa have much to learn from the progress of digital transformation in Samoa.

▶ Click **here** to view Mr Chuck Leota's Goodwill Message.

Digital Samoa — Digital Transformation Centre Stage: Samoa

Her Excellency, Afioga Fiamē Naomi Mata'afa, Prime Minister, Independent States of Samoa

Promotional video

In June this year Samoa will conclude its celebration of 60 years of independence and self-reliance as an isolated country in the middle of the Pacific Ocean. Samoa has traditionally relied on the communications and IT sector to manage natural disasters and coordinate recovery, however, the COVID-19 pandemic showcased the sector's potential to transform the country's economy and enable its citizens to participate fully in the digital economy.

> *We need to change our world for the better and leave hope for our future generations.*
>
> *Mr President, the COVID-19 situation, forcing border lockdowns and state of emergency restrictions, further emphasise the importance of digitalisation of SIDS (Small Island Developing States) to build resilience and meet the sustainable development goals.*
>
> *Samoa will continue to prioritise the need to invest in digital Technologies and to promote a digital economy and connectivity. This is key to stimulating business opportunities and increasing productivity and growth in more traditional sectors such as agriculture and tourism.*

Her Excellency, Afioga Fiamē Naomi Mata'afa, Prime Minister, Independent States of Samoa

Samoa's digital strategy focuses on three key areas: the people, economy, and the governments. The goal is to ensure that all summer months are to be digitally connected to services including remote areas or government services will be streamlined and modernised to be responsive to the needs of all people. The economy will benefit from this full-flex connectivity and increase in investment in sectors such as agriculture, fisheries, tourism, and e-commerce. There will be affordable and high-quality services while promoting infrastructure development across the country, including fibre solutions for last mile access. Samoa hopes to be seen as a thriving digital economy by 2030, where its children can participate fully in the advantages offered by advanced digital societies. The nation is proud of the values and principles that make it unique and aims to uphold these while embracing the full potential of the digital revolution. The investment in digital transformation to achieve a digital Samoa will play a significant role in accelerating the country's economic development and progress for years to come.

▶ Click **here** to view Samoa's Digital Transformation promotional video.

Digital transformation and the National Identification Project

This session looked at the need for improved Digital Transformation in Samoa, with a review of the National Identification Project a government initiative that is set to establish a National Digital Identification System (NDIDS) and reviewed the need at creating a regulatory environment that enables legal and policy frameworks that nurture a thriving telecommunications ecosystem.

Presentation: Digital transformation and the National Identification Project

Mr Leota Ali'ielua Salani, Chief Statistician, Samoa Bureau of Statistics, Government of Samoa

Mr Leota Ali'ielua Salani was appointed the Samoan Government Statistician to lead the Samoa Bureau of Statistics in 2022.

With 30 years in the Bureau, 15 as Assistant Chief Executive Officer Leota Aliielua Salani brings a wealth of experience.

Mr Salani has led numerous undertakings relating to the coordination and compilation of Statistical Activities surveys, reviews of national accounts systems as well as the development of a Composite Indicator that monitors and evaluates the performances of the various sectors of the economy.

The National Identification Project (NIP) started in 2018 with COVID-19 delaying project implementation, however, despite delays the current government's desire for digital transformation now means the project has traction, the draft bill is currently under parliamentary review.

NIP is a significant digital undertaking, it is an enabler for socio-economic developments in Samoa. The government of Samoa has been the focus of this important digital strategy. In statistics there is a saying, "that everyone counts", it is important that many stakeholders are involved in the project execution.

For many years Samoan central government official documentation has included birth certificates, passports, driver's licenses, and the government has kept records on residents' place of work and student IDs. In terms of gathering biometric data via Passport services, the Samoan government could not effectively capture the whole population because specific people only travel, not everyone needs a passport.

In terms of birth certificates, Samoa historically has experienced challenges recording births, a vital statistic, through the births, deaths, and marriages registration, due to challenges such as remote location, no available communication device, etc, in many cases people did not register.

Similarly with driver's license certification, only a limited number of people in the population drive, so not everyone has a driver's license. With education and employment records these only capture parts of the population, many people do not have employment, and/or have not been through the education system.

Considering the challenges with the current national ID systems, the government decided that it would be pertinent to look at a national ID which covers the whole population. Digital transformation will be central to this programme, it was decided that the ID scheme should not only feature an identifier, such as an ID card (a fiscal identifier) but instead look at a digital identifier.

The first objective of the National Digital Identification System (NDIDS) is to provide a unique legal digital identity for all citizens and residents of Samoa and the intention is to improve accuracy and reliability of other systems like the Civil Registration and Vital Statistics System (CRVS). The health information system, the passport system, voter registry, etc would all benefit from the NDIDS implementation programme. There are many opportunities for the Samoan government when we get this unique legal digital identity.

The second objective is to provide an authentication and verification, even though Samoa civil registration partly incorporates this within the births, deaths, and marriages registration, it is not extensive as not everyone is part of this register.

The third objective is to have integrated information. Statistics development in Samoa has been a challenge for many years because we have various data sources, and the cost of maintaining these survey operations is becoming a burden on the government. The indices community is trying to look at opportunities whereby the government can reduce costs, to minimise the cost to produce these statistics.

Statistics production must be timely and accurate so with NDIDS, that will include a business ID, Samoa can facilitate an efficient statistics production. The comprehensive portfolio of statistics will allow for informed policy development and will influence decision-making on a timely basis. NDIDS will be an enabler and will allow integrated information.

The final projective objective is Samoa will upgrade their civil registration system technology with the NDIDS, this will eliminate the discrepancy in the CRVS and the Population Registry (PR). NDIDS technology provides a solution to the many challenges Samoa is facing with streamlining the current systems.

The NDIDs will have data variables that will be part of the registration system, standard data fields such as name, date of birth, place of birth, gender, address(es) for instance, complete with biometric data. What is key to Samoan identity is the fact that Samoans have many titles, and this system will be developed to allow from the entry of Matai titles (literally "formal name"). The NDIDS will have first name, last name as standard fields and the database used will be in part record some of the other variables such as Matai titles, but these will not be part of the persons nationality. The significance of the indigenous material, such as titles will be kept on separate databases, so that the Samoan government can keep these records in the system for a separate use.

In terms of the NDIDS process, every person is important, and every person must have an estate, the Samoa digital identification, which will be a unique identifier for each resident.

There is a sequence of life events that will be captured by the digital identity system, from the birth of the child, from infancy through to adulthood and then death. It is important that NDIDS will report the status of each life event.

The NDIDS system will incorporate the CRVS system currently in use, but the incumbent system will be refined and improved. The NDIDS will allow multidisciplinary reporting, the CRVS system will be informed by the Ministry of Health, and the Ministry of Women, Community and Social Development (MWCSD) working with representatives of the villages, who will operate as direct reports to the CRVS.

Once CRVS registration is complete, the individual's profile is created on the national identity system with the SDIN (Samoa Digital Identification Number) number being generated, a unique identifier, the SDIN will be used as a state number and will be both an authentication and verification code within the national database. At the age of 18 residents of Samoa will be required to provide biometric data and this will be recorded within the NDIDS, within a separate biometric database system.

There was consideration given to the age of enforcement for the biometric data, and it was considered best practice for the age to be 18 years-old, the standard entry age for marriage registration and likewise 18 years-old is the age banks in Samoa extend certain privileges. The age when Samoa will fully issue the National identification will be 18 years of age.

With regards to civil registration there will be two operating databases; the identity system and the biometric system that will be used as part of this authentication and verification process.

During childhood the initial identity system will identify and verify a person and during adulthood the biometric database will come into operation. It is necessary to have registration of death as part of the process included in the CRVS. When a person dies the death must be a recorded indices because the SDIN remains unique up until death, there is no duplication of the number. It is important the office of this certification is informed of all deaths so that the numbers can be removed from the database.

The implementation of NDIDS will be an enabler to the economy and underlines the importance of digital transformation on the lives of Samoans. In terms of the social sector (eHealth and ePharmacy, eLearning and Student Enrolment, Passport and Immigration Registry, Voters Registry and Courts Administration) Samoa is looking to use this national ID as a single identifier for all databases. This national ID will be part of every system in the country, it is essential that Samoa integrates this as an identifier to every system.

The economic and finance sector are strong advocates of this project, in the future to open a bank account it is likely that it will be a requirement for Samoan residents to declare the SDIN number. Having this national ID will fast-track the process and eliminate a lot of the laborious past processes. It will be the same approach for tax management and land registries soon.

I must acknowledge the great support from the government and the various Ministries cooperating as well as our leaders, working in the interest of the NIP to create the legal and policy frameworks that will support the development of the NDIDS and subsequent implementation. In 2017, the Samoan cabinet gave approval for the establishment and development of a national identification system. In 2018, World Bank funding was secured to assist the development and implementation of this project. In 2019, the National ID Steering Committee was created, legal (MacMillan Keck) and technical (Norway Registers Development) consultancies were secured to advise on the national ID programme and the National ID Division was established at the Samoa Bureau of Statistics. In 2020, an Official Policy statement was drafted, as was a Policy Findings and Recommendation Report, a Strategic Implementation Plan, Technical and Functional Requirements were established, a Request for Proposal (Bidding document), and draft instructions for legislation written. In 2021, a consultant contract focussing on strategic communication (4Ts consultant) was awarded. In 2022, a National Digital Identification System Draft Bill with the submission of the bill to the Office of the Attorney General and a Strategic Communications Plan and costed implementation Plan 2022–2025 was drafted.

The Samoan government approved for a bill and for relevant legislation to be tabled, the significance of digital transformation and the importance of processes in protecting and handling the information of citizens is critical.

The endorsement of cabinet has been reached and now Parliament is now reviewing the relevant documentation. Samoa is anticipating the legislation to be passed by Parliament soon, possibly as early as August 2023. Samoa is looking at having this national ID in place in early 2026. There is more work ahead to get the NDIDS operational, and there will be added costs but there are continued discussions with the World Bank to fund these activities.

▶ **Click here to view Mr Leota Ali'ielua Salani's Presentation Digital Transformation and the National Identification Project.**

Presentation: Creating an enabling environment for digital transformation: universal access and quality of service — policy, legislation and regulations

> 👤 **Mrs Lematua Gisa Fuatai Purcell, Regulator, Office of the Regulator, Samoa**
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> Mrs Gisa Fuatai Purcell is the Regulator for the Government of Samoa. Prior to this appointment, she was Acting Secretary-General for two years at the Commonwealth Telecommunication Organisation (CTO) and Director, ICT Development.
>
> Before working for the CTO, she worked at the ITU as the Head of the ICT Development and worked in climate change adaptation, emergency telecommunication, and e-waste for least developing countries, small island developing states, landlocked developing countries, and countries with economies in transition. She has over 30 years of experience in Telecommunications and ICT development at the national, regional, and international levels.

Digital transformation is critically important to the country of Samoa. To create an enabling environment for digital transformation it is important to focus on inclusivity, without a meaningful digital transformation then people living in remote and rural villages will not be able to participate and use digital Technologies. They won't be able to benefit from e-commerce opportunities, make electronic banking transactions or benefit from government social programmes online.

The outcome of the digital transformation will ensure businesspeople and ordinary folk in remote and rural areas will no longer have to travel to the urban areas to pay taxes, make e-commerce payments and will be able to build an effective online enterprise from their remote location using a mobile phone, tablet, or laptop. Digital Transformation provides a range of services essential for development. Promises to reduce poverty and promote socio-economic growth by integrating more communities into the global economy. In Samoa on the island of Savai'i digital transformation would be a dramatic change in lifestyle, a businessperson would save money in traveling across the island, then travelling by boat, from there which is an hour from Savai'i to Upolu, and then drive the remaining distance to Apia to pay their taxes, for instance. When digital transformation strategy is implemented then instead of being forced to take the long journey to Apia the capital of Samoa, to trade or use government services, they will be able to do so from the comfort of their home, or the beach. Sector reforms will allow market forces to play a greater role in achieving universal access.

With digital transformation it is important to acknowledge the problems that cause divisions in society. There's a digital divide (lack of access to technologies, devices or broadband), there's the gender divide (men more likely to have access to work, money, income, technology) there are economic divisions (i.e., rural to urban). In Samoa, there is a gender divide, but the disparity is comparatively low, women using technologies is approximately 48% compared to 52% of men now using digital Technologies and participating in online activities. The digital divide is significant in Samoa, and this requires greater attention.

Government interventions will help boost digital transformation. The Samoan government must aim at leaving no one behind, everyone must have access to their digital Technologies. Samoa is a Small Island Developing State (SIDS) with a population of around 200,000. As a small nation it is possible for stakeholders to work together to move this forward quickly, the National Digital Identification System (NDIDS) is the catalyst in Samoa for digital transformation that will provide a range of services that are relevant to the development of the country.

All countries have a shared responsibility of achieving the strategic development goals (SDGs) by 2030, a target set by the United Nations. It is a requirement that every country including Samoa will have to move quickly and achieve all the components and completing the activities in the Samoan Digital Transformation Pathway strategy, is the only way to helping achieve the targets set by the UN.

Legal Framework reform will help achieve digital transformation. In 2005 Samoa adopted the National ICT Policy, the Telecommunications Act 2005 was passed. These developments within Samoa at that time were ahead of any other country within the Pacific Islands. The purpose of the Telecommunications Act 2005 was to liberalise the mobile market, in 2006 in November Digicel launched its services in Samoa and the Office of the Regulator was created.

Samoa continues to develop legal frameworks with the Samoan Digital Pathway, Samoa has implemented a Universal Access Fund, and has established a Cybersecurity Unit within the Ministry of Communication and Information Technology, there is a need for the government to buy back the Samoa National Broadband Highway (SNBH) infrastructure. SNBH is the government network linking government offices throughout Apia as well as other locations.

Samoa must review the legislative framework going forward and keep up to speed with emerging technologies. Developing a strong legal framework is key. The concept of liberalisation of the telecommunications sector did not only mean creating a marketplace for telecommunication service providers, but it also referred to reforming telecommunication within Samoa. This was the main reason the Office of the Regulator was established. It was to ensure that the Ministry of Communications and Information Technology does not become both a provider and regulator of services and this is in line with international guidelines set by the International Telecommunications Union (ITU).

Implementing the Universal Access Fund is also a role for the Office of the Regulator. This area of responsibility has been in the Telecommunications Act since 2005. The purpose of the fund is the government's way of intervening to make sure that reserves are created that can be set aside for future telecommunications development, that will create access to underserved areas of the country and not just to create access to ensure quality of service. The Office of the Regulator is looking at the Telecommunications Act 2005 and reviewing with the assistance of the Ministry of Communication and Information Technology. To ensure Samoa keeps abreast of emerging technologies to make sure our legal framework is intact.

The Office of the Regulator main mandate is to implement the objectives of the Telecommunications Act 2005, the Electricity Act 2010, the Broadcasting Act 2010, and Postal Act 2010. The function is to provide regulatory services for the Telecommunications, Electricity, Broadcasting and Postal Sectors.

An important role of the regulator is to protect the interest of the consumer. The regulator must make provision for the consumer to make complaints relating to service provision, the regulator must address these complaints in an amicable manner and at the same time making sure that credible advice is given to the Minister of Communications and Information Technology and the Samoan government.

The Office of the Regulator must monitor telecommunication status including access and quality of service, including quarterly monitoring. The Office of the Regulator must compile lists of underserved and unserved areas to the service providers, and demand roll out plans and solutions. The regulator must manage competition of the market, interference of service and review and approve digital equipment to be used in the marketplace.

Regulations are in place for satellite technologies, UHF (Ultra-High Frequency) radio, VHF (Very High Frequency) radio and High Frequency (HF) radio, handheld, base and mobile, UHF/VHF Repeaters, GPS (Global Positioning System), VSAT (Very Small Aperture Terminal). The Office of the Regulator provides licenses and reviews license applications for these various technologies and across all four sectors of the Office of the Regulator's mandate.

Digicel and Vodafone, the main mobile network coverage providers in Samoa, ensure mobile coverage is a mix of GSM (Global System for Mobile Communications) a standard to describe protocols for second-generation (2G) digital cellular networks, 3G the protocols for third generation wireless mobile telecommunications technology, LTE (Long Term Evolution) a standard for wireless broadband communication for mobile devices and data terminals as well as 4G (fourth generation of mobile communication standards). 4G and LTE technologies are used interchangeably.

Whilst 2G mobile protocols are considered outdated and service providers would like to remove this technology from the sector the role of the Office of the Regulator will ensure that whatever changes are proposed the consumer will benefit.

The digital divide is a global issue, in 2020, 3.6 billion people remained unconnected. In Samoa the amount of people or areas unserved and underserved people is a mere fraction, but the Samoan government does not wish to leave anyone behind, and the Samoan Digital Pathway will make sure that these issues are reviewed and addressed, so services will remain available that will be affordable and inclusive. The Samoan government wants digital inclusivity, that everybody has access or the opportunity to access, good quality of service (download speeds), access to digital services, the need for network security and the need to develop local content. Once the Samoan Digital Pathway is implemented there will be an increase in local content, currently most content has not originated from Samoa.

The Office of the Regulator must ensure that local content is protected, and attention must be given to the Samoa Intellectual Property Act 2011, and relevant Acts which the WIPO (World Intellectual Property Organization) lead as the global forum, serving the exchange of ideas and best practices.

As Samoa moves to implement the Samoan Digital Pathway then more attention needs to be made to quality of service, a problem common across the Pacific region. Quality of service is key to the Samoan Digital Pathway to achieve digital transformation, all regions must have access and a good internet speed, if there is a lack strength then digital transformation will not be achieved at the national level.

In Samoa, quality of experience of the user is based on the complaints received, the Office of the Regulator makes provisions for complaints, the regulator has set up a toll-free number, however, the regulator also accommodates in-person complaints, when the complaint is deemed significantly serious or important.

Samoa continues to build regional and international relationships and establishing close links with development partners. The Samoan government believes that to achieve digital transformation nationally, it is necessary for continuous collaboration, within Samoa, regionally across the Pacific Islands and at the international level. To implement the digital strategy there is a need to explore funding components of the national projects and providing the opportunity for people to be trained whether locally online or overseas. Samoa is also benefits from fellowships and funding to attend international meetings and conferences; this also helps to build capacity nationally. Samoa also supports harmonisation of digital transformation policies across the Pacific region, regional coordination is important for development.

▶ Click **here** to view Mrs Lematua Gisa Fuatai Purcell's Presentation Creating an enabling environment for Digital Transformation.

Q&A: National Identification Project and policy, legislation and regulations considerations

Ⓠ Mr Leota Ali'ielua Salani, Chief Statistician, Samoa Bureau of Statistics, Government of Samoa

Ⓠ Mrs Lematua Gisa Fuatai Purcell, Regulator, Office of the Regulator, Samoa

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Q1 *The National Identification Project (NIP) implementation has inherent challenges to overcome, one being registration of children. How is the Samoan government going to enforce child registrations so the project can move forward? (Asked by Ms Bernadette Lewis, Secretary-General, CTO)*

Response The Samoa Bureau of Statistics is currently reviewing civil registration and vital statistics (CRVS) enforcement with the support of the United Nations Development Programme (UNDP). Samoa is working to strengthen CRVS enrolment, working with the Ministry of Health to strengthen systems that will enable wider data sharing. This civil registration programme is intrinsic to the national ID project. In terms of incentives, in 2023 Samoa started mobile registrations of births, before this intervention the number of Samoan births captured languished at around 35% of all births recorded within a year. In recent times after registration awareness campaigns, where there was engagement across all districts, the total number of births registered stands at approximately 65 to 70% of all births for the period. The expectation now is that with continued measures and awareness campaigns mass registration will be achieved across the whole country.

One initiative that was also implemented was to provide cash incentives to families to encourage registrations.

The Samoan government is looking at renewing legislation, because currently registrations are chargeable. When birth parents go to the Samoa Bureau of Statistics in person, along with their form, the Birth, Deaths, and Marriages (BDM) staff verify the information on the system and fills a form for birth registration. Upon payment of a $15 fee, a printout of the birth registration is issued. Samoa is looking at having a new legislation whereby registrations of birth can be free, and payment would only be applicable for the issuance of a certificate from the issuance office.

Q2 *What is the Regulator doing to ensure affordability of access to digital services and devices? (Asked by Ms Bernadette Lewis, Secretary-General, CTO*

Response Affordability is one of the key issues with reducing the digital divide. The Samoan Ministry of Customs & Revenue have historically reduced the duty on mobile phones to increase mobile phone take-up.

The Samoan Regulator implements the Universal Access Fund (UAF) to increase access to mobile devices. The Office of the Regulator will continue to look at how the costs of handheld devices further.

The Office of the Regulator is currently undertaking a consultation on type approval charges. Type approval is a process by which ICT equipment and devices, such as Radiocommunications and Telecommunications Terminal Equipment (RTTE), is authorised for sale and use in a country ("approved"). Samoa has never charged manufacturers importing digital equipment. The Office of the Regulator has just been given the go ahead from revenue authorities to start charging. The intention is once funds are established from this income stream then Samoa can look at areas to reduce the cost of handheld sets.

One current issue in Samoa is that the operators now want to do away with 2G, but the key issue of eliminating 2G technologies from the marketplace is the cost of handsets. Samoa has approximately 700 people who are still using the 2G phones. The Office of the Regulator is now looking at ways service providers can bring to the market affordable smartphones. The Office of the Regulator have met with the service providers and their proposal is due for submission. The key issue is affordability, in early 2022 there was an awareness programme in Samoa. Many people gave up their 2G phones, but others questioned the cost of the smartphone.

Q3 *Does Samoa allow Starlink equipment for high-speed internet connection, to be imported for personal use? (Asked by an audience member)*

Response Starlink provisionally met with the Office of the Regulator, and the Ministry of Communication and Information Technology (MCIT), and a second meeting has also taken place. Until now no formal application has been submitted by Starlink to Samoa. The key issue for the Office of the Regulator is affordability. $550 is cost of the Starlink equipment and at this price remains unaffordable for most Samoan people. The Office of the Regulator is looking at the interests of everybody not just the few, and consideration must be given to all people when making decisions.

Q4 *What if you don't want to have a National ID card?*

Response It is very important that this is considered in the legislation for the NIP, that this will be mandatory itself with registration. Making sure that everyone is part of the process, and no one is left behind, the legislation must be clear.

▶ Click **here** to view Session One, Questions and Answers — National Identification Project (NIP) and Policy, Legislation and Regulation considerations.

Solutions for Samoa's emergent digital economy

This session looks at a case study of Digital Transformation in Samoa, the Maua digital service provides a complete e-commerce platform built around the realities of many Pacific communities. This session also looks at the building blocks for transformation and the need to further establish an educational system that promotes digital transformation and encourages indigenous digital content creation.

Maua e-commerce platform and payment gateway developing the Pacific Region's digital economy

Mr Faaso'otauloa Sam Saili, Chief Executive Officer and Chairman, SkyEye Pacific Limited

Mr Saili is a Samoan business systems and ICT professional. He has 22 years of experience in establishing information and business management systems, and developing innovative solutions to business challenges in Samoa, Vanuatu, and Tonga.

Mr Saili started in the Samoa Ministry of Finance as a Senior Business Data Analyst helping to set up the Samoa Financial Management System, Samoa Debt Management System and the first Samoa National ICT Policy. From 2005 to 2016 he helped SamoaTel/BlueSky to setup and manage their Customer Care and Billing Systems, led the roll out of the nation-wide WiFi Hotspot network system, and administered the migration from analogue to IP base telephony for corporate communications.

Since 2016, Sam helped to establish SkyEye as an innovative and socially responsible company with a regional and global profile.

The Maua app is an e-commerce platform created and designed by SkyEye Pacific Limited. This Locally designed (and owned) platform features a proprietary delivery addressing system, in-app messaging & order tracking, and superior customer service.

SkyEye Samoa Ltd a locally owned and managed Vehicle Tracking and Geographic Information Systems Company has operations in Samoa, Solomon Islands, Tonga, and Vanuatu. The e-commerce space offers great benefits encourages national digital transformation and enables the national economy.

SkyEye Pacific Limited realised grassroot vendors were at risk of being excluded from the digital economy due to limited access to technology. Local people had little know-how to create their own websites and lacked skills to use available digital solutions like Shopify. Many digital solutions available were foreign, from overseas, and there were hurdles in trying to participate in those platforms.

The digital payment gateway was one hurdle that needed to be overcome. In establishing support at the local level, SkyEye Pacific Limited carried out consultations before entry into the market, research was viewed as important to gauge how the thinking would translate operationally. There was a comprehensive stakeholder consultation across the two main islands. SkyEye Pacific Limited sat with respective customers to understand exactly how and what hurdles they see using the digital platform.

SkyEye Pacific Limited planned to make the platform compatible with accessibility tools, so that people living with disability can also use the platform. Ahead of local traders selling products through the Maua app, SkyEye Pacific Limited had consultations with Nuanua o le Alofa (NOLA)/Rainbow of Love (NOLA) the Samoan national organisation that represents people living with disability. From these discussions the platform was assessed to incorporate accessibility tools. The developers looked at the Apple iOS, a proprietary mobile operating system that runs on mobile devices such as the iPhone and iPad, as well as Android technology and the associated accessibility tools available.

One major hurdle to overcome was the language barrier, and making the app available in the local languages was a conscious decision in the app's development. The Maua platform is available in Samoan and in Bislama, the native language in Vanuatu.

One of the major challenges for SkyEye Pacific Limited getting into this e-commerce area is the lack of a standardised street address system. When anyone orders online there is an expectation for the order to be delivered to their home in a quick and affordable manner.

There was attention paid to improving the address system, the various privately owned plots are divided into land parcels by the geospatial data, many of the land parcels or majority of the land in Samoa is customary land. The land bank refers to aggregating parcels of land to effectively repurpose properties. The use of GIS in the process has made it vastly more effective.

SkyEye Pacific Limited found the challenge with Samoan land registry was made difficult to assign an individual's name onto a particular plot of land. SkyEye Pacific Limited overcame this by creating their own address system where a grid is placed over the whole country and then assigned a nine-digit code to every two-by-two metre of Samoa's land. Through creating this system SkyEye Pacific came up with over 8 million individual street addresses across the islands of Samoa.

Within the Maua app there are three different applications, the first one is the buyer app. The buyer sees products available for purchase on the app. The second app is the vendors app, this app is specific to how the vendor wishes to operate, it allows vendors to load their products, put a description and cost, and then receive orders. SkyEye Pacific Ltd outsource delivery so anyone with access to a mobile phone and a vehicle can contribute to the delivery Network. This creates market competition ensuring lower costs, as well as a faster delivery time.

Digital payments are handled through the application, Samoan people still struggle to get access to bank accounts and even less people have credit cards. These are the default payments methods for every e-commerce platform overseas. SkyEye Pacific Ltd reviewed what payment platforms were easily accessible. Mobile Money options were considered a good way of delivering payments. A Digicel MyCash wallet allows registered users to easily send and receive money across Samoa, as well as receive money from overseas. Vodafone M-Tala mobile money accounts allows money to be sent across the whole of Samoa. Money can be sent to pay bills, buy top-up or cash out at one of the many Vodafone M-Tala mobile money agents across Samoa.

SkyEye Pacific Ltd integrated mobile money into the Maua app because with mobile money, if the registrant has a SIM card, the registration is very simple, so by covering both networks SkyEye Pacific Ltd has access to anyone that has a SIM card and equally they're able to participate in this e-commerce platform. SkyEye Pacific also recognises that cash still dominates the market, so buyers are also able to offer cash on delivery.

The e-commerce market is small in Samoa, considering the local population size and those that access smartphones and have access digital payments is only a certain proportion of the population, and that's not enough people to sustain an e-commerce platform.

A significant contributor to the Samoan economy is the diaspora population, the app provides an opportunity to help their families at home by using this platform, buyers can purchase directly from overseas for any of their families at home. The platform will deliver for them. To enable this SkyEye Pacific Ltd enabled credit cards payments within the Maua app.

There was no opportunity to use a local banking system, so SkyEye Pacific Limited looked overseas, registered the company in Australia where they pay Australian taxes. The company partnered with Stripe. Stripe Australia supports credit and debit card payment methods, and the Stripe platform can accept credit card payments from 130 countries around the world. The Maua platform is now able to sell to 130 countries around the world and this is where the majority of sales are generated.

During the COVID-19 lockdown there was a period when Samoans were not able to leave their homes but thankfully the government allowed the Maua app to operate, and we were able to deliver medicine and deliver essential goods during the lockdown.

SkyEye Pacific Ltd is proud of the many established partnerships, one of these is the Poutasi Development Trust (PDT). Poutasi village is on the south-east coast of Upolu Island in Samoa, with a population of around 400 people. Poutasi was extensively damaged by the 2009 Samoa earthquake and tsunami. The Maua app enabled the delivery of fresh produce during the lockdown from the village to remote parts of Samoa.

SkyEye Pacific Ltd has many other partnerships, particularly projects with women in business. During the lockdown the Maua app ensured these businesswomen were able to operate and deliver their products.

The app has allowed producers to virtualise their monthly market so instead of the farmers coming to sell produce in town, people now pre-purchase their products and the women in business go out and pick all up the products from the micro farmers and micro fisheries and then the platform enables the delivery.

Over the two and a half years of the pandemic the Maua app has generated direct sales to the micro farmers and sixty percent of the produce is from rural communities and this includes Apolima, the smallest of the four inhabited islands of Samoa, and Manono Island the third largest island helping remote communities survive.

The Maua app has enabled Samoans to also use technology for aquaculture. A World Bank grant programme The Samoa Agriculture & Fisheries Productivity and Marketing Project (SAFPROM) came into force in October 2019. The project aims to increase the productivity and access to markets by selected producers, to improve management of targeted productive natural resources and, to provide an immediate response to the Eligible Crisis or Emergency. SAFPROM has helped Samoa spearhead its aquaculture sector. The programme has used the Maua app to distribute this funding grant. Before the introduction of the Maua app the time lapse from purchase to delivery was 90 days on average, now the time has been reduced to one day to distribute products.

The Ministry of Agriculture and Fisheries, the Ministry of Finance and the Samoa Audit Office all have access to the platform, they perform independently, with a separation of duties. The platform allows one Ministry to create a voucher, another Ministry can approve, and assignments can be made to farmers. Grants and applications for financial assistance can be made in this way to farmers and fishermen.

The UN Capital Development Fund (UNCDF) helped SkyEye Pacific Limited to expand the platform, so it is now available in Vanuatu, with all the same features and benefits.

SkyEye Pacific Limited is conscious of the valuable contribution the company is making in helping Samoa achieve its targets for the Sustainable Development Goals (SDGs). The company is conscious of their social responsibility and commitment to achieving target for the SDGs. The contribution has been verified independently by a consultancy firm that the Australian government hired to interview Maua app benefactors, vendors and the public, verifying SkyEye Pacific's claim that the platform is contributing to the attainment of the SDGs.

▶ **Click here to view Mr Faaso'otauloa Sam Saili's Presentation Maua E-commerce platform and payment gateway developing the Pacific Region's Digital Economy.**

Success factors for app development: digital skills for a digital nation

Professor Ioana Chan Mow, Professor Computing and Computer Education, National University of Samoa

Dr Ioana Tuugalei Vaai-Chan Mow is the Professor of Computing and Computer Education at the National University of Samoa (NUS). She is the COL Focal point for Samoa and been pivotal in the integration of technology-enabled learning (TEL) through research and training at NUS. The Team Leader for the National University of Samoa Aptus research team, and played a key role in the PACENETPlus, COLTEL and Faculty of Science Open and Distance Learning Project.

The presentation looked at the role of the education sector in building ICT capacities digital skills and literacy, identifying the various success factors in building ICT capacity, and reviewed the issues and challenges, before exploring the various initiatives in the education sector within the framework of these success factors.

The National University of Samoa identify the following as critical success factors for building ICT capacity and digital skills for a digital nation: Policy Frameworks, regulations and standards, connectivity, knowledge platforms, the educational programmes, local and national projects, innovation and research, and evaluation.

In any development programme there are issues and challenges which affects the implementation of the development or adoption. Within the education sector the following challenges were encountered, access to devices, quality of service, cost of broadband, connectivity and network congestion, inadequate teacher training and technical support, inadequate technical skills and knowledge, lack of opportunities for the disadvantaged (women, rural communities, people with disabilities), visibility, and rural technology adoption and underutilisation (i.e. Samoa SchoolNet and Community Access Project (SchoolNet)), during COVID-19 (teacher and student engagement, mental health, and parental support).

The strategies and innovations implemented by the Samoan education sector to build ICT capacity were viewed within a framework of the success factors. The success factors identified, and mitigation of the challenges encountered. The Policy framework considered the Pathway Development for Samoa and the key strategic outcomes resulting from this development, these included key social development, and the priority areas to achieve the outcome included quality education and a skilled workforce.

In terms of delivering against the policy frameworks Samoa increased market competition through its regulatory framework, by encouraging competition through policies that encouraged deregulation, including the establishment of the national ICT policies (broadband, cybersecurity, email, internet usage, etc). In Samoa building ICT capacity of the national workforce has always been and continues to be a priority area, in all policies at the national level.

The alignment of policies at the national level and the commitment to building ICT capacity across the national workforce is intrinsic to the Pathway development. Samoa places a strong emphasis on international standards and industry accreditation. Standards for skills and training upheld across the Samoan education sector by the Samoa Qualifications Authority (SQA), who established the qualifications framework for all education and training programmes. From Post School Education and Training (PSET) providers certification to PHD level, as well standards for early childhood education (ECE), primary and secondary are set by the ministry and various teacher councils. The National University of Samoa (NUS) internal standards for all programmes are set by the university's Senate and the academic joint subcommittee.

Connectivity is a critical component for accessing both internal and external networks, information, and services and for building the ICT capacity programmes. NUS has made substantial upgrades to its infrastructure since COVID-19. The fibre optic backbone reaches across each individual campus, supplemented by wireless. The four campuses are connected by a wide area net, two ISP Providers, Vodafone and Digicel, and is connected to the Samoa National Broadband Highway (SNBH).

The Samoa National Broadband Highway (SNBH) ensures local connectivity to various agencies and NUS now has an established broadcasting capability because of the infrastructure upgrade. NUSTV8 is a free to air television station owned and operated by The National University of Samoa. NUS Radio is a community service from the National University of Samoa, to inform the public of major events and developments within the NUS. This platform is supported by NUS ICT as part of its NUS Broadcast initiative operated by the Multimedia Unit as part of its new developments and expansion.

The Ministry of Education, Sports and Culture (MESC) in Samoa have established e-learning projects such as SchoolNet and Computer Service Limited (CSL) helped roll out free fast wireless internet for primary schools in Samoa in 2011. CSL, in partnership with the Ministry of Education, provided secure and safe internet access to schools across the country using money from its technology fund, a trust fund governed by the company's Board of Directors.

In 2021, the MESC launched a project in support of integration of ICT in education, with support from the Government of Japan and the United Nations Educational, Scientific and Cultural Organization (UNESCO). This project has provided internet to 20 schools and the process is being extended to 146 schools.

Other school connectivity projects include the Samoa Information Technology Association (SITA) E-Learning Project with the United Nations Development Programme (UNDP) in Samoa, the first phase completed in 2021, provided the Moodle X 7 Platform and connectivity to seven schools, with completed trainings for both teachers and students. Moodle is a Learning Platform or course management system (CMS), a free open-source software package designed to help educators create effective online course.

Lastly, the Pacific eLearning Program, that aims to change how STEM (Science, technology, engineering, and mathematics) is taught in the Pacific. This project is delivered for year-10 Samoan students & teachers, created by partners Catalpa International, Nanogirl Labs and Wintec, and funded by New Zealand Agency for International Development (NZAID) and Ministry of Foreign Affairs and Trade, Samoa.

The use of technological platforms for knowledge sharing are intrinsic to the Samoan government's educational strategy, providing access to valuable information, and are repositories of knowledge at the national level. The Samoa Knowledge Society Initiative (SKSI) is a rights-based initiative that acknowledges the right to access to information to all Samoans contributing towards an enabling environment for enhanced digital development. The initiative has three components: the digital library, the research repository, and the lifelong learning platform at the sector level. At the sector level there is the Samoa Education Management Information System (SEMIS) that aims to make data management more efficient. This initiative was set up to share aggregated data across the three implementing agencies (MESC, NUS, and Samoa Qualifications Authority (SQA)), and provide monitoring and evaluation across the sector.

The radio (NUS Radio) and TV broadcasting (NUSTV8) stations have been used by both the NUS and government Ministries since the onset of COVID-19 for the delivery of multimodal learning. Samoa also benefits from the UNESCO funded Open Educational Resources (OER) repository for access to open educational resources. At NUS there is an NUS digital library, and the Centre of Samoan Studies (CSS) also has digital collections on indigenous culture and language. NUS also has open access to EBSCO online resources, a provider of research databases, e-journals, magazine subscriptions, eBooks and discovery service for academic libraries and public libraries. Samoa also has the NUS, MESC and SQA websites or portals all which have undergone considerable upgrades in recent years.

Samoa is investing in programmes and training in ICT and Computing. Within the school system there is a national computer studies curriculum for secondary schools and computer studies is an examinable subject, in the two national exams the curriculum includes computer applications, and basic programming. MESC also hosts on its websites educational resources developed under UNESCO. The government of Japan funds computer literacy and computer aided learning and this is offered in some primary schools but there is no formal national curriculum for this age group.

The National University of Samoa offers a variety of programmes, mainly academic programmes (Certificate, Diploma, Bachelor, Postgraduate, Masters) and Majors in computing, applied computing, with content in the areas of applications, information systems, computer programming, networking, operating systems, hardware and graphic design, IT security and risk management, management of systems. The Postgraduate and Masters' programmes are now accredited by the SQA and the remaining programmes are in the final stages of their accreditation.

In the Samoa Technical and Vocational Education and Training (TVET) area the NUS offers two certificates: the Certificate, Diploma Computer operations and the Certificate, Diploma Office management. NUS also has two academies which cater for the industry level certifications, the Cisco Academy offering CCNA (Cisco Certified Network Associate), a popular certification for computer network engineers. In addition, the CAC Academy, established under the government of India funding and offers courses in advanced application. The NUS also offers short-term training and workshops in ICT and Computing upon requests from Ministries and corporations.

Most of the projects and innovation initiatives within the education sector have been funded externally. These key initiatives focus on building resilience in education systems, to ensure teaching and learning continuity. Several of these projects are research and evaluation projects which is one of the critical success factors highlighted in this presentation, research is key to informing the quality of teaching.

The following are NUS projects that have been delivered or are currently being delivered:

- COLTEL — established Moodle platform, baseline study, teacher training, TEL and OER policy, impact study.
- SKSI (UN) — three components (national digital library, open access research repository, lifelong learning — Moodle)
- Infrastructure audits 2018–2021 2 audits of NUS network infrastructure.
- Infrastructure (network and broadcasting) upgrade 2018-ongoing.
- NUS multimodal 2020–2022 — Moodle implementation plan-transition online — 100% online, print, radio and tv for communication, publicity, and teaching.
- Skills for work (COL) — free online courses Coursera, Google and Udemy.
- Risk assessment project 2022 — ongoing.
- Online proctoring evaluations 2022–2023.
- Moodle AI powered Help desk 2023–ongoing.

The COLTEL project 2017–2019, funded by the Commonwealth of Learning, included a baseline study skill and ICT use by teachers and students & findings of an infrastructure audit, development of a Technology-Enabled Learning (TEL) and Open Educational Resources (OER) policy and implementation plan for Open Distance Learning (ODL) and TEL. Capacity Building workshops for implementing TEL and ODL (train staff, administrators, technical support). The setup of servers for Moodle and DSpace. Dspace used in SKSI project, is an open-source repository software package typically used for creating open access repositories. Second COLTEL project included further training on TEL using Moodle, impact study on effectiveness of Moodle. Recommendations from evaluation used to improve the infrastructure, access and Moodle support for staff and students (ready for COVID).

The SKSI Samoa Knowledge Society Initiative 2019–2022 is a national project with multiple partners of which NUS is one. Funded by UN agencies and the India Development fund, the SKSI aims to build a Knowledge Society Platform with two repositories and a digital library.

Specifically, these three components are: Samoa Digital Library, Lifelong Learning Lab, and an Open Access Research Repository.

The potential benefits of these knowledge platforms are manifold, such as access to credible information from credible digitised sources, establishment of an open access research repository access for research findings and storage of data in areas of national interest and priority. SKSI piloted in the education sector at NUS then extended to rest of the Ministries and community. External connectivity via the internet and local connectivity via the SNBH is expected to provide access to all Ministries, schools and hospitals thus ensuring national access to these 3 platforms. At later stages provide access to the community via mobile apps.

Two major infrastructure audits were conducted at NUS between 2018–2021, internal and external audits and the evaluation and findings of these audits have been used in the infrastructure upgrades which are ongoing. This ensured the upgrades of servers, network, fibre optic backbone supplemented by Wi-Fi in the four campuses. Campuses connected by Wide Area Network (WAN).

The Moodle implementation workplan, this refers to the NUS workplan for transitioning to online learning when Samoa went into voluntary lockdown in response to COVID-19.

Key considerations: access to devices, access to internet, sufficient bandwidth, sufficient processor power of servers to handle volume of processing, number of simultaneous users on Moodle, skill level of staff and students to use Moodle.

Key tasks and activities in transitioning to online learning were the conversion of course content to digital form, the registration of courses in Moodle, and uploading of courses. In addition, the Training of staff on the use of Moodle, the actual use of Moodle for teaching.

Plus building an awareness for staff and students, creating a backup plan for Moodle infrastructure, additional training for staff, student engagement and developing a community of practice, alternatives mode of online delivery and assessment.

The Moodle implementation workplan 2020 provided much needed transition to emergency teaching through Moodle during the COVID-19 pandemic. NUS went from 30% to 100% teaching online, 312 courses per semester. In addition, NUS also implemented learning across multiple modes through print, radio, offline and online.

The NUS Lifelong Learning Skills for Work Initiative 2021–2024 was a collaboration between Commonwealth of Learning (COL), NUS and three major online platforms Coursera, Google and Udemy. To provide online educational opportunities for those denied educational opportunities because of COVID-19. Under this workforce recovery initiative, 900 learning opportunities have been offered to be taken over three years with a cohort of 150 biannually, Samoa is now into cohort four of the six cohorts.

Research in ICT curricula is important for improving the quality and relevance of the curriculum. A Relevance to Industry Needs of Computing Courses to Industry (RINNCII) study was conducted by NUS in 2013 to 2014 and is conducted every three to four years. The NUS review the relevance of curricula and recommendations for improvement. Other studies by NUS include the evaluation of Notepad in a Java programming environment, the evaluation of effectiveness of Moodle in Online learning and a study in Student Programming errors in Java.

With an increasing focus on building secure resilient environments a key focus area in 2022–2023 was a Risk assessment project, that noted the importance of a resilient secure environment. Initiated in 2022 to assess risk in area of data and information security based on earlier audit by Cyber365. There was an assessment of infrastructure and recommendations in risk audit report and the findings informed security strategies which are now being implemented.

The COVID-19 lockdown from 2020–2022 highlighted the need for the offering of a secure online exams' facility. The Online Proctoring Evaluation of 2022–2023, evaluated online proctoring systems suitable for NUS and trialled 2 ops: Integrity Authenticate (IA) and Proctorio. Preliminary findings supported IA as the preferred choice for NUS's current situation and found that Proctorio would suit a larger NUS student roll.

A trial of AI powered helpdesk for Moodle 2023 was a collaboration between COL and NUS.

Trials are to commence within the coming weeks, and it is hoped that this will help NUS alleviate the workload of the ICT help desk. An AI powered helpdesk has two components, a technical and instructor focused helpdesk.

There have been numerous MESC projects and initiatives. SchoolNet (ADB), providing networks and teaching resources to 22 secondary schools. SKSI Lifelong learning platform that provided Moodle and teacher training. There has been the ICT in Education project in Samoa, developing resilient education system through online and multimedia as the countermeasure against COVID-19 pandemic (funded by UNESCO and the Government of Japan) that provided teacher and student training, Technology-Enabled Learning (TEL), open educational resources (OER) repository. The education sector Covid response Project (funded by United Nations International Children's Emergency Fund (UNICEF) and the Global Partnership for Education (GPE)) this reviewed the COVID response plan, and resulted in multimodal programmes and training including Moodle, WASH (Water, Sanitation and Hygiene) facilities). The MESC had a multimodal response pre-covid, via tv and radio programme, online programmes. The Samoa Education Management Information System (SEMIS) a sector wide information sharing between agencies, is a work in progress. The Pacific eLearning programme for Year-10 to improve Science education (funded by the MFAT), the SITA funded eLearning that saw seven schools implement Moodle Learning Management System and the Connectivity Project (funded by the MCIT Samoa) that upgraded connectivity to 20 schools and is being extended to 146 schools nationally.

In terms of research into ICT education, Samoa undertook a 2018 study on the evaluation of the use of tablets and connectivity in 28 primary schools. The study evaluated the adequacy of training, level of usage and ease of use of the devices and programmes, and usefulness by teachers and students, and the findings of this study recommended a planned integrated approach, a need to increase the number of devices available, to provide more training, better instructional and technical support.

In conclusion, Samoa has adopted several strategies to build resilience and mitigate the challenges. There are various success factors crucial for building ICT capacity. The education sector in Samoa must continue to strive to provide ICT capacity building, further develop ICT and digital knowledge and skills to ensure an ICT literate workforce that will support Samoa's digital pathway, leveraging digital transformation to realise the national goals.

▶ **Click here to view Professor Ioana Chan Mow's Presentation Success Factors for App Development: Digital skills for a digital nation.**

Q&As: Solutions for Samoa's emergent digital economy

⊗ **Mr Faaso'otauloa Sam Saili, Chief Executive Officer and Chairman, SkyEye Pacific Limited**

⊗ **Professor Ioana Chan Mow, Professor Computing and Computer Education, National University of Samoa**

Q5 — *How does the Maua app handle customer support such as live chat, ticketing system or knowledge place integration? (Asked by an audience member)*

Response — In terms of live chat the Maua app has a live in-app chat used by buyers, vendors and drivers, all are able to speak to each other, or text each other, on the platform and also with the Maua app admin staff and supervisors. Within the chat there are four different components of the platform, they're able to converse with each other, if there's an issue or if there's questions, that's on the inside the platform itself.

The Maua app is integrated with Facebook Messenger, for live chat online for people that are not in the platform but have questions. The Maua app Facebook page receives hundreds of questions and many are automated Answers. For questions that cannot be answered with an automated response, then users have to talk Maua customer service team.

Q6 — *Does Maua provide training to all people that are wanting to use the app to sell? (Asked by an audience member)*

Response — In terms of training every vendor receives a full set of training instructions. Maua train in both English and Samoan. In terms of online security Maua app provide advise on security relating to the platform, such as their login protection, how to monitor and secure mobile money transactions, payments received as well as guaranteed payment of orders. To ensure there is no spam or no false orders, every order is prepaid so when they receive the order Maua app already have the funds in the trust account and ensuring the supplier gets paid when the order is completed.

Maua app utilise a two-factor authentication for every vendor so every vendor that registers using mobile money, they must log-in and receive an SMS or OTP one-time pin to verify their identification which is the industry standard, this security is an expense for Maua app but it is necessary to ensure security.

Q7 — *Artificial Intelligence (AI) continues to rapidly evolve, some students may misuse AI for their own personal gain within the education system. What measures are The National University of Samoa (NUS) taking to address this issue and ensure responsible AI usage in education? (Asked by an audience member)*

Response — The misuse of AI with respect to reporting and assessment is a concern for NUS. NUS assignments are submitted online and via Moodle. NUS uses plagiarism software that produces a similarity report and also an AI report. NUS has received assessments that have matched against the AI report, the report details the level of plagiarism, whether it's 5%, 10%, 50%, for instance. NUS must consider the percentage of plagiarism that is deemed acceptable, and set the percentage marker. Currently NUS uses the AI reports and decides from there, just how much has been the work of the students or the work of AI. This is a debate that needs more consideration, because now we have to ask the question what is assessment what is knowledge.

NUS encourages students to go online and use the available tools, but plagiarism through the use of AI is becoming a real concern. NUS has had assignments coming in with 100% plagiarism through the use of AI. Consultant experts for NUS have warned against the use of AI in learning because you can use one AI software platform and the product can then be put through another AI software platform, then the plagiarism becomes more difficult to detect.

The NUS Senate has requested an update on the terms and use of AI at the university and the advice may well be that, yes NUS has those issues, but there must be focus on the productivity side of AI.

▶ Click **here** to view Session Two, Questions and Answers — Solutions for Samoa's emergent digital economy.

Cooperation, collaboration, support

Mrs Afioga Lefaoali'i Unutoa Auelua-Fonoti, Chief Executive Officer, MCIT, Government of Samoa

Lefaoalii Unutoa Auelua-Fonoti is the CEO for the Ministry of Communication Information Technology.

She is the current Chairman of the APT's Telecommunications/ICT Development Forum. Lefaoalii is the Former Regulator of Samoa for Telecommunications, Broadcasting, Postal and Electricity and the first Samoan to be appointed at the position. She is the former General Manager for Samoa Digital Company Ltd.

Lefaoalii has over 20 years of work experience both in Government and Private Sector as a technical/engineer for various sectors. She is the Board Member of SVSG and an active member of the community.

Mrs Auelua-Fonoti acknowledged the significant contribution Professor Mow has made in the education sector as Professor Computing and Computer Education for the National University of Samoa. The MCIT and the Government of Samoa recommend Professor Chow to be training lead for the proposed Diploma in Telecommunications, a course that the government of Samoa and CTO plan to jointly endorse courtesy of the National University of Samoa.

The success of Samoa's digital transformation strategy relies heavily on cooperation, collaboration and support from multiple stakeholders. Various Ministries hold specific roles and responsibilities in ensuring its effective implementation and success. The Ministry of Communications Information Technology leads the development and implementation of the strategy and coordinating support and managing benefits. MCIT works closely with other Ministries, Civil Society organisations, the private sector, Academia, and other stakeholders. MCIT ensures that the Samoan Digital Pathway strategy meets the government's and the people of Samoa's needs.

The plan spans a period of seven years in three phases, the first phase entails establishing institutional alignments and processes, upgrading National infrastructure coupled with the whole of government, IT planning and capacity building, trainings and awareness. This will lay the foundation of the electronic health, agriculture, tourism, and education. The second phase aims at increasing community engagement, showcasing four benefits of e-health initiatives, tourism, Agriculture and Educational Systems. The final phase looks at full participation from both private and public services reflecting a society that fully embraces the digital transformation.

The strategy priorities coordination across the whole of government, management and alignment of stakeholder needs. To achieve this MCIT have proposed a specific unit to manage the transformation and project management aspects of Samoa's digital initiatives, determining the priorities for digital transformation among the Ministries.

The MCIT has finalised the government digital platform policy to centralise government services and serve to improve data management. Further reviews may be needed after consultation, but the national digital ID initiative is in progress. MCIT will ensure an upgrade of the Samoa National Broadband Network and secure a data centre. The MCIT goal is to rely on this network to deliver government services to all citizens effectively.

Comprehensive training must be provided, including support given to engineering and an advanced cybersecurity capability, MCIT values the relationship with the private sector and prioritisation must be given to Samoa's leading industries such as tourism, agriculture, finance, transportation and social sectors, such as education and social development.

MCIT intends to utilise local companies to achieve the longterm goals, to build together with the support from corporate development partners. Submarine cables are providing fast and reliable connectivity to the islands. Samoa has access to the latest technology and information. Confidence in regulations is also critical, as is digitising traditional

systems, achieved through a review of both Samoan legislations, technical and project management skills of the Samoan workforce. MCIT remains confident in the resilience and Leadership qualities of the Samoan community to drive change and turn this Vision into a reality.

The commitment of the Honourable Minister of Communications and ICT and the Honourable Prime Minister to this initiative is unwavering. The Government of Samoa look forward to welcoming Commonwealth leaders to Samoa in October 2024, during CHOGM2024.

Closing remarks

⊙ Ms Bernadette Lewis, Secretary-General, CTO

Multi-stakeholder engagement, cooperation and collaboration have been recurring themes throughout the webinar. These principles will certainly help Samoa in achieving its goals.

SG Lewis thanked the government of Samoa for agreeing to be featured in the Digital Transformation Centre Stage webinar series. With special thanks given to Hon. Toelupe Poumulinuku Onesemo, Minister, MCIT, Government of Samoa, special congratulations and acknowledgement were given on the Samoa government's election to Second-Vice chairmanship of the CTO at its 60th Council meeting.

SG Lewis congratulated the Minister for his vision and his commitment to building supporting digital infrastructure for ensuring connectivity and cybersecurity, for increasing digital literacy skills and cultivate strategic partnerships. These are all essential for realising the goal of the digital transformation journey.

SG Lewis commended all of the presenters for the deep insight provided by Samoa's digital transformation journey, providing rich information that will help other CTO members and other countries on their own digital transformation journey.

SG Lewis welcomed the recommendation of Professor Chan Mow for the CTO's training programmes and confirmed CTO will be reaching out to her. SG Lewis gave special thanks to Masters of Ceremonies Mr Leaso Ronnie Aiolupotea and the MCIT team who worked diligently with the CTO secretariat to deliver the second edition of Digital Transformation Centre Stage.

Samoa's digital transformation journey has been a powerful exposition of what a small country has been able to accomplish. SG Lewis thanked the participants from the around the world who stayed the course of the meeting.

Conclusion

The National Identification Project (NIP) is a scalable project that aims to issue unique identification numbers to all citizens of Samoa, enabling them to access government services and benefits.

NIP will streamline service delivery and will allow citizens access to government services, eliminating the need for paperwork. With enhanced security and fraud prevention, the use of biometric data, ensures the accuracy and authenticity of identification documents.

The NIP Project ensures inclusive development, by reaching marginalised communities and providing them with the means to access essential services. NIP empowers individuals who may have faced difficulties in proving their identity due to a lack of traditional identification documents.

The NIP will ensure data-driven policy making and holds significant potential for driving socio-economic progress in Samoa. By streamlining government services, reducing bureaucracy, the NIP contributes to a favourable business environment, attracting investors and promoting economic growth whilst helping Samoa achieve the UN Sustainable Development Goals (SDGs).

The private sector is making a valiant contribution to building a digital nation, the Maua platform has facilitated much more than digital payments in the country. It has enabled women entrepreneurs — a key target group for the app. The app helps to reach more customers, save time and create a digital invoice and payments history.

SkyEye Pacific Limited is helping Samoa achieve its targets for the SDGs. The company is conscious of their social responsibility and commitment to achieving target for the SDGs and looks to lead the Samoan economy into a digital future.

With digital transformation it is important to acknowledge the problems that cause divisions in society. The Office of the Regulator works to increase connectivity to enable digital transformation whilst ensuring nobody is left behind.

The National University of Samoa continues to encourage investment in ICTs for education and has delivered a remarkable number of projects for a small island nation and continues to do so.

There are challenges ahead for Samoa, but the world looks on with keen interest to see whether the National Digital Identification Bill 2023 now before parliament becomes law, if it does, all Samoans will have digital IDs in the future, an exciting prospect not just for the island of Samoa but the Pacific islands region. Samoa is a tech leader in the Pacific Islands and many neighbouring islands in the region will look to follow.

What next?

The CTO continues to build momentum in helping CTO members achieve their digital transformation vision. CTO will ensure that members can access learning content easily and will continue to work with member states through continued consultations to ensure all Commonwealth nations have the necessary support to realise their ambitious Digital Transformation plans.

Appendix one

Survey results

During the webinar delegates were invited to complete a short poll, the results of which are presented below. Participants expressed their satisfaction with the organisation and conduct of the webinar, its content and quality of presenters. What participants said survey answers:

What was your primary motivation for attending?

How did you hear about the webinar?

How would you rate provision of new insights and knowledge?

How would you rate the overall experience?

How would you rate effectiveness of content delivery?

How would you rate quality of discussions?

How would you rate applicability of content to job function?

How would you rate speaker delivery?

How likely are you to recommend this webinar series to a friend or colleague?

What aspects of the webinar did you like the most?

- Great talks.
- Diverse topics covered. Exposition and expansion on challenges and responses to challenges/issued in Samoa for connectivity and moving forward with Digital Transformation.
- The tireless effort to continue to build ubiquitous communication for Samoa, the forecast of advancing to implement future aspects of Digital Communication for the benefit of everyone.
- Covered important areas in a short period of time.
- Presentations.
- Samoa's Roadmap.
- All presentations were interesting and stimulating.
- Sharing of slides presentation and polite structure.
- You can attend and access from anywhere (convenient).
- Opportunity to watch remotely and hear feedback from international audience.

What countries would you like to see featured in the future?

- Fiji
- Ghana
- Solomon Islands
- South Africa
- Tonga
- Vanuatu
- Other Pacific Island Countries

How can the Digital Transformation Centre Stage series be improved?

- Be good if there was more time for questions and discussions.
- More features of island nations in their journey and activities for Digital Transformation.
- More presentations from other sectors, businesses and private sector communities.
- Keep focusing on the individual and working things inwards.
- Presentations sent to participants before or soon after event completion.
- Organise at better time.
- More relevance from the speakers on strategy, KPIs and delivery.
- It would be nice to see other organisations and government ministries presenting their views and projects.
- Keep presentations short/audio sometimes not clear during speeches and Q&A.
- Equity of roles — male and female.

Finally, are you in a position to offer professional support to Samoa's digital transformation journey. If so, how?

- Yes. Reviewing technical documents in regards to systems. Building and testing systems.
- Yes. Through the Office of the Regulator.
- Acknowledge and thanking Samoa for great achievements.
- Yes. Collaborate with Government Agencies and outside support.
- Yes. ADB ICT Specialist Pacific Department/Digital Technology for Development Department.
- Consulting opportunities.
- Yes, we are in the stage of populating resources on to our digital platforms or digital libraries here at National University of Samoa.
- Yes, encourage inclusivity and ensure no one is left behind during the modern era and latest innovation especially for the developing countries and small island states.
- Not directly. No. Not in an agency doing digital transformation projects. But indirectly, can plant seeds and quietly propose solutions.

Appendix two

Participating organisations by country

American Samoa
🏛 **American Samoa Telecommunications Authority (ASTCA)**

Australia
🏛 Amazon Web Services
🏛 Kacific Broadband Satellites
🏛 **Monash University**

Barbados
🏛 **Caribbean Export Development Agency**

Bermuda
🏛 **The Cabinet Office, Government of Bermuda**

Cameroon
🏛 National Agency for Information and
Communication Technologies (ANTIC)
🏛 **Telecommunications Regulatory Board (TRB)**

China
🏛 **SkyEye Pacific Limited**

Cook Islands
🏛 **Office of the Prime Minister**

Fiji
🏛 **Caine Consulting**

Gabon
🏛 **Ministry for the Digital Economy**

Guyana
🏛 **National Data Management Authority of Guyana**

Jamaica
🏛 **Ministry of Science, Energy,
Telecommunications and Transport**

Kenya
🏛 **Commonwealth Businesswomen's Network — Africa**

Mozambique
🏛 **National Communications Regulatory Authority (INCM)**

New Zealand
🏛 CERT NZ
🏛 Ministry of Foreign Affairs and Trade
🏛 Samoa Stack Overflow
🏛 **University of Auckland**

Nigeria
🏛 Furqaan Hub
🏛 **Model Girls Comprehensive Secondary School**

Niue
🏛 **Ministry of Infrastructure**

Papua New Guinea
🏛 **Department of Information and
Communications Technology**

Philippines
🏛 **Asian Development Bank (ADB)**

Samoa
🏛 Accident Compensation Corporation Samoa
🏛 Dave Main
🏛 Digicel Samoa Ltd
🏛 EnCode Software Solutions
🏛 Greenology Samoa Ltd
🏛 madman.com IT Consulting and Services
🏛 Ministry for Public Enterprises
🏛 Ministry of Communications & Information Technology
🏛 Ministry of the PM and Cabinet
🏛 National University of Samoa
🏛 National Bank of Samoa (NBS)
🏛 Office Of The Regulator
🏛 Samoa Bureau of Statistics
🏛 Samoa Information Technology Association (SITA)
🏛 Samoa International Finance Authority
🏛 Secretariat of the Pacific Regional
Environment Programme (SPREP)
🏛 Tautua Human Development for All Program
🏛 Vodafone
🏛 **WebSafe Samoa**

Solomon Islands

🏛 **Ministry of Communication and Aviation**

South Africa

🏛 **Department of Communications and Digital Technologies**

Switzerland

🏛 **Universal Postal Union**

Timor-Leste

🏛 **International Telecommunications Union**

Togo

🏛 **Ministry of Digital Economy and Digital Transformation**

Trinidad and Tobago

🏛 **Telecommunications Authority of Trinidad and Tobago**

United Arab Emirates

🏛 **Fast Track Consulting**

United Kingdom

🏛 **Inmarsat**

United States

🏛 Hoffman Roberts Wellstein Global Advisors

🏛 **Law Offices of Curtis T. White, P.C.**

Vanuatu

🏛 Civil Registration and Identity Management

🏛 **Office of the Government Chief Information Officer (OGCIO)**

Virgin Islands (British)

🏛 **Department of Information Technology,
Government of the Virgin Islands**

International Organisations

🏛 Commonwealth Businesswomen's Network (CBWN)

🏛 **Commonwealth Telecommunications Organisation (CTO)**