



# Regulator

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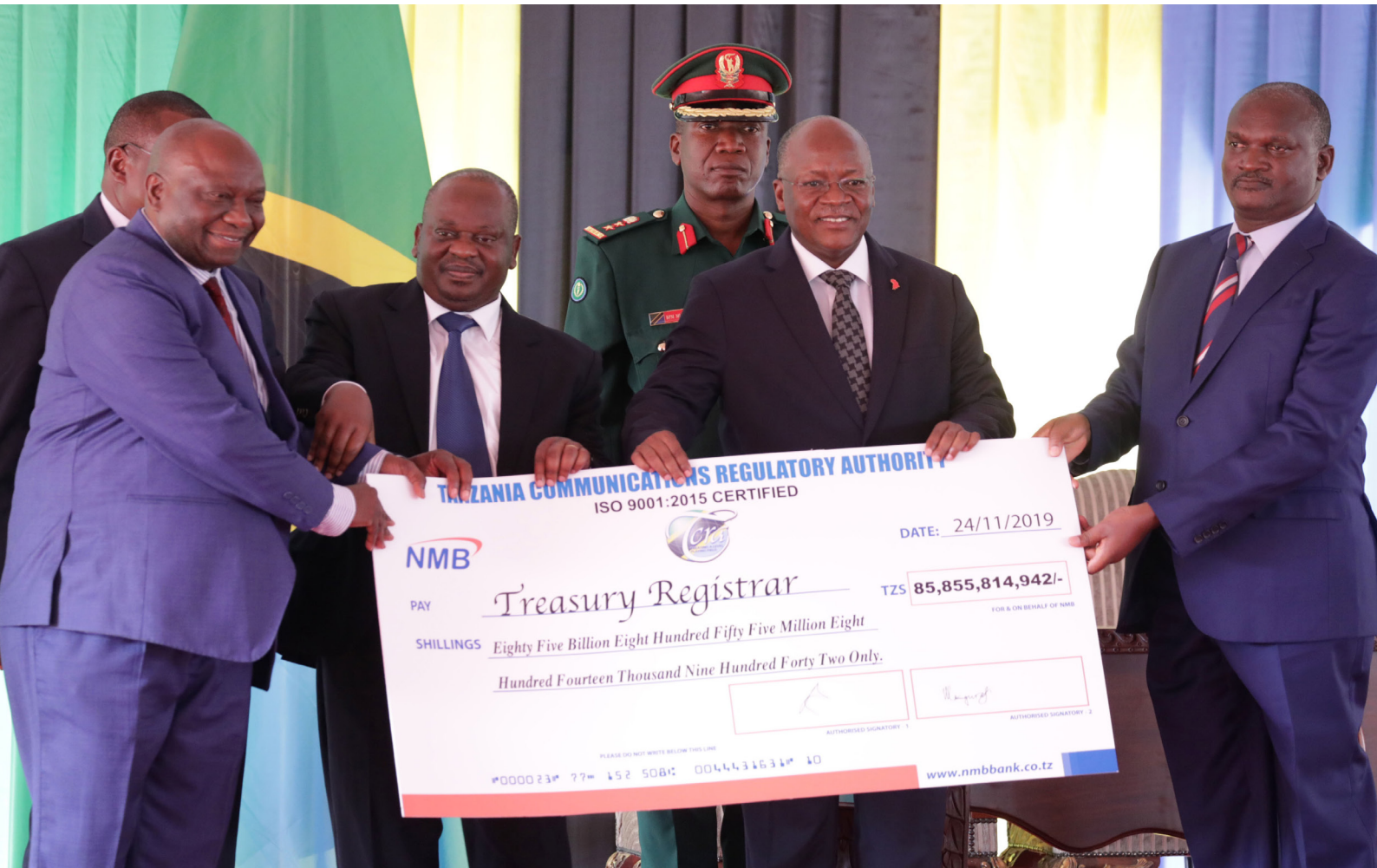
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# Tanzania Gears Up for Digital Transformation



## KISWAHILI SECTION

 Sekta ya Mawasiliano: 2015-2019

 Mwongozo wa Usajili Laini za Simu



ISO 9001:2015 CERTIFIED

# LICENSING PROCEDURES AND PROCESSES

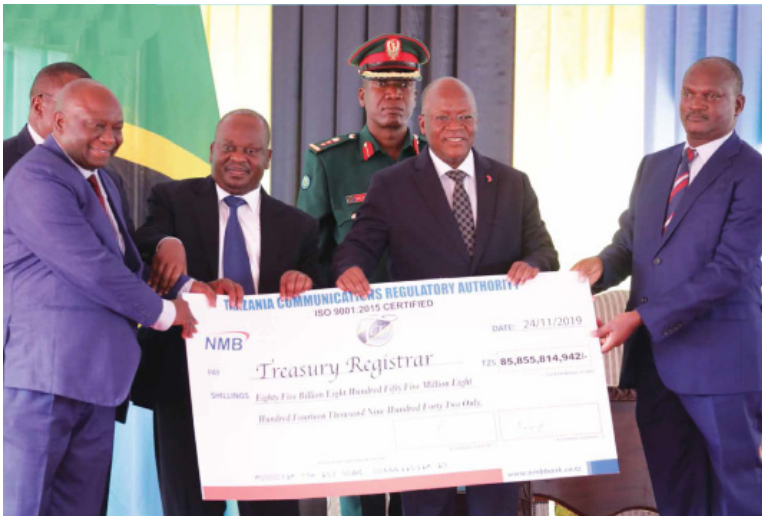
Applications for licences for provision of Network Facility Services, Network Services, Applications Services and Content Services nationally, will require stringent and rigorous scrutiny by the Authority as follows:-

1. The Authority shall periodically announce in the media a deadline for submission of applications.
2. Applications received shall be categorised into respective licence categories; network facility services, network services, application services and content services and corresponding market segments; International, National, Regional, District and Community.
3. Received applications shall be scrutinised to establish whether they have all required attachments viz: receipt of application fee, duly filled application form, business plan, roll out plan, company registration, information on technical proposal of the service to be provided, information on the previous experience, company profile.
4. Applicants who do not comply shall be notified to submit the appropriate required documents. Complied applicants shall be notified accordingly.
5. The Authority shall conduct detailed evaluations of the applications basing on pre-determine criteria for each category of license.
6. The list of applicants shall be published in widely circulated newspapers and posted on the Authority's website to invite public comments.
7. The Evaluation team shall convene to assess public comments against the applications including interviewing the applicant if deemed necessary.
8. Recommendations of the Evaluation team shall be forwarded to the Management for decision making.
9. Recommendations of the Management shall be submitted to the Board for approval.
10. Recommendations of the Board shall be submitted to the Minister for consultation.
11. Licenses shall be granted to successful applicants upon payment of appropriate fee (initial fee, frequency user fee, numbering fee, etc).

Please access more licensing information on:

<https://tcra.go.tz/index.php/licencing/licensing-information>

## COVER PHOTOGRAPHS



*LEFT: The President, Dr. John Pombe Joseph Magufuli receives a symbolic cheque for 85,855,814,942 from the Chairman of the TCRA Board, Dr. Jones A. Killimbe (left) and Director General, Eng. James M. Kilaba (right); the Authority's contribution to the Government this financial year. Second left is the Speaker of the National Assembly, Hon. Job Y. Ndugai. ABOVE: Accessing the internet at a cafe in Bagamoyo.*

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The Regulator is published quarterly by the Tanzania Communications Regulatory Authority (TCRA), an independent Government agency established under the Tanzania Communications Regulatory Authority Act No. 12 of 2003 to regulate the electronic and postal sectors in Tanzania.

The Authority's functions and duties include enhancing public knowledge, awareness and understanding of the regulated sectors, and to disseminate information about matters relevant to the functions of the Authority.

### EDITORIAL BOARD

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The launching of the national e-health strategy, with targets for connecting hospitals and health centres through digital systems by 2024 is among measures set to usher Tanzania into the digital age. Zanzibar's health centres have all gone digital. Articles on digital health and the various initiatives to mainstream the use of ICTs in socio-economic programmes are covered in this edition.

We have a report on the adoption of recommendations at the quadrennial World Radio Communication Conference (WRC-19) held in Egypt between 28 October and 22 November this year, in which Tanzania fully participated.

An article on e-commerce explains how the postal sector is undergoing reforms globally, including strategic diversification, by leveraging ICTs and creating new business streams.

Recent notices on ransomware, malware and 'Phobos' threats to computer systems are

reproduced in full, as part of TCRA's mandate on public education on regulated services and products.

The Kiswahili section features a review of the performance of the communications sector between 2015 and 2019; the four years of the Fifth Phase Government. Most of the targets in the Election Manifesto of the ruling Party have been met.

An article on electronic waste recommends, among others, recycling and awarding initiatives on safe disposal.

TCRA has been working with key stakeholders in the current programme to enhance the registration of SIM cards through biometric features and using the national Identity Card.

The Authority has developed Guidelines on the registration and a Kiswahili version is produced from page 38.

## Call for Contributions

The Editor invites articles, contributions and comments in all areas of electronic and postal communications.

Contributors are invited to submit full-length articles, including figures and pictures. Articles should have references, where possible. Material should be in font size 12, single-spaced, up to four A4 pages. Photographs, with detailed captions, should be submitted in JPEG format.

Contributions should be submitted to:  
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The Regulator is distributed to the Authority's stakeholders and subscribers. Electronic versions and past copies can be accessed on the TCRA website - [www.tcra.go.tz](http://www.tcra.go.tz). Navigate to 'Publications and Statistics', - scroll down to The Regulator.

## TCRA CORE VALUES

**Professionalism:** We maintain the highest degree of professionalism and ethical standards, building value-added relationships with customers and stakeholders to deliver quality services.

**Respect:** We are an organization that values its employees and respects its customers.

**Empowerment:** We believe in empowerment and effective delegation enabling employees to make decisions and take challenges commensurate with their levels of responsibility.

**Innovation:** We encourage creativity and innovation leading to enhancement of our capacity in handling regulatory issues.

**Integrity:** We believe in integrity and we are determined to treat customers and each other

with trust, confidentiality and honesty.

**Accountability:** We are accountable, undertaking our duties fairly, with care and transparency.

**Teamwork:** We benefit from teamwork, putting together diverse expertise to achieve success.

**Objectivity:** We undertake our activities objectively and we are result-oriented.

**Efficiency:** We believe in efficiently providing regulatory services.

**Non-discrimination:** We believe in equal opportunity and treatment for our internal and external Stakeholders and do not discriminate against gender, religion, race, affiliation and origin.

## Promoting Tanzanians' welfare

The special supplement in the Kiswahili section of this edition presents the main milestones in the communications sector in Tanzania over the last four years.

Most of the targets in the Chama Cha Mapinduzi (CCM) 2015 Elections Manifesto for the ICT sector have been met and surpassed. For example, while the target for internet access was 20 million users by 2020, there are now more than 23 million internet users.

The number of service providers has increased in all licence segments, leading to more subscriptions and the introduction of new services. A new licence category has been introduced for online content services. Competition has opened up the market and lowered tariffs.

Robust infrastructure, forward-looking national policies and plans, a predictable regulatory approach and effective strategies have enabled TCRA to contribute to these achievements as part of its mandate outlined in the TCRA Act of 2003 and the Electronic and Postal Communications Act (EPOCA) of 2010.

The reviewed ICT Policy of 2006 and the Five Year Development Plan recognize the central role of communications in transforming Tanzania.

EPOCA and the TCRA Act define TCRA's role in Tanzania's development. Section 5 of the TCRA Act entrusts the Authority with the duty of striving to enhance the welfare of Tanzanians. Through its licensing functions and the enforcement of the various regulations under EPOCA, the Authority has been able to ensure the availability, affordability, reliability and safety of communications services and goods.

TCRA is required to establish standards and

codes of conduct and terms and conditions for the provision and use of services for licensees and consumers. This is part of promoting efficiency and quality services and ensuring a level playing field.

Over the past five years, TCRA has implemented programmes designed to promote quality and to protect consumers. Regular quality of service and quality of experience tests and consumer satisfaction surveys have led to service delivery improvements.

The introduction of the Central Equipment Identification Register (CEIR), the database of compliant mobile communications devices has eliminated sub-standard and fake mobile phones in the market; ensuring consumers good value for money and raising the quality of communication.

The ongoing enhanced registration of SIM cards and SIM-enabled communications devices is a major effort to enhance consumer safety and security and to build confidence in mobile transactions. Registration by using the national identity card issued by the National Identification Authority (NIDA) and verifying a subscriber's fingerprints will create unique digital identities key to the success and safety of electronic transactions.

TCRA regularly publishes reports and studies on the sector and carries out education programmes to raise public and consumer awareness on the regulated services and goods; and on consumer rights and responsibilities. This is part of empowering consumers. The Communications consumers handbook launched in 2018 has been a very effective tool.

TCRA reiterates its commitment to improving the welfare of Tanzanians through effective regulation and enforcement of regulations and rules.



*President Dr. John Pombe Joseph Magufuli presents a certificate of appreciation to the Chairman of the TCRA Board of Directors, Dr. Jones A. Killimbe (right) and Director General, Eng. James M. Kilaba (left) after receiving the Authority's contribution of 85,855,814,942 shillings to the Government.*



**ABOVE:**  
*The Head of the TCRA Corporate Communication Unit, Mr. Frederick N. Ntobi addressing students in Geita after TCRA had donated computers to their school as part of the Authority's corporate social responsibility and contribution to the promotion of ICTs use in the country.*

**LEFT:** *The Director of Industry Affairs, Dr. Emmanuel Manasseh speaking at the annual ICT Forum in Dar Es Salaam, November 2019.*

**BELOW:** *Participants in a meeting on copyright issues convened by TCRA in Dar Es Salaam for publishers, actors/actresses, artists and musicians.*



EVENTS

*The World Radiocommunication Conference 2019 (WRC-19) was held at Sharm El Sheikh, Egypt from 28 October to 22 November, 2019. The conference adopted reviewed Radio Regulations, an international treaty that governs the global use of radio-frequency spectrum and satellite orbits. WRC-19 also passed resolutions on the promotion ICTs among women and on railway communications. We present excerpts of the conference report.*

# New technologies for sustainable development

The Conference identified additional globally harmonized (millimetre wave) frequency bands for International Mobile Telecommunications (IMT), including IMT-2020 (otherwise known as 5G mobile), facilitating diverse usage scenarios for enhanced mobile broadband, massive machine-type communications and ultra-reliable and low-latency communications.

This will unlock a host of applications facilitating Intelligent Transport Systems, creating smart cities and making communities more sustainable while allowing for effective climate action, improved health care, sustainable agricultural practices, and greater energy efficiency.

At the same time, protections were accorded to the Earth-exploration satellite service (EESS) as well as meteorological and other passive services in adjacent bands, such as the space research service (SRS) to ensure that space-based monitoring of the earth and its atmosphere remain unhindered. Satellite services supporting meteorology and climatology that aim to safeguard human life and natural resources will be protected from harmful radio-frequency interference, as will systems used by radio astronomers for deep space exploration.

Steps were also taken to ensure that radio astronomy stations would be protected from any harmful radio interference from other space stations or satellite systems in orbit.

“WRC-19 paves the way for new, more innovative ways to connect the world using both terrestrial and space-based communica-

tion technologies,” said ITU Secretary-General Houlin Zhao. “As leading edge broadband technology manifests itself in new industrial developments, people in the remotest areas will also get better and more affordable access.

“The hard won agreements at WRC-19 will favourably impact the lives of billions of people around the world, creating a digital landscape for sustainable growth and development,” said Mr Mario Maniewicz, Director of the ITU Radiocommunication Bureau.

“The achievements of WRC-19 in enabling new communication technologies and the protection of existing services will be reflected in the continuous growth of the trillion dollar telecommunication and ICT industry.”

## Key outcomes

**Identification of additional bands:** Additional bands for IMT identified in the 24.25-27.5 GHz, 37-43.5 GHz, 45.5-47 GHz, 47.2-48.2 and 66-71 GHz bands, facilitating development of fifth generation (5G) mobile networks.

**Earth exploration-satellite (EESS) service:** Protection accorded to EESS with the possibility of providing worldwide primary allocation in the frequency band 22.55-23.15 GHz in order to allow its use for satellite tracking, telemetry and control.

**Non-Geostationary Satellites:** Regulatory procedures established for non-geostationary satellite constellations in the fixed-satellite service,



opening the skies to next-generation communication capabilities. Mega-constellations of satellites consisting of hundreds to thousands of spacecraft in low-Earth orbit are becoming a popular solution for global telecommunications, as well as remote sensing, space and upper atmosphere research, meteorology, astronomy, technology demonstration and education.

Regulatory changes introduced to facilitate rational, efficient and economical use of radio frequencies and associated orbits, including the geostationary-satellite orbit.

**High-altitude platform stations (HAPS):** Additional frequency bands were identified for High Altitude Platform Systems – radios on aerial platforms hovering in the stratosphere – to facilitate telecommunications within a wide coverage area below for affordable broadband access in rural and remote areas.

**WiFi networks:** Regulatory provisions are revised to accommodate both indoor and outdoor usage and the growth in demand for wireless access systems, including RLANs for end-user radio connections to public or private core networks, such as WiFi, while limiting their interference into existing satellite services.

**Railway radiocommunication systems between train and trackside (RSTT):** A resolution was approved on Railway radiocommunication systems to facilitate the deployment of railway train and trackside systems to meet the needs of a high-speed railway environment in particular for train radio applications for improved railway traffic control, passenger safety and security for train operations.

**Intelligent Transport Systems (ITS):** The ITU Recommendation (standard) was approved to integrate ICTs in evolving Intelligent Transport Systems (ITS) to connect vehicles, improve traffic management and assist in safer driving.

**Broadcasting-satellite service (BSS):** This involves protection of frequency assignments, providing a priority mechanism for developing coun-

tries to regain access to spectrum orbit resources.

**Global Maritime Distress and Safety System (GMDSS):** It covers expanded coverage and enhanced capabilities for GMDSS.

**Earth stations in motion (ESIM):** The decision on ESIMs will connect people while in planes, ships, and trains to communication links with geostationary satellites.

**A look at the WRC 2023 agenda:** The Conference identified some of the areas to be included in the agenda of the next WRC, to be held in 2023. These are:

**Earth stations in motion (ESIM) :** Conditions will be further defined for communications of ESIMs with non-geostationary space stations in the fixed-satellite service to provide reliable and high-bandwidth Internet services to aircraft, ships and land vehicles.

**High-altitude IMT base stations (HIBS):** Possible use of same frequency bands as ground-based IMT base stations on HAPS for extended mobile broadband connectivity to underserved communities and remote areas.

**Aeronautical mobile applications:** Modernizing aeronautical HF radio, new non-safety aeronautical mobile applications for air-to-air, ground-to-air and air-to-ground communications of aircraft systems, and possible new allocations to the aeronautical mobile satellite service to support aeronautical VHF communications in the Earth-to-space and space-to-Earth directions.

**Global Maritime Distress and Safety System (GMDSS):** Improved communications and additional spectrum and satellite resources to enhance maritime capabilities in GMDSS, such as e-navigation.

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*Some of the WRC-19 women delegates*

## New ICT push for women

**A** new international recommendation has been adopted on the promotion of the involvement of women in fields related to ICT development.

The 2019 World Radio communication Conference (WRC-19) held at Sharm El Sheikh, Egypt has called on countries to motivate women to be in ICT as users, entrepreneurs or leaders.

The conference Declaration on Promoting Gender Equality, Equity and Parity in the ITU Radiocommunication Sector re-

iterates that girls should be encouraged to take up subjects leading to careers in ICT.

The International Telecommunication Union (ITU) has introduced an annual event to promote science, technology, engineering and mathematics (STEM) among girls; with the fourth Thursday of April, each year marked as the international “Girls in ICT” day.

ITU has also adopted a Gender Equality and Mainstreaming (GEM) Policy, so that it becomes a model organization for gender equality that leverages the power of telecommunica-

## Transport Proposal fit for Tanzania’s SGR

**A** resolution on railway networks communication is set to improve communication in Tanzania’s standard gauge railway (SGR), the first phase of which is nearing completion.

The recent quadrennial World Radiocommunication Conference 2019 (WRC-19) held in Sharm El Sheikh, Egypt has approved a new Resolution on the harmonization of spectrum for railway radiocommunication systems between a train and trackside (RSTT).

It seeks to improve railway traffic control, passenger safety and security for train operations.

RSST addresses train radio, train positioning

information, train remote and train surveillance.

WRC 19 was held between October 28 and November 22 this year. Tanzania was represented by TCRA.

Reliable communication is vital for train dispatching, train control and ensures the safety of train operations and passengers.

The first phase of Tanzania’s SGR; from Dar Es Salaam to Morogoro is due for completion early next year.

The Tanzania Railways Corporation operates train services from Dar Es Salaam to Kigoma, Mwanza and Moshi.



*TCRA Board members and management witnessing the welding of the SGR main track at Soga, Coast region. The Authority has pledged to ensure reliable communications in all national strategic projects.*

# E-commerce to redefine Postal business

● *Abel John and Jasson Kalile*

Postal services play a significant role in development. They provide communications between individuals, businesses and government. In recent years, postal operators have been facing challenges of rapid technological development, market liberalization, segmentation and increasing competition.

Electronic communication has impacted all postal operators' businesses. The traditional letter has been substituted by various electronic means.

The saying that "what doesn't kill you makes you strong" is relevant in current world postal operations. The spread of email, online advertising, online bill payment, and other digital communication tools have put a real dent on postal services as people in many parts of the world have gradually stopped writing general letters, browsing through catalogues, and responding to paper-based direct mail marketing.

The postal industry is embracing and developing digital postal services and a great deal in financial inclusion models. Business model reviews have been a recent area of interest in management, and such offer an innovative perspective on the postal industry's development activities in digital postal services.

The industry has evolved to include traditional post (like package and mail delivery), courier services, freight services and electronic services.

Quality parcel services are of essence for online shops; which bypass the traditional retail channels.

Electronic Commerce has transformed the retail sector. Some players have faced restructuring or even bankruptcy due to heightened competition from online platforms.

Some of the giant players have opted for business innovation and built new business models based on the spread of ICT, particularly the internet.

Delivery times are getting shorter; with same day delivery options. The result is a

knock-on effect on customer expectations.

End recipients are demanding great flexibility as well as more delivery options, fitting around their lifestyles, rather than around the operational processes of mails and parcel delivery currently used.

In aligning with the current development in the Postal Sector, the Tanzania Posts Corporation has adopted several delivery solutions.

For example, pick up and drop-off services; known as Posta Mlangoni (the Post at your doorstep) for ordinary mails have been adopted to bridge the gap; giving solutions to Ministries, Government agencies, institutions, private companies and banks timely delivery at their offices and homes.

TPC has also introduced Postal City Urgent Mail service, which is a fast, reliable and affordable intra-city/town cost-effective and efficient service for the delivery of documents and packages within a city or town.

In most cases, the delivery of this kind of items is made within a few hours, in a day.

The service is convenient and reliable: since it enables customers to send or receive parcels within a town on the same day.

Track and trace have been installed to facilitate tracking of domestic and international items. It provides the complete tracking of an item from an office of origin to the destination. It is a fast way of locating a posted item.

Office administrators depend on the accuracy and efficiency of postal services and delivery systems to conduct their daily business. A major factor in business is communication with customers, clients, contractors, distributors, manufacturers and suppliers. Global business opportunities increase dependence on worldwide postal services and international mail systems.

Office administrators use postal services and systems to send out and receive important

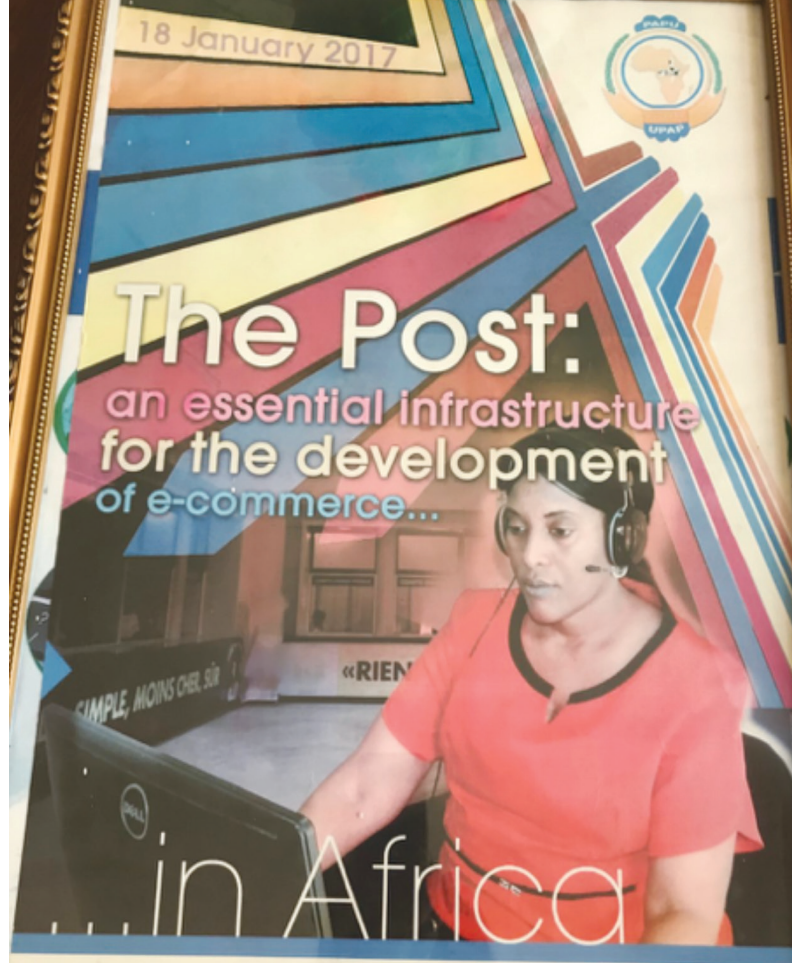
notifications, signed contracts, written correspondence, small packages and large deliveries.

Increased usage of ICT has transformed the postal sector locally and internationally by embracing innovative solutions that address customers changing needs. This provides certified mail and delivery confirmations that guarantee office administrators that documents or packages have been delivered properly.

Cell phones, text messages, email correspondence have reduced the use of general letter services but at the same time have triggered the increase in the volume of small packages and large deliveries.

The growth of e-commerce has offered new opportunities to the Post, through online shopping, which has the potential to generate huge volumes of small packets, small parcels that postal services around the world are uniquely positioned to handle and deliver at low cost.

Rather than falling into obsolescence, Postal services stand to prosper if postal service providers are quick to adapt to meet the demand of this rapidly growing and evolving market.



*An e-commerce marketing poster at the head offices of the Tanzania Posts Corporation in Dar es Salaam*

## UPU Strategy for a revamped Post

The next World Postal Strategy to be adopted next year will define action lines for diversification and improving this sub sector which has seen a drop in traditional mail volumes.

The 2021-2024 strategy, to be adopted at the Universal Postal Union (UPU) Congress in Abidjan, Cote d'Ivoire in 2020 calls for the full utilization of the extensive Postal networks in respective countries for development.

UPU Strategy Forum for Africa, held in Ouagadougou, Burkina Faso, in June 2019 underlines the need to consider the regional needs of key postal sector stakeholders in Africa. The meeting urged Governments to increase investments and focused policies to improve the postal sub sector.

Operators should enhance their performance by implementing diversified strategies and operational improvements, including fostering partnerships, says Gladys Mutyavaviri, UPU regional coordinator for Southern and Eastern Africa.



*A post office in Dar Es Salaam*

# Tanzania gears up for digital transformation

● Lokila Mosso

Information and communications technologies are set to contribute to the realization of the objective of Tanzania's socio-economic strategies between 2020 and 2025 as the country approaches middle-income status.

It is an interesting period in which targets in the country's Development Vision 2025 and the Five Year Development Plan (2016/17-2020/21); which recognizes the critical role of ICTs in development and transformation; and the development and transformation; expected to be realized. The Vision seeks to

transform Tanzania into a knowledge-based, semi-industrialized middle-income economy.(1)

The five years will also coincide with the implementation, at various stages, of national strategic projects whose efficiency could greatly be boosted by the application of ICTs.

Much will depend on how planners mainstream ICTs in their work. Tanzania has reviewed its ICT policy, which sets the parameters for the development and use of digital applications in Tanzania; and established the National ICT Commission in 2015, to foresee implementation



*Using computers at a secondary school. The promotion of ICTs among the youths speeds up a country's digital transformation.*



*TCRA's corporate social responsibility includes assisting institutions to acquire basic ICT equipment. The Authority recently donated computers to schools in Arusha region. The head of the Corporate Communication Unit, Mr. Frederick Ntobi (standing first right), the Head of the Northern Zone, Eng. Imelda Salum (first left) and Ms. Thuwayba Hussein (second left) at the handing over.*

of the policy and to coordinate digital innovations and programmes in the country.(2)

These are key building blocks for the digital transformation of the country.

The potential for the transformation of Tanzania through ICTs is immense.

The Government is committed to the adoption of digital solutions in various sectors of Tanzania's economy to accelerate Tanzania's transformation.

However, the coordination that is essential to ensure the success of such interventions is not palpable. For example infrastructural projects being implemented, the modernization programmes in urban areas and the development of Dodoma as the Government's seat have the potential to integrate ICTs in a more integrated manner.

The last 10 years have seen an ICT leap forward like never before; from the number of service providers and variety of services to an exponential increase in the number of subscribers.

When the current leadership – the Fifth Phase Government, took over the reins in 2015, it started implementing the manifesto of the country's ruling party – Chama Cha Mapinduzi – which targeted growth in

internet usage, a more liberalized market, universal access and consumer satisfaction.

The CCM Election Manifesto underlined the need to increased broadband usage. It set a target of having 20 million internet users by 2020; which has been surpassed.(3)

More than 23.1 million Tanzanians were using the internet by June 2019; with almost 96 per cent accessing the service through mobile devices (4). This is a penetration of 43 per cent, almost double the African average of 24.4 per cent and six digits above the average of 35 per cent for least developed countries. It falls slightly short of the 45 per cent for developing countries and the global 51 per cent.(5)

Extensive network coverage, the growth of subscriptions, availability of reliable electricity, affordable handsets, basic skills and low tariffs are some of the drivers of internet growth.

Mobile phone handsets are modestly priced and data tariffs are among the lowest in Africa and in the region. Broadband coverage is set to improve following the auctioning of spectrum in the 700 MHz band in June 2018. Winning bidders were given conditions of ensuring broadband coverage to 60 per cent of the population by



Table 1: Tanzania in global Internet penetration ranking		
Average internet users per 100 people (penetration rate)		
Region	Target	Actual
Africa		24.4%
Developing countries	65%	45%
Least developed countries	35%	20%
Global	75%	51%
Tanzania		43%

*Source: ITU/UNESCO Broadband Commission Report, 2019. (6)*



*A lady accesses social networks on her mobile phone in Bagamoyo*

2021 and to 90 per cent by the end of 2024.(7)

Tanzania is the third African country with the largest growth in internet usage over the last five years; and is the first in the continent with the largest relative growth between 2017 and 2018.

The country's digital revolution is being fuelled by mobile communications. There were 43 million SIM cards in the market in June 2019. At least 27 million people have subscribed to mobile phone services in Tanzania. It is estimated that there are 24 million mobile phone users; due to multiple SIM card ownership.

Besides the various applications available through mobile platforms, mobile service providers' initiatives have introduced initiatives that contribute to the realization of the country's e-strategies.

This is having a profound impact on the country's social, cultural and economic frameworks, through enhanced access to key services, improved productivity and efficiency across economic sectors.

Mobile communications have greatly facilitated Tanzania's e-government strategy. The country established the electronic governance agency in 2012 to provide oversight to government digital interventions and to coordinate electronic governance initiatives and standards.

The e-Government Agency (eGA) has integrated public institutions' e-government initiatives and systems. It has also

promoted citizens' engagement with their government through a short message service, through its mobile platform.

Some 173 public institutions are integrated into the platform; which is part of a shared e-government infrastructure including a Government Communication Network (GovNet). The latter connects 72 ministries, departments and agencies. Regional networks include regional hospitals and municipal councils.

But perhaps an area where mobile has contributed to the economy is in mobile money. Tanzania is one of the most advanced money markets in Africa and is one of the most competitive in Sub-Saharan Africa; according to a recent report on digital transformation in Tanzania.(8)

There are currently more than 23 million accounts and an average of 231 million monthly transactions averaging a total of 77 trillion shillings a month.

Mobile facilitates access to communications services; leads to efficiency and promotes financial discipline in public institutions through controlled payments and stricter financial controls. It facilitates revenue collection and payments. The government has set up its own electronic payments gateway (GePG).

It contributes to the Government's revenue through direct corporate taxes, levies and fees. They have created new revenue streams for the government.(9)

The tele-traffic management system



at TCRA ensures accountability and transparency in the payment of taxes by making available mobile communications and mobile money transaction data.

Mobile money services have created employment in the informal sector and incomes for players in the form of commissions: offered by mobile service providers to their agents and others in the value chain, including banks, which have taken advantage of mobile money outlets to show their presence.

Mobile money service providers have initiated micro-credit schemes to their customers, thus contributing to entrepreneurship development.

The ongoing re-registration of SIM cards, through biometric features and national identity issued by the National Identification Authority (NIDA) and centralized identification database, has the added benefit of providing mobile phone users with unique digital identities which can build confidence in electronic transactions including e-commerce and e-banking.

There are various digital applications in agriculture, education, relying on mobile technology. The National ICT Broadband Backbone (NICTBB), which covers all regions and districts; and Zanzibar, has created

possibilities for the delivery of electronic services.(10) A recently launched digital health programme relies on the backbone. (see related stories on pages 14 and 15).

The national postal services provider-Tanzania Posts Corporation is implementing an e-commerce programme. There are also plans to introduce virtual post office boxes.

As Tanzania consolidates its gains in ICT, more coordination is needed to take full advantage of advances in technology and the entry of new applications. New projects being implemented countrywide could integrate technology such as Artificial Intelligence for delivery.

Examples of projects where ICTs could be leveraged include roads, bridges and flyovers being built. These could be installed with sensors to manage traffic and guide motorists onto faster and safer lanes and to reduce congestion. These smart roads and bridges will lead to economic efficiency.

ICT could also be employed in urban areas to help curb crime and to improve the delivery of social services. Tanzania's towns could be transformed into smart urban centres by fully utilizing ICTs to improve their residents' quality of life.

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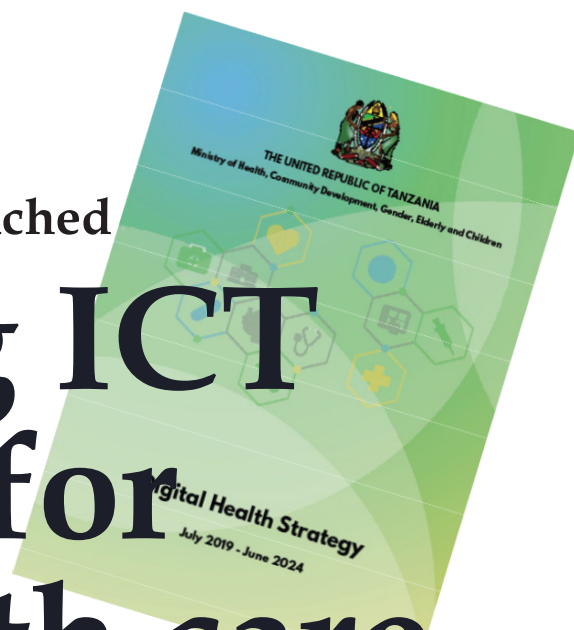
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New e-health strategy launched

# Integrating ICT initiatives for better health care



All hospitals in Tanzania and half the number of health centres and dispensaries will be providing telemedicine services through improved infrastructure and by more skilled personnel by 2024, according to the newly released national digital health strategy.

The reviewed 2019-2024 strategy, which was launched in November contains action lines for the improvement of critical infrastructure, overcoming power supply problems and, skills gaps by that time.

The Minister for Health, Community Development, Gender, Elderly and, Children; Hon. Ummy A. Mwalimu (MP) says the preceding 2013-2018 strategy led to improvements in the quality of health services delivery, revenue collection and management and, health information management.

Connections to the National ICT Broadband Backbone (NICTBB) and the installation of local area networks contributed to the success.

Telemedicine is the provision of health care services and education over a distance using telecommunication technologies.

The e-health strategy, which is aligned to the Five Year Development Plan (2016/17-2020/21), National Health policy (2019 - 2024), the Tanzania Development Vision 2025 and the National ICT Policy of 2016 is a major initiative to fast-track the attainment of universal health coverage in Tanzania.

The National ICT Policy promotes the use of ICT applications to enhance social services delivery.

The strategy seeks to consolidate the more than 160 existing digital health or health-related systems to ensure their interoperability.

A review of the 2013-2018 strategy noted that these systems, which were either national or institutional-based systems were not well aligned with the workflow in the health sector and this contributed to an added workload to health workers.

The other strategic targets are to:

- Solve problems affecting the delivery of the 2013 -2018 strategy. This action includes improving the infrastructure for the effective delivery of digital health
- Upgrade ICT and e-health skills among health personnel. A training package on data use by health workers will be developed by December 2019. At least 80 percent of all health workers are expected to be trained on data use by 2024.
- Ensure that all hospitals and at least 25 percent of primary health care facilities utilize ICT applications for administrative, financial and clinical operations by 2020.
- Have the required ICT infrastructure to support the delivery of telehealth services in 70% of all health facilities by June 2024.
- Ensure that 60% of all community-based health services digitalized by June 2024.
- Integrate revenue collection sys-



tems with the Government electronic payments Gateway (GePG) in all public health institutions and facilities by June 2022.

The introduction of e-health strategies is in line with recommendations of the health working group of the UN Broadband Commission for Sustainable Development which recommended in its 2019 report that gov-

ernments should adopt digital health interventions within their national health plans.

The Commission was established in 2010 jointly by the International Telecommunication Union (ITU) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) to promote internet access for development.



*The National ICT Broadband Backbone (NICTBB) map.*

## Zanzibar Health Centres go digital

All 24 health centres in Zanzibar have been connected to the national ICT Broadband Backbone (NICTBB) and are linked to the Isles' main referral hospital. Doctors can now transmit the results of patients' medical tests to the referral hospital at Mnazi Mmoja, Zanzibar for analysis.

The centres are equipped with facilities for toll-free communication among doctors. The Executive Director of the Zanzibar ICT

Infrastructure Agency, Eng. Shukuru Awadhji Suleiman, said recently that the second phase of the Zanzibar e-health programme will see the construction of an electronic medical data centre where patients' records will be stored for realtime retrieval.

The Zanzibar ICT policy of 2013 seeks to promote telemedicine, to provide ICT equipment and extend cost-effective access to ICT networks to all health care centres.

# Effective action on e waste management

● Abel John

Electronic waste (e-waste) encompasses a broad and growing category of electronic devices ranging from large household appliances such as refrigerators, microwave ovens and air conditioners to consumer electronics such as cellular phones, televisions, personal stereos and computers. Electronic equipment contains a variety of toxic ingredients, including hazardous heavy metals that pollute the environment and are very dangerous to human health.

The ongoing ICT evolution has improved people's lives in many ways. Electronic products have become part and parcel of human way of doing things in their day to day life.

Since economic growth and technological advances are an integral part of human life, it is often cheaper and convenient to buy a new electronic product than to upgrade an old one. The life span of consumer electrical and electronic devices is continuously becoming relatively short, and decreasing as a result of rapid changes in equipment features and capabilities.

This, therefore, creates a large waste stream of obsolete electrical and electronics equipment. Even though there are conventional disposal methods for e-waste, the same have disadvantages from both economic and environmental viewpoints.

Growing dependence on electronic products has given rise to a new environmental challenge. Currently, e-waste is one of the fastest-growing segments of a waste stream in the world, particularly in the developing countries including Tanzania. E-waste often ends up in landfills or incinerators. Toxic substances like mercury

and lead that are commonly used in electronic products contaminate the land, water and air.

The current trend shows that at the household, or institutional levels there is no clearly-established system for separation, sorting, storage, collection, transportation and disposal of e-waste. This is a big challenge in attaining sustainable development.

Discarded equipment, such as phones, laptops, fridges, sensors, and television sets contain substances that pose considerable environmental and health risks, especially if treated inadequately. Most e-waste is not properly documented and not treated through relevant recycling chains and methods. At the same time, e-waste streams challenge the efforts towards a circular economy as valuable and scarce resources are wasted.

Tanzania and the information communication technology industry at large have witnessed major technological changes. These include, but are not limited to, construction of infrastructure; implementation of universal service obligations and successful migration from analogue to digital terrestrial television broadcasting which has further improved quality; while enhancing the rescue of spectrum resources (digital dividend) suitable for mobile broadband services particularly in the last mile connectivity.

Tanzania has a fairly positive policy and legal framework for environmental issues related to solid waste management, hazardous waste management, chemical and other waste that can pose health effects to human beings.

The National Environmental Policy of

1997 provides a framework for the development and operationalization of other sectoral policies. It emphasizes sustainable and equitable use of resources for meeting the basic needs of present and future generations without degrading the environmental resource base or risking health and safety. Since currently there is no specific policy for e-waste management, the Environmental Policy remains just the overall tool enabling the management of electronic/electrical and solid waste generated in the country.

The Environmental Management Act (EMA) No. 20 of 2004 became operational in July 2005. According to section 114(1) Act, in the course of ensuring minimization of solid waste in their respective areas, local government authorities shall prescribe for different types of waste or garbage separation at the source and set standards to guide the type, size, shape, color and other specifications for the use of refuse containers.

The Solid Waste Management Regulations of 2009 (amended in 2016) stipulates the overall management procedures for solid waste in Tanzania. It spells the responsibilities of stakeholders; who include the Vice President's Office, National Environmental Management Council (NEMC), Local Government Authorities and private sectors dealing with the collection, transportation and disposal of solid wastes.

The Regulations require every citizen to protect the general environment (water sources and natural resources) and to restrict illegal dumping. It prescribes penalties and charges to polluters. Based on these Regulations, the overall waste-stream of hazardous waste handling and its management requires authorization which includes storage, transportation and disposal.

### **Proposed initiatives for managing electronic waste**

- Training initiatives undertaken for pupils and students in primary, secondary and technical schools and any other relevant informal learning institution.
- Ensuring that institutions adopt a waste management policy detailing their treatment of e-waste.
- Providing free training and courses; supported by various stakeholders from governments, partners and international organizations.
- Carrying out public awareness programmes

through the media, such as television, social media, websites and newspapers to make the problem of e-waste and its management well known.

- Continually improving processes and research on different lines of action in the search for solutions to the problem of waste electrical and electronic equipment (WEEE).
- Incorporating and linking e-waste activities to social undertakings and innovations, especially in training institutions to encourage new solutions through motivating students to become involved professionally on this subject.
- Initiating a multi-stakeholder approach involving communication among all actors involved (governments, the private sector, organizations and society) with defined responsibilities to each throughout the WEEE management chain.
- Devising incentives; including awards, recognition and mentions for outstanding work or initiatives on e-waste.

### **Recommendations for WEEE management**

Methods and policy incentives to enhance e-waste management through recycling may include:

- i. Manufactures to take back product packaging.
- ii. Maximum reuse, recycling and/or composting to reduce the volume of toxic of waste.
- iii. Encouraging the use of reusable, recycled and durable materials and products.
- iv. Minimizing waste and packaging by redesigning manufacturing processes.
- v. Encouraging the setting up of repair shops for electrical and electronic equipment at convenient locations within the local government to encourage people to repair their electrical and electronic equipment instead of resorting to dumping.
- vi. Promoting circular economy models in which e-waste will be treated as a resource rather than waste; through enhancing reusability, repairing, redistribution, refurbishment and remanufacturing before recycling.
- vii. Encouraging material exchange, including donations of used electrical and electronic equipment to promote the reuse of old equipment by other organizations. Dealers who sell new electrical and electronic equipment should be encouraged to receive old equipment for



proper recycling.

The responsibilities of users of electrical and electronic equipment in waste prevention are perhaps more preferred to any other waste management option.

Donating electronics for reuse purposes extends the lives of valuable products and keeps them out of the waste management system. However such items should be in working condition. Separation should be done during deposition/collection to segregate e-waste with other normal household wastes. Such separation should be done at the source (household level/industrial level).

Sustainable product design to minimize hazardous wastes should be at the product design stage. Users and consumers should be made aware of the consequences and dangers of e-waste. They should be encouraged to participate in implementing appropriate initiatives on e-waste management.

The concept of 'responsible purchasing' should be promoted among consumers, and they should be made aware of

the environmental impact of their purchases, and that they should choose the most environmentally friendly products.

The increased adoption of electrical and electronic equipment has led to more e-waste and their improper and unsafe disposal through open burning or in dumping. Such practices pose risks to the environment and human health.

The worst scenario is the challenge it poses to the attainment of the Sustainable Development Goals (SDGs). Clear and continuous monitoring, auditing and analyzing of e-waste data will contribute greatly towards attaining several goals. In particular, it will help address the SDGs 6, 11, 12, and 14; related to environmental protection and Goal 3 on health.

If adopted, this culture will address SDG 8 which focuses on employment and economic growth; whereby proper management of e-waste has a direct impact on employment creation, through extracting valuable minerals and extending the life and usability to some of the equipment through refurbishment, repair and reuse.

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Quarterly Magazine of the Tanzania Communications Regulatory Authority

# 2020



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*The Minister for Works, Transport and Communications, Hon. Eng. Isack Aloyce Kamwelwe (MP) being briefed on the Authority's quarterly magazine – the Regulator – by Mr. Semu Mwakyanja of the Corporate Communication Unit at an exhibition held during the annual ICT forum in November 2019.*



### APRIL

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Some of the leaders who attended the launching, in Dodoma, of the TCRA Clients Service Charter. Seated, from left are: Director General, Eng. James M. Kilaba; Board Chairman, Dr. Jones A. Killimbe; Dodoma District Commissioner Mr. Patrobas Katambi; the Minister of State, Public Service and Good Governance, Hon. George H. Mkuchika (MP); the Minister for Works, Transport and Communications, Hon. Eng. Isack Aloyce Kamwelwe (MP); Deputy Minister Hon. Eng Atashasta J. Nditiye (MP). Extreme right is the Deputy Minister for Information, Culture, Arts and Sports, Hon. Juliana Daniel Shonza (MP). The Charter defines the standards and delivery timelines of TCRA services.



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*TCRA Director General, Eng. James M. Kilaba (centre right) briefs a delegation from.... on the Authority's functions. They were in Tanzania for a benchmarking visit earlier this year.*

### TCRA VISION

“To be a world-class Communications Regulator creating a level playing field among Communication Service Providers, and promoting environmentally friendly, accessible and affordable services to consumers.”

### MISSION

“To develop an effective and efficient communications regulatory framework, promote efficiency among the Communications Services Providers, and protect consumer interests with an objective of contributing to socio-economic and technological development in the United Republic of Tanzania.”

### QUALITY POLICY

Tanzania Communications Regulatory Authority (TCRA) is committed to enhancing

the welfare of Tanzanians through provision of effective and efficient regulatory services that ensures Universal Access to Communication Services, through Quality Management System in all processes needed in our areas of jurisdiction. TCRA continuously improves and reviews her Quality objectives regularly and communicates the policy within the organization.

### QUALITY OBJECTIVES

- To maintain an effective Quality Management System complying with International Standard ISO 9001:2015.
- To achieve and maintain a level of quality which enhances the TCRA reputation with stakeholders.
- To ensure compliance with relevant statutory and regulatory requirements.
- To endeavour, at all times to maximize stakeholder satisfaction with our services.



# Safety in Cyberspace

*Regulation 6(s) of the Electronic and Postal Communication (Computer Emergency Response Team - CERT) Regulations 2018, requires TZ-CERT to provide early warning on cybersecurity incidents. This notice shares security strategies and best practices to help mitigate and effectively respond to Ransomware, Fileless Malware and Phobos attacks.*

## Ransomware

### 1. Introduction

The Tanzania Computer Emergency Response Team (TZ-CERT) has observed an increase in ransomware attacks across the globe.

Ransomware is a type of malicious software, or malware, designed to deny access to a computer system or data until a ransom is paid. Principally, it encrypts files on the compromised systems and demands from victims a ransom in cryptocurrency to decrypt them.

In December 2018, TZ-CERT published a security notice on a variant of ransomware known as SamSam detailing its mode of propagation, impacts and its control measures.

Since then, however, there has been an evolution of threats landscape. Ransomware actors have discovered new and sophisticated techniques for attacking.

### 2. Impacts

The impact of a successful ransomware attack can be severe to a targeted organization or individuals. This may include loss of access to data, systems or leads to operational outages. The potential downtime, coupled with unforeseen expenses for restoration, recovery, and implementation of new security processes and controls can be devastating and always difficult to quantify in monetary terms.

### 3. Propagation

Ransomware infections are transmitted to targeted systems in mainly two ways:

**3.1. Manual propagation.** Upon getting access to the victim's machine and obtaining administrative privileges, the ransomware actor may execute either of the following:

3.1.1. Manually run encryptors on targeted

systems.

3.1.2. Deploy encryptors on a victim's machine using Windows batch files (mount C\$ shares, copy the encryptor, and execute it with the Microsoft PsExec tool).

3.1.3. Deploy encryptors with Microsoft Group Policy Objects (GPOs).

3.1.4. Deploy encryptors with existing software deployment tools utilized by the victim organization.

**3.2. Automated propagation.** This may involve the following:

3.2.1. Extract credential or Windows token from Hard disk (HDD) or memory;

3.2.2. Leverage trust relationships between systems such as Windows Management Instrumentation (WMI), Server Messaging Block (SMB), or PsExec to bind to systems and execute payload; and

3.2.3. Exploit unpatched Windows vulnerabilities (e.g. EternalBlue or MS17-010).

### 4. Security strategies to combat ransomware

TZ-CERT encourages its constituents to take note of the following security best practices to help prevent, mitigate and recover from ransomware attacks:

**4.1. Preventive measures.** Prevention is the most effective defence against ransomware and it is critical to take precautions for protection.

TZ-CERT recommends the following preventive measures to protect their computer networks from falling victim to a ransomware infection:

4.1.1. Raise awareness of ransomware and enhance appropriate technical expertise. End users are targets and cyber-actors are constantly

exploiting human vulnerabilities. Employees and individuals should be aware of ransomware threats.

4.1.2. Enable strong spam filters to prevent phishing emails from reaching the end users and authenticate inbound email using technologies like Sender Policy Framework (SPF), Domain Message Authentication Reporting and Conformance (DMARC), and Domain Keys Identified Mail (DKIM) to prevent email spoofing.

4.1.3. Scan all incoming and outgoing emails to detect threats and filter executable files from reaching end users.

4.1.4. Configure firewalls to block access to known malicious IP addresses;

4.1.5. Patch operating systems, software, and firmware on devices, consider using a centralized patch management system.

4.1.6. Set anti-virus and anti-malware programs to conduct regular scans automatically.

4.1.7. Manage the use of privileged accounts based on the principle of least privilege: no users should be assigned administrative access unless needed and those with a need for administrator accounts should only use them when necessary.

4.1.8. Configure access controls including file, directory, and network share permissions with least privilege in mind. If a user only needs to read specific files, the user should not have write-access to those files, directories, or shares.

4.1.9. Scan and remove macro scripts from files transmitted via email. Consider using Office Viewer software to open Microsoft Office files transmitted via email instead of full office suite applications.

4.1.10. Implement Software Restriction Policies (SRP) or other controls to prevent programs from executing from common ransomware locations, such as temporary folders supporting popular Internet browsers or compression/decompression programs, including the AppData/LocalAppData folder.

4.1.11. Consider disabling Remote Desktop Protocol (RDP) if it is not being used.

4.1.12. Use application whitelisting, which only allows systems to execute programs known and permitted by a security policy.

4.1.13. Categorize data based on organizational value and implement physical and logical separation of networks and data for different organizational units.

4.1.14. Educate your personnel – Attackers often enter the organization by exploiting human vulnerabilities i.e. tricking users to disclose their password or click on a virus-laden email attachment. Keep on reminding users to never click unsolicited links or open unsolicited attachment in emails.

## **4.2. Business Continuity Considerations**

4.2.1. Back up data regularly. Verify the integrity of the backups and test the restoration process to ensure it is working;

4.2.2. Secure your backups. Ensure backups are kept offline i.e. not connected permanently to the computers and networks they are backing up. Some ransomware known as persistent synchronization is capable of locking cloud-based backups when systems continuously back up in real-time. Backups are critical in ransomware recovery and response. If infected, a backup may be the best way to recover your critical data; and

4.2.3. Perform vulnerability assessment and penetration test to systems and network infrastructure to uncover potential vulnerabilities for corrective measures to improve the security posture of your organization.

## **4.3. Actions to recover if impacted**

In case preventive measures fail, consider taking the following steps:

4.3.1. Isolate the infected computer immediately. Infected systems should be removed from the network as soon as possible to prevent ransomware from attacking the network or shared computing resources;

4.3.2. Immediately secure backup data or systems by taking them offline. Ensure backups are free of malware;

4.3.3. If possible, change all online account passwords and network passwords after removing the system from the network. Furthermore, change all system passwords once the malware is removed from the system.

4.3.4. Delete Registry values and files to stop the program from loading.

4.3.5. Report the incident to TZ-CERT for technical assistance.

## 5. Conclusion

TZ-CERT understands that falling victims of ransomware attacks can be frustrating and may necessitate the expenditure of funds for payment of a ransom to recover valuable information held hostage. However, it is important to consider the following security risks before paying the ransom;

5.1. Paying a ransom does not guarantee a victim to regain access to data. Some individuals or organizations were never provided with decryption keys after having paid a ransom.

5.2. Some victims who paid the demand have reported being targeted again by ransomware actors.

5.3. After paying the originally demanded ran-

som, some victims have been asked to pay more to get the promised decryption key.

5.4. Paying could inadvertently encourage this criminal business model. In principle, victims are urged to report any cybersecurity incident to TZ CERT for immediate assistance and avoid meeting attackers' demands.

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# Fileless malware

## 1. Introduction

As its name implies, fileless malware does not depend on a computer file as an attack vector but rather makes use of vulnerable Windows features to execute its malicious payload into a target system.

Fileless infections fall into the broader category of Low-Observable Characteristics (LOC) attacks, a type of stealth attack that evades detection by most antivirus, whitelisting and other traditional endpoint security solutions.

Fileless actors have been targeting organizations with critical ICT infrastructures and services running on Windows operating systems to steal sensitive user information for malicious intent. The data breach in Equifax, the largest credit agency based in the United State (U.S), is amongst high profile attack involving fileless malware reported to impact approximately 143 million customers (Ragan, 2017).

Many of these types of devious attacks have been happening in the past five years. The reason for trending now is that the techniques for attacks are becoming prevalent with severe security impacts to affected individuals or organizations.

## 2. Mode of propagation

The findings revealed that, unlike traditional malware, fileless rely on manipulation of Windows legitimate processes and applications to execute attacks rather than using a file as an attack vector.

Fileless actors take advantage of trusted applications and processes to run malicious codes on a victim's Random Access Memory (RAM) computer rather than on disk.

Many fileless attacks take advantage of Microsoft Windows PowerShell, a legitimate and useful tool used by systems administrators for task automation and configuration management.

PowerShell consists of a command-line shell and associated scripting language, providing fileless actors with unprecedented access to the central part of the operating system (kernel), including unrestricted access to Windows Application Programming Interfaces (APIs). Ideally, Windows is turned against itself.

A typical fileless attack may stream malicious scripts, codes and commands over the network (from a website) or download them via an email attachment like an innocuous-looking Microsoft Word document. Once it gains entry into a vic-



tim's machine, it may initiate various processes, beginning with reconnaissance and credential theft, and later it can trigger other malware downloads.

Some typical fileless propagation strategies include: -

a) *"Living off the land"* where fileless actors design attacks that escape detection by using tools, utilities, and Operating system (OS) components that already exist on the targeted system.

b) *"Malware-less"* which includes using legitimate tools that are not already installed on the target system.

c) *"Clean up after yourself"* which leverages common Windows built-in tools.

Upon compromising victim's machine, malicious instructions are loaded directly into memory similar to what other traditional malware do.

### 3. Phases of Execution of Fileless Malware

To launch an attack on the targeted system, fileless actors may undergo the following phases:

#### 3.1. Initial compromise

Fileless attacks often use social engineering to get users to click on a link or an attachment in a phishing email. The malicious content, which may be hiding in Flash on a website or in a document generated by an authorized application, is downloaded in a stealth manner and written to memory or some other non-traditional location such that it evade detection by antivirus software.

In this stage, fileless actors often use evasion and obfuscation kits, like the credential-stealing Mimikatz, which can extract plain-text passwords from memory as a means to gain entry into the targeted system. Fileless attacks are typically lateral, meaning they make their way from one device to another for reconnaissance or gaining access rights to valuable data across the enterprise network.

#### 3.2. Fileless execution

At this stage, attackers want to ensure that traditional security monitoring technologies will not inspect any files or activities. This step involves getting into the inner part of trusted, whitelisted applications or the operating system to initiate malicious processes.

There are two main strategies:

a) Download to memory and execute

Attackers download the content of files whose

signatures would have been detected if the files had downloaded to disk. One of the reasons attackers prefer PowerShell-based malware is because it supports memory-based download and execution.

b) Using trusted applications. In this case, attackers leverage approved, whitelisted applications, which security software won't inspect, since these applications don't usually download malicious content.

#### 3.3. Fileless persistence

On reboot of an infected system, malicious code in RAM will get erased. Given that most fileless techniques are short-lived, attackers may employ several evasive techniques to achieve persistence including: -

a) Storing malicious code in unusual locations associated with the operating system or common utilities, such as the Windows registry, Windows Management Instrumentation (WMI) Store, Structured Query Language (SQL) tables, or Scheduled Tasks.

b) Injecting malicious code into a system process, which helps attackers evade inspection, as the activities will seem to come from legitimate processes.

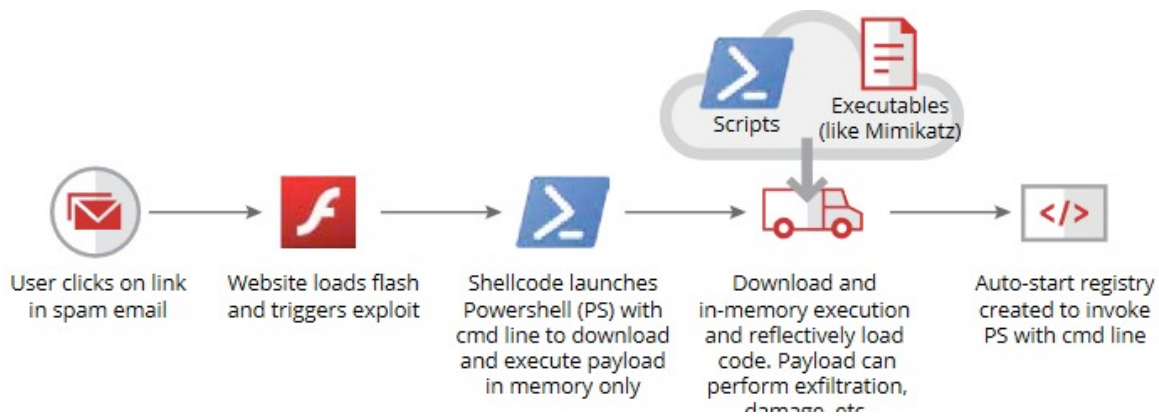
#### 3.4. Achieving objectives

When everything is set, while objectives may either be reconnaissance, credential harvesting, data exfiltration, cyber espionage, or to cause damage, fileless attacks are successful since they are capable of masking their activities and bypassing most endpoint protection solutions equipped with file-based detection mechanism, even if they do monitor behaviour. These attacks abuse the trust model used by security applications not to monitor whitelisted programs of which fileless actors use these features to carry out their malicious activities.

### 4. Mitigation Measures

Since the malware doesn't rely on files to deliver the payload, it leaves no footprint on effected systems; making its attack nearly undetectable by most anti-malware programs and even skilled security analysts.

However, adhering to following security best practises may help organizations mitigating fileless attacks: -



**Figure 1. An example of fileless malware propagation method.**

4.1. Deploy an interactive threat management system i.e. security appliances with intrusion detection and response capability that automatically and proactively investigate and respond to abnormal behaviour on endpoints and can search for fileless attack footholds.

4.2. Carry out a vulnerability assessment and penetration testing on ICT systems and network to ascertain potential vulnerabilities and take remedial measures upon discovery to improve security posture.

4.3. Use strong and updated endpoint security and protection solutions that facilitate tight integration with third-party partners who offer advanced technologies beyond endpoint security. The more advanced security features your endpoint protection has, the greater your ability to counteract fileless attacks.

4.4. Keep windows operating system and application programs in your network patched and updated. 4.5. Monitor application and network traffic, and take appropriate measures against any malicious or suspicious activities.

4.6. Turn off any unnecessary application fea-

tures.

4.7. Restrict permission, to users connected to the local area network, to install and run unwanted software applications.

4.8. Once an attack happens, change all systems password.

4.9. Ensure all users are aware and have a proper knowledge to ward off social engineering attacks.

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## Phobos ransomware

### Introduction

Ransomware infections have continued to spread and affect individuals and organizations of all sizes across the globe. Ransomware is a form of malware or a virus that prevents users from accessing their systems or data until a sum of money is paid.

Ransomware actors have been using dif-

ferent attack vectors to infect targeted computer systems with malware. To date, there are more than 1000 variants of ransomware with diverse attacking techniques.

TZ-CERT has observed a new and sophisticated technique that ransomware actors are currently using to infect targeted victims across the globe, with a variant of ransom-



ware known as “Phobos” reported to take advantage of an open or poorly secured Remote Desktop Port (RDP) from a computer system as well as exploitation of human weaknesses through use of social engineering methods.

Similar to other ransomware attacks, Phobos malware encrypts data from infected systems and keeps it hostage until a ransom is paid in bitcoin cryptocurrency.

### Impact

A successful Phobos attack may result in loss of access to data, interruption of critical business operations and financial loss from payment of a ransom in a vain attempt to restore encrypted data.

The potential downtime, coupled with unforeseen expenses for restoration, recovery, and implementation of new security processes and controls can be devastating and difficult to quantify in monetary terms.

### Propagation

It propagated either through clicking email attachments or links infected with Phobos malware, exploitation of an open and poorly secure remote RDP port or in downloading movies, software and applications from malicious sites such as torrents.

### Symptoms of Phobos infections

The symptoms include a display of a ransom note on a desktop demanding payment of funds in bitcoins cryptocurrency to Phobos actors, denied access to computing resources

that were previously usable, change of files names and extensions i.e. infected files renamed to different file extension such as “.phobos”, “.phoenix”, “.barak”, “.adage”, “.blend”, or “.acute”, bearing the victim’s unique identity (ID) and email address.

### Mitigation

Actors are constantly inventing new and sophisticated methods to infect victims with malware, however. The impact of infection can be significantly reduced if a robust data backup process is in place. Comprehensive data backups should be scheduled as often as possible and must be kept offline in a separate and secure location.

The most effective method to prevent ransomware infections is to adhere to security best practices on the appropriate and safe use of internet and ICT.

Further, regular cybersecurity training and awareness programs to ensure proficient in safe Internet-browsing techniques and the ability to identify phishing emails should be carried out.

### Important

You are advised to report to TZ-CERT through [incidents@tzcet.go.tz](mailto:incidents@tzcet.go.tz) of any security incident encountered for immediate technical assistance. You are further advised to refer to ransomware security notices published on the TZ-CERT website: <https://www.tzcet.go.tz> to obtain further information on how to manage and respond to ransomware attacks.



TZ-CERT, is a team which coordinates responses to cyber security incidents at the national level and cooperates with regional and international bodies dealing with the management of cyber security incidents. TZ-CERT was established under section 124 of the Electronic and Postal Act (EPOCA) of 2010 within the structure of TCRA.

Its address is:  
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P.O.Box 474. Postcode 14414, Dar es Salaam  
Phone:+255 22 2412 039, +255 22 2199760-9 Ext: 3000. Fax:+255 22 2412 038  
Email: [info@tzcet.go.tz](mailto:info@tzcet.go.tz)  
PGP Key id: DFEB96E8  
PGP Fingerprint: 38FF 3F79 7E41 8D52 C43C 8C6E 3E53 6C17 DFEB 96E8  
Website: <https://www.tzcet.go.tz>



Hili ni toleo la Kiswahili la jarida la The Regulator, linalotolewa mara nne kwa mwaka na Mamlaka ya Mawasiliano Tanzania (TCRA), taasisi ya serikali inayosimamia mawasiliano ya kielektroniki na posta nchini. Jarida hili ni sehemu ya Mamlaka ya kutekeleza majukumu yake. Huduma za shitariki zinapatikana kupitia kwa Mhariri, barua pepe: [regulator.magazine@tcra.go.tz](mailto:regulator.magazine@tcra.go.tz). Nakala za nyuma zinapatikana kwenye tovuti ya Mamlaka, ambayo ni: [www.tcra.go.tz](http://www.tcra.go.tz). Nenda 'Publications and Statistics; halafu shuka hadi 'The Regulator'.

### BODI YA UHARIRI

#### Mwenyekiti/Mhariri

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#### Mhariri/Mratibu

Bw. Semu Mwakyanjala

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Bw. Erasmo Mbilinyi

#### Mhariri wa uzalishaji

Bw. Isaac Mruma

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### BARUA YA MHARIRI

**T**unayo makala maalum ambayo inaelezea mafanikio katika sekta ya mawasiliano kati ya 2015 na 2019.

Malengo yoye yaliyowekwa na Serikali ya Awamu ya Tano ya Jamhuri ya Muungano wa Tanzania kwenye sekta ya mawasiliano, kati ya 2015 na 2020 kwa mujibu wa Ilani ya Uchaguzi ya Chama Cha Mapinduzi yameshafikiwa na mengine kupitwa.

Kwa mfano, Ilani iliweka lengo la kufikia watumiaji wa intaneti milioni 20; lakini hadi Juni 2019 kulikuwa na watumiaji 23,142,960.

Malengo mengine yalikuwa ni kuendelea kuweka mazingira bora ya ushindani kwenye sekta ya mawasiliano ili wananchi wengi waweze kumudu gharama za mawasiliano ya simu; kuwalinda watumiaji wa simu za mkononi dhidi ya dhuluma, wizi na uhalifu wa mtandao.

Sehemu ya kiingereza ya toleo hili ina taarifa kuhusu namna tekinolojia, na hasa mifumo ya kidijitali inavyowezesha Tanzania kuelekea kwenye mabadiliko kiuchumi na kijamii. Matumizi ya tekinolojia pia yamewezesha sekta ndogo ya posta kuendeleza huduma ya biashara mtandaoni; ambapo waagizaji bidhaa wanatumia mitandao; na bidhaa zinapofika zinasambazwa hadi walipo wateja.

Novemba 2019 Serikali ilizindua mkakati wa kutumia tekinolojia katika huduma za afya; ambao una malengo ya kuunganisha hospitali na vituo vya afya kwenye mifumo ya kidijitali ifikapo 2024.

Kimataifa, Tanzania ilishiriki kwenye mkutano wa kila miaka minne unaojulikana kama World Radiocommunication Conference, uliofanyika Misri ambao ulipitisha maazimio kuhusu matumizi ya masafa kwenye maeneo mengi ya mawasiliano.

Kuna taarifa kuhusu hatua za kuchukua kukabiliana na tishio la programu hasidi na virusi kwenye mifumo ya kompyuta iliyounganishwa kwenye intaneti.



# Sajili laini yako sasa

*Sehemu ya maelezo ya Mkurugenzi Mkuu wa TCRA, Mhandisi James M. Kilaba kwenye mkutano na waandishi wa habari, Disemba 2019 kuhusu usajili wa laini za simu kibimetria.*

**T**angu mwaka 2009, Serikali kupitia TCRA imechukua hatua mbalimbali za kiudhibiti kuhusu usajili wa laini za simu za mkononi nchini kwa kutumia utaratibu mbalimbali.

Mfumo wa usajili unaotumika hivi sasa umeboreshwa ili kukabiliana na changamoto mbalimbali zilizojitokeza katika usajili, zikiwa ni pamoja na namna ya kuhifadhi taarifa hizo na uwezo wa kufikia matarajio na malengo ya zoezi la usajili. Aidha, usajili kwa kutumia Kitambulisho cha Taifa au Namba ya Utambulisho na kuthibitishwa kwa kuchukua alama za vidole vya mtumiaji unalenga kulinda maslahi ya watumiaji wa huduma za mawasiliano pamoja na kuhakikisha usalama wa huduma hizo.

Usajili wa Simu za Mkononi unafanyika kwa mujibu wa matakwa ya Sheria ya Mawasiliano ya Kielektroniki na Posta (the Electronic and Postal Communications Act - EPOCA) ya mwaka 2010.

Sheria ya Mawasiliano ya Kielektroniki na Posta ilianzishwa kwa malengo matatu ya msingi:-

- i. Kukabiliana na changamoto zinazotokana na maendeleo ya haraka ya teknolojia hasa muunganiko wa teknolojia.
- ii. Kufanya ufanisi na kuimarisha Sheria za mawasiliano ili kuzuia migongano katika utekelezaji.
- iii. Kuanzisha kanzidata inayotunza taarifa za namba tambulishi za vifaa vinavyotumika kwenye mitandao ya simu (Central Equipment Identification Register - CEIR) na usajili wa laini za simu.

Mwaka 2016, Serikali kupitia TCRA, kwa kushirikiana na watoa huduma za mawasiliano nchini, vyombo vya usalama na Mamlaka ya Vitambulisho vya Taifa (NIDA) walikubaliana kwa pamoja kuboresha mfumo wa usajili wa laini za simu. Hii ilikuwa ni pamoja na utekelezaji wa matakwa ya sheria ya uundwaji wa kanzidata itakayohifadhi taarifa zote za usajili wa laini za simu Tanzania.

Kanuni za usajili ziliboreshwa mwaka 2018 ili kuimarisha usalama katika matumizi ya simu za

mkononi, kulinda watumiaji na kufanikisha shughuli nyingine za usimamizi. Kanuni zimeweka utaratibu wa kusajili laini za simu kibimetria.

Kanuni za Kulinda Watumiaji za mwaka 2018, zinamtaka mtu yeyote anayeua au anayetoa laini ya simu kwa namna yoyote ile kuzisajili kwanza kabla hazijatumika.

Usajili kwa njia ya kibimetria unatumia vifaa vya kielektroniki ambavyo vimeunganishwa kwenye mfumo wa vitambulisho vya Taifa unaoratiwa na NIDA.

Usajili wa laini za simu kibimetria ni wa uhakika na usalama zaidi kwa sababu alama za vidole za mtumiaji ni utambuzi wake wa pekee; ambao hauwezi kughushiwa na wezi na matapeli wa mtandaoni.

TCRA inatoa wito kwa wananchi kujitokeza zaidi katika maduka ya watoa huduma ili waweze kupatiwa huduma ya usajili kwa njia ya Biometria kwani ni usajili unaotumia muda mfupi na wenye uhakika zaidi. Wote wenye laini za simu na namba ya kitambulisho cha Taifa (yaani NIN) ambao hawajajisajili kwa alama za vidole, wafanye usajili huo mapema.



*Usajili wa laini kibimetria utawahakikisha watumiaji usalama zaidi.*



# Mifumo kidijitali kuibadili Tanzania

*Makala haya yanaeleza mafanikio katika sekta ya mawasiliano ndani ya kipindi cha miaka minne ya Uongozi wa Awamu ya Tano.*

**M**alengo yaliyowekwa na Serikali ya Awamu ya Tano ya Jamhuri ya Muungano wa Tanzania, kwenye sekta ya mawasiliano kati ya 2015 na 2020 na Ilani ya Uchaguzi ya Chama Cha Mapinduzi yame-shafikiwa na mengine kupitwa.

Yale ambayo utekelezaji wake unategemea utendaji wa Mamlaka ya Mawasiliano Tanzania (TCRA) ni kuendelea kuweka mazingira bora ya ushindani kwenye sekta ya mawasiliano ili wananchi wengi waweze kumudu gharama za mawasiliano ya simu; kuwalinda watumiaji wa simu za mkononi dhidi ya dhulumu, wizi na uhalifu wa mtandao na kuongeza watumiaji wa mitandao ya intaneti kutoka tisa (9) milioni hadi kufikia milioni 20 mwaka 2020. Hadi Juni 2019, watumiaji wa intaneti walifikia 23,142,960. Ushindani unaotokana na kuongezeka kwa watoa huduma na aina ya huduma za mawasiliano kumeleta ufanisi katika utoaji na matumizi ya huduma hizo.

## Sekta Wezeshi

Kwa ujumla wake, sekta ya mawasiliano imechangia kukua na kuendelea kwa sekta nyingine; kwani mawasiliano ni muwezesaji/mhimili wa sekta nyingine: ni kama mishipa ya fahamu ya uchumi wa nchi. Huduma za Mawasiliano ni za msingi katika maisha ya wananchi kisiasa, kiuchumi na kijamii.

Kuenea kwa huduma za mawasiliano kunawezeshwa na sera imara na mfumo wezeshi wa kisheria na wa udhibiti. Katika kip-

indi cha miaka minne ya Serikali ya Awamu ya Tano Tanzania Sera ya Taifa ya Teknolojia ya Habari na Mawasiliano (TEHAMA) imepitwa upya.

Vile vile kanuni mpya chini ya Sheria ya Mawasiliano ya Kielektroniki na Posta (EP-OCA) zimechapishwa. Sera ya Posta ya 2003 inapitiwa kukidhi mahitaji ya sekta ndogo ya posta katika kipindi hiki cha mabadiliko makubwa ya kitekinolojia ambayo yameathiri mifumo ya kawaida ya posta.

## Majukumu ya TCRA

Taasisi za usimamizi na udhibiti zimepata nyanzo za utendaji na utaalamu zaidi. Mojawapo ya taasisi hizo ni TCRA, ambayo ilianzishwa mwaka 2003 ili kusimamia/kudhibiti sekta ya mawasiliano nchini. Kazi zake ni pamoja na kutoa leseni za huduma za mawasiliano na pia kufuta inapobidi kwa kuzingatia ubora wa utoaji huduma; kusimamia bei ya huduma za utangazaji na mawasiliano pale ambapo haku-na ushindani.

TCRA pia inasimamia utendaji wa watoa huduma katika sekta, ikiwa ni pamoja na kuweka viwango vya huduma wanazotoa, kupanga gharama za maingiliano baina ya watoa huduma za simu pale wanaposhindwa kuku-baliana; kudhibiti ubora wa utoaji na usambazaji wa huduma, kulinda maslahi ya watumiaji na kushughulikia malalamiko na kusuluhisha migogano na migogoro ndani ya sekta.

Mamlaka inashirikiana na taasisi za kimataifa na kikanda zinazosimamia ma-



***Wajumbe wa Kamati ya Miundombinu ya Bunge la Jamhuri ya Muungano wa Tanzania wakipata maelezo kuhusu mtambo uliofungwa garini kufuatilia masafa ya mawasiliano na muelekeo, wakati walipotembelea TCRA.***

wasiliano na wadhibiti wa mawasiliano katika nchi nyingine na inatekeleza mikataba ya kimataifa katika sekta ya mawasiliano.

Baadhi ya taasisi hizo ni Shirika la Mawasiliano ya Simu Ulimwenguni (ITU), Umoja wa Mawasiliano Afrika Mashariki (EACO), Umoja wa Wadhibiti wa Mawasiliano Kusini mwa Africa (CRASA), Umoja wa Posta Ulimwenguni (UPU), Umoja wa Mawasiliano ya Simu Afrika (ATU) na Umoja wa Posta Afrika (PAPU), ambayo ina makao makuu Arusha.

Hivi sasa TCRA ni mwenyekiti wa EACO na CRASA; kama ambavyo Tanzania ni mwenyekiti wa Jumuiya ya Maendeleo Kusini mwa Afrika (SADC).

**Utoaji leseni**

Utekelezaji wa mfumo unaozingatia muingiliano wa teknolojia, ambao una aina nne za leseni, umechangia kwa kiasi kikubwa katika kukua kwa huduma za mawasiliano Tanzania.

Leseni ya miundombinu (network facility) inajumuisha miundombinu ya setilaiti, mitandao inayotumia waya aina ya optic fibre, uwekaji wa nyaya na njia za mawasiliano, vifaa vya mawasiliano kutumia redio, milingoti ya mawasiliano ya simu za mkononi, minara na vifaa vya kurushia matangazo ya vyombo vya utangazaji.

Kampuni zenye aina hii ya leseni zimefikia 23, tatu zikiwa zimepata leseni kati ya 2015 na

2019.

Leseni ya mtandao wa simu (network services) inaruhusu kutoa huduma za simu yaani sauti, picha na takwimu. Mtoa huduma anaweza kutumia miundombinu yake au ya kukodisha kutoa huduma. Watoa huduma za simu za mkononi wako chini ya kundi hili la leseni. Kuna leseni 14; ambazo ni pamoja na za watoa huduma za simu za mkononi; ambao saba miongoni mwao wanatoa huduma.

Leseni ya huduma (application services) inaruhusu mmiliki kutoa huduma kama vile internet, kupiga simu kupitia internet, takwimu kwa ajili ya biashara, na huduma za kutuma taarifa fupi.

Kuna leseni 76 kwenye kipengele hiki, ambamo 24 zimetolewa kati ya 2015 na 2019.

Leseni ya huduma ya maudhui (content services) inaruhusu mmiliki kutoa huduma za utangazaji na taarifa kupitia mitandao (online publishing) na taarifa za habari. Machi 2018, TCRA ilianzisha leseni za maudhui mtandaoni (online content).

Aina nyingine za leseni zinazotolewa na TCRA ni leseni ya Posta ya Taifa; leseni ya kusafirisha vifurushi; leseni ya kutumia masafa, leseni ya kufunga mitambo ya mawasiliano; leseni ya kuagiza na kuuza bidhaa za mawasiliano na leseni ya kutumia namba fupi (short codes).



<b>Jedwali 1: Idadi ya Leseni</b>					
<b>Huduma/watoa huduma</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Wenye leseni za miundombinu	20	21	23	23	23
Wenye leseni za kutoa huduma kupitia miundombinu	14	14	14	14	14
Wenye leseni za huduma ( applications services)	52	54	63	73	76
Makampuni yanayotoa huduma za simu	7	7	7	7	7
Wenye leseni za redio mtandaoni	Lesemi hizi zimeanza kutolewa 2018			31	36
Wenye leseni za televisheni mtandaoni				90	169
Wenye leseni za maudhui kwenye blogu (online content blog)				59	68
Wenye leseni za blogu za mtandaoni (web blogs)				29	29
Wenye leseni za majukwaa mtandaoni (online forums)				2	2

<b>Jedwali 2: Mwelekeo wa matumizi ya TEHAMA</b>					
<b>Mwaka</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Idadi ya laini zilizotolewa *	36,665,600	40,044,186	39,953,860	43,497,261	43,670,675
Akaunti za pesa simu za mkononi	17,639,349	18,080,622	21,889,618	23,367,826	22,957,515
Watumiaji wa intaneti	17,263,523	19,862,525	22,995,109	23,142,960	
<ul style="list-style-type: none"> <li><i>Tanbihi:</i> Inakisiwa kwamba idadi la watumiaji mmoja mmoja ni milioni 24 kutokana na baadhi ya watumiaji kuwa na laini zaidi ya moja.</li> </ul>					
<b>Rejea:</b> <a href="https://tcra.go.tz/index.php/quarterly-telecommunications-statistics">https://tcra.go.tz/index.php/quarterly-telecommunications-statistics</a>					

Watumiaji wa intaneti 22,281,727 kati ya 23,142,960 walioonyeshwa hapo juu wanatumia vifaa vya mawasiliano vya mkononi vilivyounganisha kwenye mtandao wa intaneti; kama vile simu, komputa ndogo (tablets) na kompyuta mpakato (laptop).

### **Kupungua gharama za mawasiliano**

Kutokana na kuwepo kwa laini za simu nyingi zaidi sokoni, na kwa tafsiri hiyo kuongezeka kwa matumizi, kumekuwa na ongezeko la dakika za maongezi ya simu na kupungua kwa gharama za kupiga simu na za kutuma meseji fupi.

Kupungua kwa gharama za maingiliano (interconnection) kati ya mitandao ya simu za mkononi, kutoka shilingi 30.58 kwa dakika mwaka 2015 hadi 10.40 kwa dakika mwaka 2019 pia kumechangia katika kushusha gharama za kupiga simu.

Desemba 2015 wateja wa kampuni za simu za mkononi walitumia jumla ya dakika 4,123,479,841 kwa maongezi. Wastani wa dakika ilikuwa 104; na kuongezeka kufikia dakika 129 kwa mtumiaji Juni 2019; ambapo waliongea kwa jumla ya dakika 5,624,898,525.



**Jedwali 3: Gharama za kupiga simu dakika moja na kutuma meseji (kwa shilingi)**

	Mtandao wa mtumiaji	Mtandao mwingine	Meseji ndani ya nchi	Gharama za muingiliano (interconnection)
Desemba 2015	306	419	82	30.58
Desemba 2016	300	405	69	28.57
Desemba 2017	249	329	51	26.96
Desemba 2018	248	321	50	15.60
Juni 2019	199	206	39	10.40

**Rejea:** <https://tcra.go.tz/index.php/quarterly-telecommunications-statistics>  
[https://tcra.go.tz/images/documents/reports/Cost\\_based\\_Interconnection\\_Rates.pdf](https://tcra.go.tz/images/documents/reports/Cost_based_Interconnection_Rates.pdf)

**Jedwali 4: Wastani wa dakika za maongezi kwa mtumiaji**

	Jumla ya dakika zilizotumika	Wastani wa dakika kwa mtumiaji
Desemba 2015	4,123,479,841	104
Desemba 2016	4,653,204,610	116
Desemba 2017	5,167,633,062	129
Desemba 2018	5,364,948,970	123
Juni 2019	5,624,898,525	129

**Rejea:** <https://tcra.go.tz/index.php/quarterly-telecommunications-statistics>



*Minara ya mawasiliano Kisarawe, Pwani.*

**Mwelekeo wa udhibiti katika miaka minne ya Awamu ya Tano**

Miaka minne ya Serikali ya Awamu ya Tano imeshuhudia TCRA ikitelekeza mipango ya kudhibiti na kushiriki katika masuala ya kitaifa na kimataifa. Aidha, Tanzania imeng'ara kikan-da na kimataifa kufuatia kuboresha utendaji kwenye maeneo kadhaa na kufanyika kwa mi-kutano muhimu ya kisekta ambamo Mamlaka imechukua uenyekiti.

**Usajili wa Laini Kibiometria**

TCRA kwa kushirikiana na wadau inasimamia mpango wa kusajili upya laini za simu za mkon-oni au vifaa vya mawasiliano ambavyo vinaweza kufanya mawasiliano kwa mfumo wa kutumia laini. Utaratibu wa sasa wa usajili unahusisha

kuhukua alama za vidole vya mtumiaji na ku-tumia kitambulisho cha taifa kinachotolewa na Mamlaka ya Vitambulisho vya Taifa (NIDA).

Uboreshaji wa usajili wa laini za simu un-alenga kuwa na kanzidata imara, ya kuamini-ka ya watumiaji wa laini za simu na vifaa vya mawasiliano vinavyotumia laini ili kuendeleza sekta, kulinda watumiaji na kuthibiti matumizi mabaya ya huduma za mawasiliano.

Usajili wa laini ulianza 2009 baada ya Mamlaka ya Mawasiliano Tanzania (TCRA) kutoa maele-kezo ya kiutawala kwa makampuni ya simu kuanza kusajili wateja wao. Uliwekwa kisheria mwaka 2010 kupitia sheria ya Mawasiliano ya Elektroniki na Posta (EPOCA) na kanuni zake; ambazo zimehuishwa Machi 2018.

Uamuzi wa kutumia kitambulisho cha taifa





*Usajili wa laini kwenye ofisi za mtoa huduma. Matumizi ya biometria na Kitambulisho cha Taifa umetatua changamoto kubwa iliyokuwepo mara nyingi katika uhakiki wa laini za simu.*

na namba ya kitambulisho cha Taifa umetatua changamoto kubwa iliyokuwepo mara nyingi katika uhakiki wa laini za simu. Vitambulisho 11 vilikuwa vinatumika; na uhakiki wa usajili iligundua matukio ya vitambulisho kughushiwa au usajili kufanyika kwa kutumia vitambulisho vya watu wengine. Ilionekana kwamba matumizi ya kitambulisho cha taifa yataondoa changamoto hii.

Usajili wa laini una faida kwa wadau wote wa sekta ya mawasiliano – Serikali, TCRA, watoa huduma na watumiaji. Unawezesha kuwepo kwa takwimu sahihi za watumiaji kwa ajili ya matumizi ya kiusimamizi na kiuchumi. Aidha unawezesha kupatikana takwimu kuhusu watumiaji wa simu za mkononi kwa ajili ya kuweka mipango ya kuendeleza sekta na hivyo kuendeleza uchumi wa nchi kwa ujumla.

Watumiaji wanatakiwa kulindwa dhidi ya matumizi mabaya ya huduma za mawasiliano. Imani ya watumiaji na watoa huduma inajengeka kukiwa na utaratibu wa kutambua watumiaji. Kwa mfano imani ya watumiaji wanaofanya miamala ya kifedha kupitia simu zao inajengeka iwapo watajua kwamba kuna kumbukumbu za wanayemlipa au kumtumia pesa; ili hata iki-tokea tatizo waweze kufuatilia wakiwa na ushahidi kamili.

Usajili wa laini unawawezesha watoa huduma kuwajua wateja wao na hivyo kudumi-

sha ushirikiano nao. Usajili unawawezesha watumiaji kupata huduma za ziada kutoka kwa watoa huduma, kwa mfano mikopo midogo ya muda wa maongezi na mingineyo inayotolewa na waroa huduma husika.

Njia mojawapo ya kuwalinda watumiaji ni kutatua malalamiko yao. Watumiaji watalindwa dhidi ya matumizi yasiyofaa ya laini za simu.

Usajili unarahisisha kufuatilia na kushughulikia malalamiko ya watumiaji ambao wanakumbana na matatizo katika matumizi ya huduma za simu.

Usajili unaiwezesha Mamlaka ya Mawasiliano Tanzania kufanya kazi za udhibiti/usimamizi na kuokoa mapato ya taifa. Wahalifu kadhaa wameshakamatwa na kufikishwa kwenye vyombo vya sheria baada ya kugundulika wakitumia laini za simu za mkononi ambazo hazikusajiliwa kupitisha simu za nje kwa kuzifanya zionekane ni za humu nchini; hivyo kuikoshesha Tanzania mapato. Wahalifu wakitumia laini zisizosajiliwa au kusajiliwa kwa majina bandia na kupitisha simu za nje kinyemela wataikoshesha Serikali mapato.

Watumiaji wanapojisajili, kwa mfumo huu wa biometria na kutumia Kitambulisho cha Taifa, wanapata kitambulisho cha kidijitali ambacho ni muhimu katika kufanya miamala ya kibenki na ununuzi wa bidhaa kwa njia ya mtandao.



## Mfumo wa kuratibu na kusimamia mawasiliano

Tanzania, kupitia TCRA, imekuwa nchi ya kwanza ulimwenguni kuwa na mfumo wa kusimamia data za pesa kupitia simu za mkononi. Hii inafuatilia kufungwa kwa mfumo wa kuratibu na kusimamia mawasiliano yote ya simu – teletraffic management system (TMS); mwaka 2013.

Mfumo huu ulikabidhiwa kwa Mamlaka na mhandisi – kampuni ya ubia wa Societe Generale de Surveillance (SGS0 na Global Voice Group (GvG) Januari 2019. Makabidhiano hayo yalishuhudiwa na Rais wa Awamu ya Tano ya Serikali ya Jamhuri ya Muungano wa Tanzania, Mhe. Dkt. John Pombe Joseph Magufuli.

Mfumo una vipengele saba – kusimamia ubora wa mawasiliano; kupata takwimu sahihi za mawasiliano ya simu; kutoa takwimu za matumizi ya huduma za mawasiliano kwa njia ya sauti, matumizi ya data na ujumbe mfupi na kubaini mawasiliano ya simu za kimataifa yanayofanyika kwa njia za udanganyifu.

Mfumo pia unafuatilia miamala ya kifedha inayofanyika kwa njia ya mtandao; unatambua namba tambulishi (IMEI) za simu za kiganjani na kuhakikisha vifaa vyote vilivyounganishwa na mitambo ya watoa huduma vinakidhi viwango vya kimataifa, na unahakiki mapato yatokayo na huduma za mawasiliano ya simu.

## Tanzania yapanda ngazi kimataifa usalama mtandaoni

Kimataifa, Tanzania imeboresha mfumo wake wa kisheria na kiudhibiti wa usalama mitandaoni katika miaka mitatu iliyopita; na ni mojawapo kati ya nchi 10 zinazoongoza Afrika kwenye eneo hili.

Imepanda ngazi kutoka ya 12 Afrika mwaka 2017 hadi kuwa ya sita mwaka 2018, kwa mujiibu wa fahirisi ya 2018 ya kimataifa (2018 Global Cybersecurity Index), ambayo imechapishwa na ITU. Tanzania imezipita Zambia, Cameroon na Ghana. Kimataifa

Tanzania ni ya tatu kwa upande wa SADC, ikiwa imepanda ngazi mbili; kutoka kuwa ya tano mwaka 2017. Imezipita Botswana, ambayo ilikuwa ya tatu 2017 lakini sasa ni ya nne; na Zambia ambayo ilikuwa nan ne 2017 lakini sasa ni ya tano.

Kwa Afrika, Tanzania imepanda ngazi moja

na kuwa ya tatu, na imeipita Uganda iliyokuwa ya tatu 2017 lakini sasa ni ya nne. Rwanda na Kenya zinaongoza.

Tanzania imepaa kutokana na kupitishwa, mwaka 2015, kwa Sheria za Makosa Mtandaoni (Cyber Crimes Act) na Sheria ya Malipo Mtandaoni (Electronic Transactions Act). Kuwepo kwa timu ya kitaifa ya kushughulikia masuala ya usalama mtandaoni (Computer Emergency Response Team - CERT) na ushirikiano wa Tanzania na taasisi nyingine za kimataifa pia kumechangia katika kuboresha ufanisi wa Tanzania katika eneo hili.

**Jedwali 5: Nafasi ya Tanzania kimataifa na kikanda katika usalama wa mtandao (2015 – 2018)**

Mwaka	Afrika	EAC	SADC
2015	11	4	3
2017	12	4	5
2018	6	3	3

Rejea: [https://www.itu.int/en/ITU-D/Cybersecurity/Documents/draft-18-00706\\_Global-Cybersecurity-Index-EV5\\_print\\_2.pdf](https://www.itu.int/en/ITU-D/Cybersecurity/Documents/draft-18-00706_Global-Cybersecurity-Index-EV5_print_2.pdf)

## Kiswahili na matumizi ya intaneti

Katika kipindi cha miaka minne ya uongozi wa Rais, Mh. Dr. John Joseph Pombe Magufuli, kumekuwa na juhudi za kuendeleza na kueneza matumizi ya Kiswahili kimataifa.

Tayari, Kiswahili kinaeleza kwamba kimechangia kwa kiasi kikubwa katika kuendeleza matumizi ya intaneti. Taarifa ya 2018 kuhusu kuenea kwa intaneti duniani inaonyesha kwamba maudhui ya Kiswahili kwenye intaneti yameongezeka kwa kasi ndani ya miaka mitano iliyopita. Applications kwa lugha ya Kiswahili zimeonegzeza kutoka 5,000 mwaka 2014 hadi 30,000 mwaka 2017.

## Mawasiliano katika miradi ya Kitaifa ya Kimakakati

Serikali ya Awamu ya Tano inatekeleza miradi kadhaa ya kimkakati ya kitaifa, ambayo ufanisi wake unategemea ubora wa mawasiliano. TCRA imejipanga kuhakikikisha kwamba mawasiliano bora kwenye miradi ya kitaifa ya kimkakati



***Wajumbe wa Bodi ya TCRA, Kamati ya Maudhui na Menejimenti ya Mamlaka wakipewa maelezo kwenye kitengo cha kompyuta cha maktaba ya klsasa ya Chuo Kikuu cha Dar Es Salaam wakati walipotembelea mradi buo hivi karibuni.***

yanaboreshwa. Miradi hii ni pamoja na reli ya kisasa, yaani standard gauge railway (SGR), Mradi wa Umeme Mwalimu Nyerere Rufiji; maktaba ya kisasa Chuo Kikuu cha Dar Es Salaam, kukamilika kwa jengo la tatu la abiria ya Uwanja wa Ndege wa Julius Nyerere Dar Es Salaam.

Mradi wa SGR, utahitaji mawasiliano ya aina ya GSM R, ambacho ni kifupisho cha Global System for Mobile Communications Railway. Viwango vya mfumo huu vinafanikisha mawasiliano bora kwenye mifumo ya reli na treni za mwendo kasi.

Mkutano wa kila miaka minne kuhusu masafa ya mawasiliano uliofanyika Sharm El Sheikh, Misri mwishoni na mwezi Oktoba na mwanzoni mwa Novemba, 2019; ambamo Tanzania ilishiriki kupitia TCRA, ulipitisha azimio la kuendeleza mawasiliano katika mifumo ya reli; yaani kati ya treni na stesheni.

**Maandalizi kwa teknolojia mpya**

Miaka minne iliyopita imeshuhudia mabadiliko makubwa na maendeleo ya TEHAMA. Teknolojia imefungua fursa mpya za mawasiliano na inazidi kuboresha maisha ya watumiaji.

TCRA imejiandaa kwenda sambamba na kasi hii ya maendeleo ya teknolojia. Kwa mfano, dunia inashuhudia kukua kwa mawasiliano baina ya vifaa. Vifaa vilivyowezeshwa kuwasiliana vinaweza kuwasiliana na mmilki, au baina ya vyenyewe, moja kwa moja bila ushiriki wa

moja kwa moja wa binadamu.

Kwa mfano, friji lililowezeshwa kuwasiliana kupitia mtandao linaweza kutoa taarifa kwa mmilki, au kuagiza kutoka duka la rejareja pale ambapo vyakula au vinywaji vinapopungua, ili viongezwe.

Mashine ya kisasa ya kufulia inaweza kutuma ujumbe kwa mmilki inapomaliza kufua au kukausha nguo. Teknolojia pia inawezesha mashine kufanya kazi za binadamu wakati wa dharura au kumhudumia mgonjwa mwenye mahitaji maalum.

Mamlaka ya Mawasiliano Tanzania imeandaa mpango wa namba za mawasiliano zitakazotumiwa na vifaa vilivyounganishwa kwenye mtandao wa intaneti.

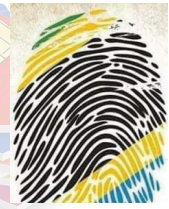
**TCRA na azma ya kuboresha huduma zake**

Katika kuboresha utendaji wake, TCRA imeandaa Mkataba wa Huduma kwa Mteja (Clients Service Charter), uliozinduliwa 2019 kwa lengo la kutekeleza majukumu yake kwa uwazi ili kutimiza dhana ya uwajibikaji.

Madhumuni ya mkataba huo ni kubainisha viwango vya utoaji huduma kwa wateja na kuuarifu umma kuhusu TCRA; huduma inazotoa, pamoja na viwango vyake; uhusiano ambao Mamlaka inataka kuukuza kati ya watumishi na wateja; na haki na wajibu wa mteja kuhusiana na huduma zinazotolewa ili kukidhi matarajio ya wateja na wadau.



# Mwongozo wa usajili wa laini za simu kibimetria



*Sehemu ya tatu ya Mwongozo wa Usajili wa Laini za Simu kwa njia ya Biometria katika Jamhuri ya Muungano wa Tanzania*

## **Utaratibu wa Kusajili laini zinazotumiwa na Watu Binafsi**

- i. Laini zinazotumiwa na watu binafsi zitasajiliwa chini ya kipengele cha Usajili wa Kibiometria wa Mtu Binafsi.
- ii. Mteja atatakiwa kuwasilisha kitambulisho chake cha NIDA na alama za vidole kwa uhakiki kwa usajili wa laini za simu.
- iii. Mtoa huduma atahifadhi kumbukumbu kwa mujibu wa ufafanuzi uliotolewa na NIDA.
- iv. Laini ya simu inayosajiliwa itakuwa na jina la mteja.

## **Utaratibu wa Kusajili laini zinazotumiwa na Mashine au Vifaa vya Mawasiliano ya Kielektroniki**

- i. Mashine na vifaa vingine vya kawasiliano ya kielektroniki vitasajiliwa chini ya kipengele cha Kampuni.
- ii. Kampuni itatakiwa kuwasilisha nakala halisi zilizothibitishwa za Namba ya Mlipa Kodi (TIN), Leseni ya Biashara na Hati ya Usajili wa kampuni.
- iii. Mwakilishi wa kampuni atawasilisha kitambulisho chake cha NIDA na uhakiki wa alama za vidole mara moja kwa kadi zaidi ya moja anayosajili kibimetria.
- iv. Mtoa huduma atatumza taarifa za kampuni na za mwakilishi wa kampuni husika.
- v. Laini itakayosajiliwa itakuwa na jina la kampuni.
- vi. Pale ambapo mashine au vifaa vya mawasiliano ya kielektroniki vinamilkiwa na watu binafsi, laini zitasajiliwa chini ya kipengele cha mtu binafsi kwa kutumia kitambulisho cha NIDA na uhakiki wa alama za vidole mara moja wa laini zote anazosajili pamoja. Mtoa huduma atatumza kumbukumbu za mtumiaji binafsi na majina ambayo laini hizo zimesajili-

wa; na jina la laini iliyosajiliwa litakuwa jina la mtu binafsi aliyeziwasilisha kwa usajili.

## **Utaratibu wa kusajili Laini zinazotumwa na Wafanyakazi wa Kampuni**

- i. Laini zinazotumiwa na wafanyakazi wa kampuni zitasajiliwa chini ya kipengele cha usajili wa laini za kampuni kibimetria.
- ii. Kampuni itatakiwa kuwasilisha nakala halisi zilizothibitishwa za Namba ya Mlipa Kodi (TIN), Leseni ya Biashara na Hati ya Usajili wa kampuni.
- iii. Kila mfanyakazi ambaye anastahili kutumia laini husika atatakiwa kuwasilisha kitambulisho chake cha NIDA na uhakiki wa alama za vidole kwa usajili wa laini kibimetria.
- iv. Mtoa huduma atatumza taarifa za kampuni na za wafanyakazi.
- v. Laini ya simu itakayosajiliwa itakuwa na jina la mfanyakazi husika.

## **Utaratibu wa kusajili laini zinazotumiwa na Kampuni**

- i. Laini za simu zinazotumiwa na kampuni zitasajiliwa chini ya kipengele cha kampuni katika vituo vya huduma kwa wateja, maduka ya watoa huduma na ya wakala.
- iii. Kampuni itatakiwa kuwasilisha nakala halisi zilizothibitishwa za Namba ya Mlipa Kodi (TIN), Leseni ya Biashara na Hati ya Usajili wa kampuni.
- iii. Mwakilishi wa kampuni atawasilisha kitambulisho chake cha NIDA na uhakiki wa alama za vidole mara moja kwa kadi zaidi ya moja anayosajili kibimetria.
- iv. Mtoa huduma atatumza taarifa za kampuni na za mwakilishi wa kampuni.
- v. Laini ya simu itakayosajiliwa itakuwa na jina la kampuni.



### **Utaratibu wa kusajili laini zinazotumiwa na Taasisi**

- i. Laini za simu zinazotumiwa na taasisi zitasajiliwa chini ya kipengele cha Taasisi katika vituo vya huduma kwa wateja, maduka ya watoa huduma na ya wakala
- ii. Taasisi itatakiwa kuwasilisha barua ya utambulisho.
- iii. Mwakilishi wa taasisi atawasilisha kitambulisho chake cha NIDA na uhakiki wa alama za vidole mara moja kwa kadi zaidi ya moja anayosajili kibiometria.
- xii. Mtoa huduma atatumza taarifa za Taasisi na za mwakilishi wa taasisi.
- iv. Laini ya simu itakayosajiliwa itakuwa na jina la taasisi.

### **Utaratibu wa kusajili laini zinazotumiwa na walio kati ya miaka 12 na 18**

- i. Laini za simu zinazotumiwa na watoto zitasajiliwa chini ya kipengele cha usajili wa biometria wa watoto.
- ii. Mzazi/ mlezi atatakiwa kuwasilisha nakala iliyohibitishwa ya hati za uasili au cheti cha kuzaliwa na/au pasipoti yenye visa inayotumika, picha ya mtoto na uraia wake.
- iii. Mzazi/mlezi atawasilisha kitambulisho chake cha NIDA na uhakiki wa alama za vidole mara moja kwa kadi zaidi ya moja anayosajili kibiometria.
- iv. Laini ya simu itakayosajiliwa itakuwa na jina la mtoto.
- v. Baada ya kufikia umri wa miaka 18 mtoto atatakwa kusajili upya laini husika akitumia kitambulisho chake cha NIDA.
- vi. Watoa huduma watamtaarifu mtoto miezi mitatu (3) kabla ya tarehe ya kufika miaka 18 na watampa miezi mitatu (3) ya kujiandaa ili kumwezesha mtoto kusajili upya laini yake.
- vii. Pale ambapo mtoto atashindwa kujitokeza kwa ajili ya kusajili upya laini ndani ya kipindi cha miezi mitatu baada ya kufikisha miaka 18, mtoa huduma ataizima laini husika kwenye mtandao wake.

### **Utaratibu wa kusajili laini kwa raia wa nje/wageni wanaoingia nchini**

Laini za simu zinazotumiwa na raia wa nje/wageni wanaoingia nchini zitasajiliwa chini

ya kipengele cha usajili wa laini kibiometria wa raia wa nje/wageni wanaoingia nchini.

- i. Wageni watatakiwa kuwasilisha nakala ya pasipoti zenye visa inayotumika na uhakiki wa alama za vidole kwa ajili ya usajili wa laini kibiometria.
- ii. Wageni wasiohitaji visa kuingia nchini watatakiwa kuwasilisha nakala ya pasipoti na uhakiki wa alama za vidole kwa ajili ya usajili wa laini kibiometria.
- iii. Raia wa nchi nyingine watatakiwa kuwasilisha vitambulisho vya taifa na uhakiki wa alama za vidole kwa ajili ya usajili wa laini kibiometria.
- iv. Mtoa huduma atatumza taarifa za wageni au raia wa nje kama upasavyo.
- v. Laini ya simu itakayosajiliwa itakuwa na jina la mgeni au raia wa nje anayehusika.

### **Utaratibu wa kusajili laini za maafisa ubalozi/wana diplomasia**

- i. Laini za simu zinazotumiwa na maafisa ubalozi/wanadiplomasia zitasajiliwa chini ya kipengele cha usajili wa laini wa maafisa ubalozi/wanadiplomasia.
- ii. Mwanadiplomasia atatakiwa kuwasilisha nakala ya pasipoti inayotumika, nakala ya kitambulisho cha kidiplomasia na barua ya utambulisho kutoka Wizara ya Mambo ya Nje na Ushirikiano wa Afrika Mashariki.
- iii. Alama za vidole hazitachukuliwa wakati wa usajili.
- iv. Mtoa huduma atatumza taarifa za mwanadiplomasia husika.

### **Utaratibu wa kusajili laini kwa taasisi za Kibalozi/Kidiplomasia**

- i. Laini za simu zinazotumiwa na maafisa ubalozi/wanadiplomasia zitasajiliwa chini ya kipengele cha usajili wa laini wa taasisi za Kibalozi/Kidiplomasia
- ii. Taasisi za Kibalozi/Kidiplomasia zitatatakiwa kuwasilisha barua ya utambulisho na barua kutoka Wizara ya Mambo ya Nje na Ushirikiano wa Afrika Mashariki.
- iii. Mwakilishi atatakiwa kuwasilisha pasipoti inayotumika na kitambulisho cha kidiplomasia kinachotumika kwa ajili ya kusajili laini zaidi ya moja kwa wakati mmoja.
- iv. Alama za vidole hazitachukuliwa wakati wa usajili.



v. Mtoa huduma atatunza taarifa za mwanadiplomasia husika.

vi. Laini ya simu itakayosajiliwa itakuwa na jina la taasisi ya kibalazi/kidiplomasia.

#### **Utaratibu wa kusajili katika hali ambapo majina hayafanani**

i. Pale ambapo majina ya mteja yanatofautiana na yaliyoko kwenye kitambulisho cha NIDA, mtoa huduma atatumia taarifa za matumizi; taarifa za kuongeza salio la muda wa maongezi, mawasiliano ya sauti, huduma za data na miamala ya pesa mtandao kuhakiki milki ya laini husika. Uhakiki huu utafanyika katika vituo vya huduma kwa wateja, maduka ya watoa huduma na ya wakala pekee.

i. Mtoa huduma atauliza maswali ya uhakiki wa matumizi kama ifuatavyo:

a) Taja namba Tano ulizopiga ndani ya siku 30 zilizopita.

b) Mara ya mwisho uliongeza salio la kiasi gani?

c) Kiasi gani cha data ulichonunua mara ya mwisho?

d) Ni kiasi gani cha muamala wa pesa mtandao mara ya mwisho?

e) Taja namba Tano ambazo unazofanyia miamala ya pesa mtandao mara kwa mara.

ii. Baada ya kupata majibu sahihi ya maswali yote, Mteja atawasilisha alama za vidole kwa ajili ya uhakiki wa kibiometria.

iii. Mtoa huduma atatuma taarifa ya mabadiliko ya taarifa za usajili kwa njia ya ujumbe mfupi ndani ya saa 24 kwa ajili ya idhini ya mteja.

iv. Baada ya kupokea idhini ya mteja, mtoa huduma atafanya mabadiliko na kutunza kumbukumbu za NIDA na nyinginezo za awali.

v. Baada ya kubadilisha taarifa za usajili, huduma za pesa mtandao zinasitishwa kwa saa 24.

#### **Utaratibu alama za vidole zisizoonekana au kwa wasio na vidole**

i. Pale ambapo alama za vidole vya

mteja hazionekani au kwa mteja asiye na vidole, mtoa huduma atamwelekeza mteja kufika ofisi ya NIDA iliyo karibu na mteja ili ajitokeze kwa ajili ya uhakiki.

ii. NIDA itathibitisha kwamba mteja hana vidole au alama za vidole hazionekani.

iii. Baada ya uhakiki, NIDA watamwuliza mteja maswali kadhaa.

iv. Mteja atarudi kwa mtoa huduma kwa ajili ya usajili wa laini.

v. Mteja atatakiwa kuwasilisha kitambulisho chake cha NIDA.

vi. Mtoa huduma atauliza maswali kadhaa kuhakiki taarifa za mteja na atauliza maswali matatu yanayotokana na kanzi-data ya NIDA.

vii. Baada ya kujibu kwa usahihi theluthi mbili (2/3) au asilimia 66 ya maswali, uhakiki utakuwa umekamilika.

viii. Mtoa huduma atatunza taarifa zilizohakikiwa na NIDA.

ix. Pale ambapo NIDA itaweka utaratibu mwingine wa kuhakiki, TCRA itatoa maelekezo kuhusu utaratibu wa kufanya uhakiki ipasavyo.

#### **Usajili wa kibiometria katika mazingira maalum**

i. Pale ambapo mteja ametambulika kwamba anatoka kwenye taasisi ya serikali au wakala wa serikali aliyeidhinishwa na taasisi hiyo ya serikali na anataka kutokufanya uhakiki wa alama za vidole, mtoa huduma atamwelekeza mteja huyo kupata kibali cha TCRA kuhusu suala hilo.

ii. Mteja ataiandikia TCRA kuomba kupata kibali cha kutokuhakiki kwa alama za vidole na katika maombi hayo ataeleza sababu za maombi yake.

iii. Baada ya kupata kibali cha TCRA, mteja atarejea kwa mtoa huduma kwa ajili ya usajili wa laini.

iv. Mtoa huduma atasajili laini kwa mujibu wa kibali cha TCRA, kwenye vituo vya huduma kwa wateja, kwenye maduka ya mtoa huduma na ya wakala wa mtoa huduma.

# TCRA na ustawi wa Watanzania

Katika kufanya kazi zake, TCRA inajitahidi kuendeleza ustawi wa jamii ya Tanzania kwa:-

- Kukuza ushindani unaofaa na ufanisi wa uchumi
- Kuendeleza upatikanaji wa huduma zilnazohibitwa kwa watumiaji wote ikiwa ni pamoja na wenye kipato kidogo waliopo vijijini na wateja walio katika mazingira magumu.
- Kulinda maslahi ya watumiaji. Kuendeleza elimu kwa wananchi kuhusu utambuzi na uelewa wa sekta zilizohibitwa. Hii ni pamoja na: haki na wajibu wa watumiaji wa huduma; utaratibu wa kuwasilisha malalamiko kuhusu huduma, na majukumu, kazi na shughuli za Mamlaka.





ISO 9001 : 2015 CERTIFIED

# MAMLAKA YA MAWASILIANO TANZANIA

Mamlaka ya Mawasiliano Tanzania (TCRA) ni taasisi ya Serikali inayosimamia sekta ya mawasiliano. TCRA ilianzishwa chini ya Sheria ya Mamlaka ya Mawasiliano Tanzania Na. 12 ya 2003. TCRA ina viwango vya ISO 9001:2015.

## Maeneo yanayosimamiwa

Mitandao ya simu na intaneti, masafa ya mawasiliano, huduma za Posta na usafirishaji wa vipeto katika Jamhuri ya Muungano wa Tanzania na huduma za utangazaji (kama vile redio na televisheni) kwa Tanzania Bara tu. Zanzibar ina Tume inayosimamia utangazaji.

## Kazi za TCRA

- Kutoa leseni, kuongeza muda wa leseni na kufuta leseni.
- Kuweka viwango kwa bidhaa na huduma zinazosimamiwa.
- Kuweka viwango vya kanuni na masharti ya kusambaza bidhaa na huduma zinazosimamiwa.
- Kudhibiti viwango na bei.
- Kufuatilia utendaji wa sekta ya mawasiliano kuhusiana na viwango vya uwekezaji; upatikanaji wa huduma, ubora na viwango vya huduma; gharama za huduma; ufanisi wa bidhaa na usambazaji wa huduma.
- Kufanikisha utatuzi wa malalamiko na migogoro baina ya watoa huduma na kati ya mtoa huduma na mtumiaji wa huduma.
- Kufanya kazi na kutekeleza majukumu mengine kwa mujibu wa sheria husika.
- Kusambaza taarifa kuhusu mambo ambayo ni muhimu kwa ajili ya shughuli za Mamlaka.

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