AFRICA TELECOM Review AFRIQUE
THE TELECOM INDUSTRY'S MEDIA PLATFORM
LA PLATE-FORME MEDIA DE L'INDUSTRIE TELECOM
telecomreviewafrica.com

East Africa Telecom: Growth, Challenges, and Future Prospects

Télécommunications en Afrique de l'Est : croissance, défis et perspectives d'avenir

- **5G FWA in Africa: Revolutionizing Broadband Connectivity**
- 5G FWA en Afrique : révolutionner la connectivité haut débit
- **Enhancing Ghana's Dam Infrastructure Through Connectivity**
- Améliorer l'Infrastructure des barrages du ghana grâce à la connectivité
- **Database Management Systems in Africa: Pillar of Digital Innovation**
- Les systèmes de gestion de bases de données en Afrique : pilier de l'innovation numérique


SUMMIT
TELECOM Review
LEADERS' SUMMIT
18th Edition
JOIN THE MOST INFLUENTIAL
VIP ICT GATHERING
telecomreview.com/summit


"GLOBAL. REGIONAL. DIGITAL."
10-11 December, 2024
DUBAI - UAE

AFRICA TELECOM Review AFRIQUE
THE TELECOM INDUSTRY'S MEDIA PLATFORM LA PLATE-FORME MEDIA DE L'INDUSTRIE TELECOM
telecomreviewafrica.com

China Designates Pilot Zones to Advance Smart Car Development

China's Ministry of Industry has selected 20 regions, including Beijing and Shanghai, for a pilot program to implement "vehicle-road-cloud integration" technology, aiming to standardize smart vehicles by 2026.

READ MORE

CatsMe! App Uses AI to Monitor Feline Health Through Facial Recognition

Carelogy and Nihon University have introduced CatsMe!, an AI-driven smartphone app designed to assess feline health through facial recognition, aiming to reduce unnecessary vet visits while improving pet care.

READ MORE

Innovative Space Habitats: How NASA Plans to Grow Homes on the Moon and Mars

Through NASA's Mycotecture project, innovation can address the challenges of long-duration space missions by providing sustainable and easily deployable living environments.

READ MORE

AI Threats Outpacing Cybersecurity Teams

A recent Bugcrowd report highlighted CISOs' concerns regarding AI threats, emphasizing the evolving cybersecurity landscape and the need for crowdsourced security.

READ MORE

Divine Intervention: Call for Ethical AI Grows

The pervasiveness of artificial intelligence is increasingly prompting the world's religious leaders to unite against the unethical practices surrounding the technology.

READ MORE

Meta Expands AI Startup Program to Bolster Tech Companies

Meta has announced the launch of an innovative open-source artificial intelligence program in France, aimed at bolstering the competitiveness of European start-up companies.

READ MORE

Founder of Telecom Review Group
CEO of Trace Media International
Toni Eid
toni.eid@telecomreviewgroup.com

Chief Operating Officer & Editor-in-Chief
Issam Eid
issam@telecomreviewgroup.com

Copy Editor
Mira Jabbour

Journalist
Pia-Maria El Kady
pia@tracemedia.info

Representative in Ivory Cost
Lacinan Ouattara
lacinan@tracemedia.info

Editorial Team
Carla Martinez Guillen, Christine Ziadeh, Clarissa Garcia, Corrine Teng, Elvi Correos, Jeff Seal, Jessica Bayley, Jonathan Pradhan, Marielena Geagea, Monika Jeleniak, Pia-Maria El Kady, Novie Nuñez,

Director of Content for Media & Events
Christine Ziadeh
christine@telecomreviewgroup.com

Advertising Enquiries
Ershad – Sales Director – Group
ershad@telecomreviewgroup.com

Operations Director – Group
Anna Chumak

Graphic Designer
Vanessa Haber

News
Provided in cooperation with AFP, the global news agency

Published by
tracemedia Ltd.
www.tracemedia.info

Trace Media Ltd.
Zouk Mikael, LEBANON
Kaslik Sea Side Road,
Badawi Group Building, 4th Floor,
P.O. Box 90-2113, Jdeidet el Metn
Tel. +961 9 211741

- Year 14 - Issue 103 -

East Africa Telecom: Growth, Challenges, and Future Prospects

TELECOM Review AFRICA

East Africa's telecommunications sector has experienced remarkable growth and transformation, emerging as a key contributor to the region's economic and social development. Mobile networks, internet services, and next-generation technologies have revolutionized communication and business, connecting millions across urban and rural areas. However, the sector faces ongoing challenges such as infrastructure deficits, regulatory hurdles, and cybersecurity threats.

Despite these obstacles, the future looks promising. Continued investments in technology and infrastructure are expected to enhance connectivity. Innovations like 5G, IoT, and AI will play crucial roles in the sector's evolution, creating new economic opportunities and transforming the digital landscape.

Influential figures like John Omo of the African Telecommunications Union and Peter Ndegwa of Safaricom PLC provide valuable insights into navigating these challenges. Kenya, a pivotal market, sets benchmarks with its mobile money platforms, expanding 4G and 5G networks, and increasing internet penetration. As East Africa continues to grow, its telecom sector will drive connectivity, innovation, and regional prosperity.

Breaking Barriers: Tackling Infrastructure Challenges in East Africa's Telecom Sector

East Africa grapples with substantial obstacles in expanding telecom coverage, particularly in rural regions where the challenges are most pronounced. John Omo, Secretary General of the African Telecommunications Union, underscores the difficulties: "The diverse and rugged terrain in some regions makes it difficult to build infrastructure. Urban areas tend to have a higher density of network towers compared to rural regions, where the number of towers is significantly lower, leading to a disparity in coverage." He notes that, "this uneven distribution of infrastructure exacerbates the problem, with the high costs of deploying and maintaining telecom networks adding further complications." Many rural communities face the dual challenge of high telecom service expenses and a lack of home charging facilities, which impedes their access to digital connectivity.

Economic disparities significantly magnify these hurdles. Omo points out, "A significant portion of the population in East Africa lives on less than $1.90 per day, making it hard for telecom operators to see a return on their investments." The high costs of devices and services further limit access, while low literacy rates in rural areas create additional barriers. The absence of electricity in many of these communities complicates the maintenance of telecom services, making the cost of mobile and fixed broadband a substantial burden on already strained monthly budgets. This highlights a pressing need for more affordable and accessible solutions.

In response to these challenges, several initiatives are underway. Countries across the region are advancing national broadband projects and expanding their fiber backbones with support from international organizations. "Investments aiming to improve mobile phone network coverage in rural areas through the installation of new telecom towers are a new front," Omo notes. Furthermore, efforts to train government personnel in digital skills and to develop comprehensive regulatory frameworks are crucial to supporting and expanding digital infrastructure. These initiatives are vital in bridging the connectivity gap and making telecom services more accessible to underserved populations.

Regulatory and Policy Hurdles in East Africa's Telecom Industry

Regulatory and policy challenges have a profound impact on the telecom industry in East Africa, shaping its growth and development. John Omo, Secretary General of the African Telecommunications Union, emphasizes that outdated regulations significantly impede the deployment of new technologies such as 5G and the expansion of fiber optic networks. "One primary issue is the slow adaptation of regulatory frameworks to keep pace with rapid technological advancements," Omo notes. The inconsistency in licensing requirements and the high fees imposed in some countries contribute to an uncertain investment environment. This instability discourages international investors and hampers the progress of regional telecom projects.

Moreover, inefficiencies and mismanagement in the enforcement of existing policies further complicate the situation. The complexities of bureaucratic processes and the challenges of ensuring transparency within regulatory bodies can often lead to delays in approving critical infrastructure projects, indirectly affecting service delivery and expansion efforts. Omo observes, "The regulatory focus on revenue generation through taxes and fees often overlooks the long-term benefits of investing in digital infrastructure and service improvements." This narrow focus can stifle innovation and hinder the development of a robust telecom sector.

Data privacy and cybersecurity concerns add another layer of complexity to the regulatory landscape. In some countries, the absence of comprehensive data protection laws exposes consumers to significant risks, undermining trust in digital services. Telecom operators are left to navigate a convoluted and often contradictory regulatory environment, which increases operational costs and impedes the effective implementation of security measures. Enhanced regulatory frameworks that address these issues are essential for fostering sustainable growth in the telecom industry and ensuring that the sector can effectively support the region's digital economy.

Competing for Connectivity: East Africa's Telecom Innovations

Market competition in East Africa's telecom industry serves as a catalyst for innovation, elevates service quality, and drives down prices, ultimately benefiting consumers. Yet, this competitive landscape also presents formidable challenges for telecom companies. Intense price wars and the high costs associated with infrastructure investment are among the most significant hurdles. "Companies navigate these challenges by forming strategic partnerships, investing in advanced technologies, and diversifying their services," explains John Omo, Secretary General of the African Telecommunications Union.

In markets characterized by fierce competition, telecom operators often

resort to aggressive pricing strategies to attract and retain customers. Larger companies leverage their market dominance and economies of scale to offer bundled services at more competitive prices, thus maintaining a distinct edge. This approach, while beneficial to consumers, can squeeze profit margins and create survival challenges for smaller players in the sector. As a result, effective regulatory policies on spectrum assignment and interconnection fees become crucial in shaping the competitive dynamics of the telecom sector.

To address these competitive pressures, companies are increasingly focusing on enhancing the customer experience through superior service quality and innovative offerings. Investments in network infrastructure, including the expansion of 4G and 5G networks, are critical for staying ahead in the market. Strategic partnerships with technology providers enable operators to deploy cutting-edge solutions that enhance connectivity and improve customer satisfaction. Moreover, regulatory bodies play a vital role in ensuring a balanced competitive environment, preventing monopolistic behavior, and fostering an industry climate that promotes growth and innovation.

Tech Surge and Cybersecurity: Navigating Threats in East Africa's Telecom Sector

East Africa is undergoing a transformative phase with the rapid adoption of cutting-edge technologies such as 5G and the expansion of fiber optic networks. These advancements are significantly improving connectivity and digital services across the region. Investments in critical infrastructure, including both submarine cables and terrestrial networks, have greatly enhanced data transmission capabilities, resulting in broader internet penetration and faster communication services. This technological leap is setting the stage for a more interconnected and digitally advanced East Africa.

However, this swift digital transformation is not without its challenges. The rapid integration of new technologies into the telecom sector has brought about increased cybersecurity risks. Telecom infrastructure is now more vulnerable to a range of cyber threats, including data breaches, ransomware attacks, and cyber espionage. These threats pose significant risks to the integrity of digital services, undermining consumer trust and potentially deterring further technological adoption.

To combat these cybersecurity challenges, both telecom companies and governments are making substantial investments. These include the deployment of advanced security protocols, the enhancement of threat detection capabilities, and the promotion of cybersecurity awareness among users and businesses. Additionally, there is a strong focus on training and capacity building to equip the workforce with the necessary skills to effectively address and manage cyber threats. Regulatory bodies are also playing a crucial role by establishing comprehensive frameworks and guidelines to ensure that telecom operators implement vigorous security measures and adhere to international standards. Moreover, cross-border collaboration is becoming increasingly important in addressing cyber threats that transcend national boundaries, fostering a more secure digital environment for the entire region.

From Regional Trends to National Triumphs: Kenya's Role in Shaping East Africa's Telecom Future

As East Africa confronts significant infrastructure challenges and regulatory obstacles, Kenya's telecom industry emerges as both a mirror of regional trends and a driving force for future developments. The country's achievements in expanding network coverage—from revolutionizing mobile money with M-PESA to spearheading the deployment of cutting-edge 5G technology—underscore its critical role in defining the sector's trajectory.

Kenya's innovative approach to overcoming these challenges has made it a benchmark for other nations in the region. The country has made substantial strides in bridging the digital divide and enhancing connectivity in rural areas, offering a valuable blueprint for addressing similar issues faced across East Africa. For instance, Kenya's success with mobile money has set a global standard for financial inclusion and digital innovation, showcasing how technology can be leveraged to address socio-economic disparities.

In addition to its advancements in technology, Kenya's experience with regulatory reforms and infrastructure development is instrumental for the region. The nation's efforts to enhance rural connectivity through the expansion of 4G and 5G networks demonstrate a proactive approach to overcoming barriers that affect telecom growth. By tackling these challenges directly, Kenya not only propels its own telecom sector forward but also serves as a guiding example for other East African countries striving to navigate and surmount their own obstacles.

Through its leadership and innovative solutions, Kenya is shaping the broader regional strategy, fostering a collaborative environment where shared challenges can be addressed collectively. As East Africa continues to evolve, Kenya's role in advancing telecom infrastructure and technology will be pivotal in driving sustainable progress and setting new benchmarks for the entire region.

Key Milestones and Historical Breakthroughs in East Africa and Kenya

Kenya's telecom industry has evolved significantly over the years, marked by several crucial milestones.
In the 2000s, liberalization and privatization drove significant changes. The establishment of Safaricom from a partnership between the Government of Kenya and Vodafone marked a pivotal moment. Other key developments included the entry of Kencell, the partial privatization of Telkom Kenya in 2007, and the arrival of Econet Wireless Kenya in 2008, which intensified competition and attracted global investment.

The 2010s witnessed rapid expansion in mobile and internet services, fueled

by the arrival of multiple submarine cables and the deployment of 3G and 4G networks by major mobile operators. Today, Kenya's telecom market continues to innovate with the rollout of 5G, extensive infrastructure developments, and a strong governmental push for digital transformation. However, challenges persist, particularly in spectrum allocation and expanding broadband access in rural areas.

Safaricom PLC's Contribution to Industry Growth

Safaricom PLC has been a cornerstone of Kenya's telecom industry. Over its 20 years of operation, Safaricom has transitioned from a mobile company to a tech organization with significant influence in both Kenya and Ethiopia.

"Our network boasts over 6,300 base stations and a substantial increase in fiber connectivity, particularly through Fibre to the Home (FTTH) and enterprise connections. This expansion was facilitated by strategic planning, data-driven overhead deployments, and agile methodologies that streamlined the rollout process, adding 3,120 km to our fiber footprint," says Mr. Peter Ndegwa, CEO of Safaricom PLC.

As of FY23, 97% of Safaricom's network coverage is 2G/3G/4G, with the addition of 2.3 million new 4G devices. Safaricom has also rolled out 205 active 5G sites across 23 countries, with plans for further expansion. "The 5G network promises higher speeds, lower latency, and increased bandwidth compared to 4G. This technology is critical in delivering solutions that will address societal challenges and enhance economic development in critical verticals such as healthcare, manufacturing, infrastructure development, agriculture, and government services," Mr. Ndegwa adds.

In addition to network infrastructure, Safaricom, along with other partners, opened East Africa's first smartphone assembly plant, capable of producing three million units annually. This initiative has led to a significant uptake of locally assembled, low-cost, 4G-enabled handsets, ensuring broader access to smartphones for Kenyans.

Mobile and Internet Penetration in Kenya

Mobile connectivity plays a pivotal role in Kenya, driving digital innovation and providing transformative technologies to both individuals and enterprises. This connectivity is not just a luxury but a necessity, supporting a range of government initiatives aimed at societal improvement and economic development.

Access to 4G devices is particularly important, as it serves as the primary gateway to broadband internet for many Kenyans. This access is crucial in bridging the digital divide, enabling more people to participate in the digital economy, and fostering inclusive growth. With the widespread availability of 4G, individuals in remote and underserved areas can now access information, education, and services that were previously out of reach.

Moreover, mobile connectivity in Kenya has led to the creation of new economic opportunities. It has empowered small businesses, farmers, and entrepreneurs by providing them with platforms to reach wider markets, access financial services, and improve their productivity. Digital payment systems, mobile banking, and online marketplaces are just a few examples of how mobile technology is transforming the economic landscape.

The government's commitment to improving mobile and internet penetration is evident in its policies and initiatives aimed at expanding digital infrastructure. These efforts are essential for supporting the country's economic growth and ensuring that all citizens can benefit from the digital revolution. By continuing to enhance mobile connectivity and internet access, Kenya is laying the foundation for a more connected, innovative, and prosperous future.

Achievements: M-PESA Mobile Money Service

Since its introduction in 2007, M-PESA has revolutionized financial inclusion in Kenya and beyond. As Mr. Peter Ndegwa, CEO of Safaricom PLC, highlights, "M-PESA is the world's largest mobile payment system and Africa's largest fintech, empowering over fifty million customers across the continent to transact, save, or borrow money through their mobile phones." This groundbreaking service has not only redefined financial transactions but also forged vital partnerships between the tech and financial sectors.

M-PESA's impact extends beyond traditional banking, providing millions of previously unbanked individuals with access to essential financial services. Its success has catalyzed similar innovations in other regions, proving the transformative power of mobile money in bridging financial gaps and fostering economic growth.

Impact of Government Policies and Regulations

Government regulations and policies play a crucial role in shaping the telecom sector, ensuring order, protecting consumers, and fostering industry growth. In Kenya, the government's approach to telecom regulation has significantly influenced the sector's evolution. While effective policies have driven competition, safeguarded consumer interests, and promoted infrastructure investment, there are areas where regulations need to adapt to the sector's rapid advancements. The Kenyan government has made notable progress in balancing these factors, creating a dynamic environment conducive to telecom growth. However, regulatory frameworks must continue to evolve to address emerging challenges and opportunities, ensuring that they support sustainable industry development while maintaining competitive and consumer-friendly practices.

In conclusion, East Africa's telecom sector, particularly in Kenya, has achieved significant development and innovation. Key players like Safaricom have driven growth, while government policies and regulatory frameworks have shaped the industry's landscape. Despite challenges in infrastructure, regulatory hurdles, and cybersecurity, the future prospects for East Africa's telecom sector remain promising.

Insights from industry leaders such as John Omo and Peter Ndegwa offer valuable perspectives on navigating these challenges and seizing growth opportunities. Their experiences highlight the importance of strategic planning and adaptation in this rapidly evolving industry.

To ensure continued progress, the sector must focus on technological advancements, expanding rural coverage, and enhancing regulatory frameworks. Strategic investments and collaborative efforts between the public and private sectors will be crucial in overcoming existing challenges and realizing the full potential of the telecom industry.

As East Africa continues to evolve, its telecom sector stands as a beacon of innovation and progress, driving socio-economic development and connecting communities across the continent. Embracing the full potential of the telecom industry will lead to substantial growth and improved quality of life for its citizens. TR

To ensure continued progress, the telecom sector must focus on technological advancements, expanding rural coverage, and enhancing regulatory frameworks

5G FWA in Africa: Revolutionizing Broadband Connectivity

The advent of 5G Fixed Wireless Access (FWA) in Africa is set to revolutionize broadband connectivity across the continent, addressing longstanding issues related to internet accessibility and quality. With the growing demand for high-speed internet, 5G FWA presents a promising solution to bridge the digital divide and foster socio-economic development. This technology is poised to transform various sectors, including education, healthcare, and business, by providing reliable and fast internet connectivity.

Understanding 5G FWA

5G FWA leverages the fifth generation of mobile network technology to deliver high-speed internet to homes and businesses. Unlike traditional fiber-optic broadband, which requires extensive infrastructure and can be costly and time-consuming to deploy, FWA uses wireless signals to connect users to the internet. This makes it particularly suitable for regions with limited or underdeveloped telecommunications infrastructure, such as many parts of Africa.

The Need for Enhanced Connectivity in Africa

Africa has long struggled with inadequate internet connectivity, which has hindered its economic growth and development. According to the International Telecommunication Union (ITU), as of 2022, only 28.2% of the African

population had access to the internet. This digital divide is more pronounced in rural areas, where the lack of infrastructure and high deployment costs have left millions without reliable internet access.

The COVID-19 pandemic further underscored the importance of robust internet connectivity. With lockdowns and social distancing measures in place, many activities, including education, healthcare consultations, and business operations, moved online. However, the digital infrastructure in many African countries was not equipped to handle the surge in demand, highlighting the urgent need for improved connectivity solutions.

Advantages of 5G FWA

- **Cost-Effective Deployment:** One of the most significant advantages of 5G FWA is its cost-effectiveness. Traditional broadband solutions, such as fiber-optic cables, require extensive groundwork and infrastructure investment. In contrast, FWA can be deployed quickly and at a lower cost, making it an attractive option for expanding internet access in underserved areas.

- **High-Speed Connectivity**: 5G technology offers significantly faster speeds compared to previous generations. This means that users can enjoy high-speed internet suitable for various applications, including streaming, online gaming, telemedicine, and remote work. The increased bandwidth and low latency of 5G FWA can support multiple devices simultaneously, enhancing user experience.

- **Scalability:** FWA is highly scalable, allowing for the gradual expansion of network coverage. This is particularly beneficial for rural and remote areas where laying fiber-optic cables may not be feasible. Telecom operators can start with a limited deployment and gradually expand coverage based on demand, ensuring efficient use of resources.

- **Quick Implementation:** The deployment of 5G FWA can be significantly faster than traditional broadband solutions. This rapid implementation is crucial for meeting the immediate connectivity needs of communities and businesses, especially in the wake of the COVID-19 pandemic.

Impact on Key Sectors

- **Education:** The education sector stands to benefit immensely from enhanced internet connectivity. With reliable high-speed internet, students in remote areas can access online learning resources, participate in virtual classrooms, and benefit from digital educational tools. This can bridge the educational gap between urban and rural areas, providing equal opportunities for all students.

- **Healthcare:** Telemedicine and remote consultations can become more accessible with 5G FWA. Healthcare providers can offer virtual consultations, remote monitoring, and access to medical information, improving healthcare delivery in underserved regions. This can lead to better health outcomes and reduce the burden on overstrained healthcare facilities.

- **Business and Economy:** Small and medium-sized enterprises (SMEs) in Africa can leverage high-speed internet to expand their reach, improve operational efficiency, and access global markets. Enhanced connectivity can drive innovation, create job opportunities, and stimulate economic growth, contributing to poverty alleviation and improved living standards.

- **Government Services:** Governments can utilize 5G FWA to enhance e-governance and digital public services. This can improve the efficiency and accessibility of government services, making it easier for citizens to access essential services and information.

Challenges and the Way Forward

Despite the promising potential of 5G FWA, several challenges need to be addressed for its successful implementation in Africa. These include:

- **Spectrum Availability:** Adequate spectrum allocation is essential for the deployment of 5G networks. Governments and regulatory bodies need to ensure that sufficient spectrum is made available to telecom operators for FWA services.

- **Infrastructure Investment:** While FWA reduces the need for extensive ground infrastructure, investments in base stations, towers, and other supporting infrastructure are still required. Public-private partnerships can play a crucial role in mobilizing the necessary resources.

- **Affordability:** Ensuring that 5G FWA services are affordable for the general population is vital for widespread adoption. Telecom operators and policymakers need to work together to develop pricing models that cater to different income levels.

- **Digital Literacy:** Promoting digital literacy and skills training is essential to enable users to make the most of 5G FWA services. Education and awareness campaigns can help communities understand the benefits and applications of enhanced internet connectivity.

In conclusion, 5G Fixed Wireless Access has the potential to revolutionize broadband connectivity in Africa, offering a cost-effective, scalable, and high-speed solution to bridge the digital divide. By addressing the challenges and fostering collaboration between stakeholders, Africa can harness the power of 5G FWA to drive socio-economic development and create a more connected and prosperous future. TR

Zambia Officially Ratifies African Telecommunications Union Constitution

Enhancing regional cooperation improves connectivity among African nations. This connectivity is crucial for economic development, as it promotes trade, communication, and access to information. Through such partnerships, African countries can utilize collective resources to drive economic growth.

Zambia has ratified the Constitution and Convention of the African Telecommunications Union (ATU), reaffirming its commitment to advancing telecommunications and ICT development in Africa. The ratification instruments were submitted at the ATU headquarters in Nairobi, Kenya, on July 26 and were received by ATU Secretary General John Omo.

Alfred Musemuna, Zambia's Charge d'Affaires in Kenya, delivered the instruments on behalf of the Minister of Science and Technology, Felix Mutati. Musemuna conveyed Mutati's message, highlighting Zambia's commitment to regional cooperation and connectivity. "Zambia acknowledges the pivotal role of the ATU in enhancing connectivity for the benefit of all African nations. We are eager to contribute to the Union's objectives of a digitally inclusive Africa," said Mutati.

Countries that ratify the ATU's foundational instruments gain various benefits, including full participation in Union activities, voting rights, eligibility for elections within the Union's Permanent Organs, and the ability to nominate candidates for elective positions.

"The ATU is the premier continental organization promoting the development of ICT infrastructure and services." With Zambia's ratification, 32 out of 52 African countries represented by ATU have now ratified or acceded to the Union's Constitution and Convention, initially signed by ATU Member States in 1999 and revised in 2014.

This action emphasizes Zambia's dedication to technological advancement and regional integration through active participation in international forums. As a member of the International Telecommunication Union (ITU), Zambia participates in the Regional Standardization Forum for Africa. The country has also adopted several ITU conventions and guidelines, such as the Guidelines on Child Online Protection, which have been localized and implemented by the Zambia Information and Communications Technology Authority, as outlined in the National ICT Policy 2023 Republic of Zambia Implementation Plan 2022 - 2026.

Mobile Connectivity Surges in the Democratic Republic of the Congo

In 2023, the Democratic Republic of the Congo saw a significant increase in mobile subscribers, with more than half of its vast population now connected.

The Congolese Post and Telecommunications Regulatory Authority reported an addition of 6.4 million mobile subscribers throughout the year, bringing the total number from 49.8 million to 56.2 million, a rise of 12.8%.

This represents approximately 59.1% of the DRC's extensive population of 95.2 million, although the actual figure may be lower due to the widespread use of multiple SIM cards, as noted by the regulator.

The government has actively promoted initiatives to increase private sector involvement in mobile connectivity, such as the collaboration between the Congolese Fiber Optic Company and the Agency for Coordination and Monitoring of Collaboration Agreements to install fiber optic cables along roadways.

By expanding mobile access, the government aims to facilitate broader access to internet-based information and financial services, which have proven beneficial to the economies of African nations. However, mobile money penetration currently stands at only 23.3%, with mobile internet penetration at 31.5%.

Starlink Launches Affordable Internet Services in South Sudan

Starlink has officially launched services in South Sudan with the approval of the National Communications Authority (NCA), which aims to bring affordable internet to the country.

In late June, Eye Radio reported that Starlink and the NCA signed an agreement granting Starlink a provisional license to operate in South Sudan.

The NCA recently approved Starlink's tariff proposals, which have been publicly released. Customers must register and pay in South Sudanese pounds, equivalent to Starlink's US dollar prices, ensuring transparency and affordability.

The NCA announced that Starlink will soon appoint local distributors for its services and equipment. Until then, importing Starlink kits through unauthorized distributors remains illegal under the National Communication Act of 2012.

South Sudan has one of the world's lowest connectivity rates, with only 1.36 million internet users (12.1% penetration) as of January 2024, per Kepios. GSMA Intelligence reports 3.97 million mobile connections (35.5% penetration) at the start of the year, a 7.7% increase from the previous year, although actual penetration may be lower due to multiple SIM ownership.

Engaging Stakeholders and ATU for Technological Innovation Impact

At the 2024 Global Symposium for Regulators (GSR-24), diverse stakeholders in the telecommunications and ICT community worldwide were deeply engaged. Insightful discussions were benefited from with members of the International Telecommunication Union Development Sector, National Regulatory Authorities & Associations, United Nations Funds and Programs, ITU-affiliated academic and research institutes, and numerous Regional and International Organizations.

A valuable opportunity to engage with partners from the African Telecommunications Union (@atu_uat) was provided, charting the course for transformative technologies to achieve a positive impact.

The challenges and opportunities for policymakers and regulators in embracing transformative technologies were examined. Key regulatory measures and guiding principles to ensure positive, inclusive impacts were identified, and strategies to drive positive market behaviors while minimizing risks and maximizing benefits were explored.

The symposium facilitated the exchange of ideas and collaboration. Regulatory frameworks that can adapt to and support the rapid evolution of technology were delved into. Best practices and innovative approaches that can be applied to various regulatory contexts were gathered from experts and stakeholders.

The balance between fostering innovation and ensuring equitable access to technology was discussed as a core theme. The creation of environments that encourage technological advancements while safeguarding public interests was examined. Mechanisms to protect consumers, ensure fair competition, and address issues related to cybersecurity and data privacy were highlighted.

Nigerian Government Fines WhatsApp $220 Million for Data Misuse

Nigeria's consumer protection agency, FCCPC, has imposed a $220 million fine on Meta Platforms Inc., the owner of Facebook, WhatsApp, and Instagram, for allegedly misusing the data of Nigerian users.

The fine follows an investigation into Meta's operations from May 2021 to December 2023, during which the agency noted that Meta cooperated.

The FCCPC's findings indicated that Meta engaged in abusive practices, implementing privacy policies that collected personal data without proper consent or the opportunity to opt out.

Meta has expressed disagreement with the decision and the fine, planning to appeal. A spokesperson stated that the central claims of the FCCPC are inaccurate, and despite initial confusion, user feedback on communication with businesses has been positive.

Tanzania's Mobile Money Accounts Surge to 55.8 Million in Five Years

The number of active mobile money accounts in Tanzania has more than doubled in the past five years, reaching 55.8 million by the end of 2023, according to the latest statistics from the Tanzania Communications Regulatory Authority (TCRA). This marks a substantial increase of 116.2% from the 25.8 million accounts reported in 2019, meaning that over 80% of Tanzanians now have a mobile money account.

In comparison, only 23.3% of Tanzanians had an account with a traditional financial institution at the beginning of 2024, according to Statista.

The volume of mobile financial transactions has also risen dramatically, up 76.6% from 3 billion in 2019 to 5.3 billion in 2023.

TCRA links this growth in mobile money accounts to the rise in mobile subscriptions, as an active SIM card is required to open a mobile money account. Mobile subscriptions grew from 43.7 million in 2018 to 76.6 million last year, reflecting over 110% market penetration.

The mobile money market in Tanzania is dominated by three main providers: Vodacom's M-Pesa, Tigo Pesa, and Airtel Money, which together hold 89% of the market share.

Enhancing Ghana's Dam Infrastructure Through Connectivity

Ghana, a beacon of democracy and economic progress in West Africa, has a burgeoning need for sustainable water resources management. Central to this is the enhancement of its dam infrastructure. With a growing population and increasing demand for water and electricity, improving the efficiency, safety, and connectivity of Ghana's dams is essential.

The Current State of Ghana's Dams

Ghana's dam infrastructure, though robust, faces numerous challenges. The country boasts several significant dams, including the Akosombo Dam, which forms Lake Volta—the largest man-made lake by surface area in the world. These dams are crucial for hydroelectric power generation, irrigation, and potable water supply. However, many of these structures are aging and suffer from inefficiencies, maintenance issues, and vulnerabilities to climate change impacts.

The Role of Connectivity in Dam Enhancement

Connectivity refers to integrating advanced communication and information technologies to enable real-time monitoring, control, and management of infrastructure. For dams, this can include sensors, the Internet of Things (IoT), data analytics, and automated control systems. These technologies can provide significant benefits, including enhanced operational efficiency,

improved safety, and better resource management.

1. **Real-Time Monitoring and Data Collection**

Implementing IoT sensors in dam infrastructure allows for continuous monitoring of various parameters such as water levels, flow rates, pressure, and structural integrity. Real-time data collection enables authorities to detect anomalies early, reducing the risk of dam failures. For instance, sensors can identify potential leaks or structural weaknesses before they become critical issues, facilitating timely maintenance and repairs.

2. **Predictive Maintenance**

Connectivity technologies can shift dam maintenance from a reactive to a predictive approach. By analyzing data collected from sensors, machine learning algorithms can predict when parts of the dam are likely to fail or require maintenance. This proactive approach not only enhances the safety and reliability of the dams but also reduces maintenance costs by preventing major repairs and extending the lifespan of the infrastructure.

3. **Enhanced Water Management**

Efficient water management is crucial in a country where agriculture is a significant part of the economy. Connectivity can optimize water usage by providing precise data on water levels and distribution needs. Automated systems can regulate water release based on real-time demand, ensuring optimal water supply for irrigation, drinking water, and hydroelectric power generation. This reduces water waste and improves the overall management of water resources.

4. **Disaster Prevention and Response**

Ghana, like many countries, is susceptible to extreme weather events that can impact dam operations. Connectivity technologies can enhance disaster preparedness and response. For instance, real-time monitoring of weather patterns and water levels can provide early warnings of potential flooding or drought conditions. This allows for timely interventions, such as controlled water release or the reinforcement of dam structures, minimizing the impact on communities and the environment

Case Studies and Success Stories

Several countries have successfully implemented connectivity technologies to enhance their dam infrastructure. In India, the Bhakra Dam has incorporated IoT-based systems for real-time monitoring and automated control, significantly improving its operational efficiency and safety. Similarly, in the United States, the Hoover Dam utilizes advanced data analytics to optimize its water management and power generation processes.

These examples highlight the potential benefits for Ghana. By investing in connectivity technologies, Ghana can transform its dam infrastructure into a more resilient, efficient, and sustainable system.

Challenges and the Way Forward

While the benefits of enhancing dam infrastructure through connectivity are clear, several challenges must be addressed. These include the high initial investment costs, the need for skilled personnel to manage and maintain the new technologies, and the integration of these technologies with existing infrastructure.

To overcome these challenges, a collaborative approach is essential. The government, private sector, and international partners must work together to secure funding, provide training, and develop comprehensive strategies for the integration of connectivity technologies. Public-private partnerships (PPPs) can be particularly effective in this regard, combining resources and expertise from both sectors.

Enhancing Ghana's dam infrastructure through connectivity is not just a technological upgrade; it is a strategic move towards sustainable development. By embracing advanced connectivity technologies, Ghana can ensure a reliable supply of water and electricity, safeguard its infrastructure against climate change impacts, and promote economic growth. The journey towards a connected and resilient dam infrastructure is challenging but imperative for Ghana's future. With the right investments and collaborations, Ghana can lead the way in sustainable water resources management in West Africa. TR

Enhancing Ghana's dam infrastructure through connectivity is not just a technological upgrade; it is a strategic move towards sustainable development

Telecom Egypt Selects Mada Communications as its Preferred Partner for International SMS Services

Telecom Egypt, Egypt's market-leading telecom operator, has signed a multi-year agreement with Mada Communications (Mada®), a leading telecoms solutions provider, to be its preferred strategic international SMS service provider.

After a rigorous selection process, Telecom Egypt has proudly selected Mada® as its strategic partner. This decision was driven by Mada's extensive expertise, solid partnerships with both local and international institutions, and robust security and protection measures. Additionally, Mada's exceptional platform adaptability and seamless compatibility with Telecom Egypt's existing systems were pivotal factors in this selection.

Mada will spearhead the management for all international Application-to-Person (A2P) messaging services including (but not limited to) functionalities such as two-factor authentication and automated notifications. The partnership enables Telecom Egypt to leverage Mada's capabilities to deliver a superior experience to its growing customer base while simultaneously maximizing A2P messaging revenues.

Mohamed Nasr, Managing Director and Chief Executive Officer of Telecom Egypt, commented, "This strategic partnership is a natural extension of our long-term successful business relationship with Mada, the global leader in voice services. In addition, given Mada's extensive expertise as the leading A2P provider in the MENA region, this joint cooperation reinforces our commitment to promoting unorthodox business practices and expanding our business scope, which will contribute to achieving sustainable revenue growth and delivering added value to our customers through integrated, secure and effective communication solutions."

Charles Hage, Chief Executive Officer of Mada, commented, "We are thrilled and honored to be selected as the preferred carrier for Telecom Egypt's A2P messages. Being chosen by such a major player in the industry is a testament to our commitment to excellence and innovation. A special thanks to both the Telecom Egypt and Mada® teams for their hard work and dedication in making this partnership possible. We look forward to furthering our cooperation with Telecom Egypt across multiple fronts and bringing exceptional value to their messaging services."

Ethio Telecom Has Announced a 22% Increase in Revenue and a 21% Growth in Profit

Ethio Telecom, Ethiopia's state-owned telecommunications company, has announced impressive financial results for the fiscal year ending in June, showcasing significant growth. According to CEO Frehiwot Tamiru, the company reported a 22% increase in revenue, reaching 93.7 billion birr ($1.63 billion), and a 21% rise in net profit, totaling 21.79 billion birr.

Tamiru also highlighted other milestones achieved during the year, including a 9% growth in total subscribers, which now stands at 78.3 million. The company's mobile money service, Telebirr, experienced a substantial surge in users, climbing to 47.55 million from 34.3 million in the previous year. Transactions through Telebirr amounted to an impressive 1.81 trillion birr, illustrating the growing adoption of digital financial services in Ethiopia.

The annual performance report for the 2023/24 fiscal year, covering the period from July 1, 2023, to June 30, 2024, reflects Ethio Telecom's robust growth and market expansion. The company's revenue for the year increased by 16.7 billion birr compared to the previous year. Foreign exchange generation rose by 20.7% to 198.2 million USD, achieving 117.5% of its target.

CEO, Frehiwot Tamiru highlighted the company's achievements in subscriber growth, stating that Ethio Telecom reached 78.3 million subscribers, meeting 100.4% of its target for the year.

In 2023, Ethio Telecom announced that it earned 75.8 billion birr in the fiscal year 2023. The company's net profit for the year was 18.78 billion birr.

Then, Tamiru said that the company's performance was "effective" and that 116 new services were launched during the year. She said that the company's income in 2023 was 101% of the planned income and that it had increased by 23.5% compared to the 2022 budget.

She also attributed the company's strong performance to the implementation of its "lead" strategy, which was launched in 2022.

NuRAN Wireless Expands with MTN Benin Agreement for Rural Connectivity

NuRAN Wireless Inc., a premier provider of mobile and broadband wireless infrastructure solutions, is delighted to announce an agreement with MTN Benin to deploy up to 200 rural 2G, 3G, and 4G sites under the Network-as-a-Service (NaaS) business model in Benin, West Africa.

This 5-year agreement extends NuRAN's presence to eight countries across Sub-Saharan Africa with signed NaaS agreements. The contract includes an option for renewal for an additional five years at the end of the initial term. Signed under the MTN Framework Agreement, this deal further solidifies the strong partnership between MTN and NuRAN, both committed to empowering rural communities across Africa.

The project will support a range of site categories to accommodate different population densities and coverage areas for 2G, 3G, and 4G networks. NuRAN will retain ownership of the infrastructure after the contract's completion, enhancing the overall value of the agreement.

With this new agreement, NuRAN now has a total of 5,092 sites under contract with various mobile network operators (MNOs), surpassing 50% of its goal to reach 10,000 sites within five years of launching the NaaS framework. This milestone not only highlights NuRAN's capability to execute large-scale deployments but also underscores its dedication to bridging connectivity gaps in remote and underserved areas.

Additionally, NuRAN management is pleased to announce the receipt of the initial US$2.5 million drawdown from the Facility for Energy Inclusion (FEI). This funding will enable NuRAN to resume its rollout plan, with the majority allocated to Cameroon and a portion dedicated to initiating site builds in the Ivory Coast, Benin, and Madagascar, as well as delivering sites already in inventory in South Sudan.

Maroc Telecom Hit with $630M Fine

The Moroccan appeals court has upheld a consequential ruling requiring Maroc Telecom to pay 6.3 billion dirhams ($630 million) in compensation to its competitor Wana Corporate, known as Inwi, for alleged unfair competition practices.

Inwi, positioned as Morocco's third-largest telecom operator, initiated legal proceedings in 2021, accusing Maroc Telecom of leveraging its dominant market position unfairly. This fine notably surpasses Maroc Telecom's annual profit of 6.1 billion dirhams in 2023. Previously, in 2020, Morocco's telecom regulator (ANRT) fined Maroc Telecom 3.3 billion dirhams for impeding competitors' access to network unbundling and the fixed market.

Maroc Telecom, listed on the Casablanca Stock Exchange and Euronext Paris, is predominantly owned by the UAE's Etisalat (53%), with the Moroccan state holding a 22% stake. Apart from Morocco, Maroc Telecom operates subsidiaries across several African countries. Inwi, privately held and controlled by the investment fund Al Mada of the Moroccan royal family, does not trade publicly.

In 2016, Inwi filed a complaint with the National Agency of Telecommunications Regulation (ANRT), alleging Maroc Telecom's inadequate implementation of local loop unbundling, which allows new operators access to infrastructure connecting customers to local exchanges. ANRT confirmed the complaint in 2017, citing Maroc Telecom's obstruction of competitors' access to infrastructure, thereby hindering their ability to offer landline services. This led to ANRT imposing a fine of 3.3 billion dirhams ($330 million) on Maroc Telecom for anti-competitive behavior in 2020.

The financial implications for Maroc Telecom are substantial, potentially exceeding its 2022 profit of 5.82 billion dirhams ($580 million). BMCI Capital Global Research emphasized the ruling's anticipated profound impact on Maroc Telecom's profit margins and distribution strategy for 2024. By September 2022, Maroc Telecom's revenue had declined annually by 1.2% to MAD 17.5 billion ($1.6 billion), with Moroccan revenues decreasing by 2.2% to MAD 9.561 billion by June 2022. Meanwhile, international revenue saw a 7.3% increase in the first quarter of 2023 to MAD 4.6 billion ($464,169), while local activities showed a modest 0.6% rise to MAD 4.7 billion ($474,260).

Cybernetics: Exploring the Intersection of Humans and Machines

Cybernetics, the interdisciplinary study of communication and control processes in biological, mechanical, and electronic systems, stands at the fascinating intersection of humans and machines. This field, which emerged in the mid-20th century, continues to evolve, driven by advancements in technology and a deeper understanding of human physiology and cognition. This exploration of cybernetics reveals its profound implications for various domains, including medicine, robotics, artificial intelligence (AI), and even philosophical inquiries about the nature of human identity and consciousness.

The Origins of Cybernetics

The term "cybernetics" was coined by Norbert Wiener in 1948, drawing from the Greek word "kybernētēs," meaning "steersman" or "governor." Wiener defined cybernetics as "the scientific study of control and communication in the animal and the machine." The field was initially focused on understanding feedback mechanisms—how systems self-regulate through feedback loops.

Wiener and his contemporaries, including John von Neumann and Claude Shannon, laid the groundwork for cybernetics by exploring how

information could be processed, stored, and communicated. Their work had far-reaching implications, influencing fields ranging from computer science and engineering to neuroscience and psychology.

Cybernetics in Medicine

One of the most promising applications of cybernetics is in the field of medicine, particularly in the development of prosthetics and brain-machine interfaces (BMIs). Modern prosthetics have evolved from simple mechanical limbs to sophisticated devices that can mimic the complex movements of natural limbs. These advanced prosthetics often incorporate sensors and actuators that allow for more precise control and feedback, significantly improving the quality of life for amputees.

Brain-machine interfaces represent a remarkable convergence of cybernetics and neuroscience. These systems enable direct communication between the brain and external devices, allowing individuals to control prosthetic limbs, computer cursors, or even wheelchairs through thought alone. This technology has shown tremendous potential for helping individuals with severe disabilities regain mobility and independence.

Robotics and Automation

Cybernetics has also played a crucial role in the development of robotics and automation. The principles of feedback and control are fundamental to the design and operation of robots, enabling them to perform tasks with a high degree of precision and autonomy. From industrial robots that assemble cars to domestic robots that vacuum floors, cybernetic principles underpin the functionality of these machines.

One of the most exciting developments in robotics is the emergence of autonomous systems capable of learning and adapting to their environments. These systems, often powered by artificial intelligence, can navigate complex terrains, make decisions based on sensory input, and even learn from their experiences. The integration of AI and cybernetics is pushing the boundaries of what machines can achieve, bringing us closer to the vision of fully autonomous robots that can perform tasks previously thought to be the exclusive domain of humans.

Artificial Intelligence and Cognitive Science

The relationship between cybernetics and artificial intelligence is deeply intertwined. Cybernetic principles have informed the development of AI algorithms that mimic human cognitive processes, such as learning, reasoning, and problem-solving. Neural networks, a cornerstone of modern AI, are inspired by the structure and function of the human brain.

As AI systems become more sophisticated, they raise important questions about the nature of intelligence and consciousness. Can machines truly think, or are they simply executing complex algorithms? This question, which lies at the heart of cybernetics, has profound implications for our understanding of human cognition and the potential of artificial intelligence.

Ethical and Philosophical Considerations

The integration of cybernetics into various aspects of human life also raises significant ethical and philosophical questions. As machines become more integrated with our bodies and minds, the boundaries between humans and machines begin to blur. This convergence prompts us to reconsider what it means to be human. Are we defined by our biology, our consciousness, or the technologies we use?

Moreover, the widespread adoption of cybernetic technologies brings forth ethical concerns regarding privacy, autonomy, and the potential for misuse. For instance, brain-machine interfaces could be used to enhance cognitive abilities, but they also raise the possibility of coercion or surveillance. As we navigate these complex issues, it is crucial to establish ethical frameworks that ensure the responsible development and deployment of cybernetic technologies.

Cybernetics, at the intersection of humans and machines, is a field that continues to expand our understanding of both. Its applications in medicine, robotics, and artificial intelligence are transforming lives and industries, while also challenging us to rethink fundamental concepts about identity, consciousness, and ethics. As we advance further into this cybernetic frontier, it is essential to balance innovation with thoughtful consideration of the profound implications for humanity. TR

The integration of AI and cybernetics is pushing the boundaries of what machines can achieve, bringing us closer to the vision of fully autonomous robots

Unlocking Fintech Innovation

E-KYC

E-Wallet

Money Transfer

TEDMOB
TECHNOLOGY , ENTERTAINMENT , DEVELOPMENT

www.tedmob.ai

info@tedmob.com

Nokia and Telecom Egypt Launch 5G in Egypt for the First Time

Nokia announced a new partnership with Telecom Egypt to bring 5G technology to Egypt for the first time. The collaboration aims to revolutionize the country's telecom landscape by introducing the transformative power of 5G to cities including Alexandria, Aswan, Cairo, Giza, and Luxor. Nokia will provide its comprehensive AirScale portfolio to deliver an exceptional network experience to Telecom Egypt's customers including faster data speeds, enhanced performance, and capacity. Deployment will take place later this year.

Under the agreement, Nokia will deploy 5G radio access network (RAN) equipment from its industry leading AirScale portfolio, comprising baseband units and its latest generation of Massive MIMO radios. These solutions utilize Nokia's energy-efficient ReefShark System-on-Chip technology, delivering extensive 5G capacity and coverage as well as enabling easy deployments. Nokia will also offer various professional services, encompassing deployment, integration, and network optimization.

5G technology will bring numerous benefits, including increased capacity for seamless connectivity in some of Egypt's most densely populated areas. This will support a wide range of applications and services, resulting in faster downloads, smoother streaming, and improved network performance. This advancement will enable unprecedented levels of innovation and efficiency across various sectors, empowering organizations to thrive in today's fast-paced digital landscape.

Earlier this year, Telecom Egypt secured the country's first 5G license, which is valid for 15 years.

Mohamed Al Fowey, Vice President and Chief Technology Officer at Telecom Egypt, said: "This new agreement with Nokia further strengthens our strong partnership, reaffirms our commitment to providing cutting-edge digital services, and positions us at the forefront of the 5G revolution. Both our consumer and enterprise customers can look forward to enhanced mobile broadband and exciting new applications that leverage the speed and low latency of 5G technology."

Tommi Uitto, President of Mobile Networks at Nokia, said: "This important 5G contract with Telecom Egypt extends our longstanding partnership. The introduction of 5G services enabled by our extensive portfolio will open exciting new opportunities for people and businesses in Egypt to experience enhanced mobile connectivity. Our collaboration establishes a strong foundation for driving the nation's digital transformation."

Cisco Report Highlights Urgent Need for Enhanced Cybersecurity in Africa

Last year, it was revealed that South African companies face average losses of R49.45 million due to data breaches. Recently, Cisco, in collaboration with Access Partnership and the Centre for Human Rights at the University of Pretoria, released a comprehensive whitepaper titled "Elevating Africa's Cyber Resilience." This report underscores the urgent need to enhance cybersecurity infrastructure, upskill the workforce, and strengthen related policies across the continent.

The whitepaper exposes a startling vulnerability: 75% of African countries are highly susceptible to cyberattacks. Charmaine Houvet, Senior Director of Government Strategy and Policy at Cisco Africa, highlighted the critical need for increased cyber resilience to support Africa's rapid internet and mobile financial services growth. Cyberattacks cost Africa over 10% of its GDP in 2021, translating to approximately $4.12 billion in losses.

In South Africa, cyberattacks, often exacerbated by corruption, have significantly impacted national finances, with R300 million embezzled from the Department of Public Works over the past decade. Cisco's findings indicate that the frequency and complexity of cyberattacks are escalating, posing a substantial threat to socio-economic development.

To combat this growing issue, Cisco advocates a tripartite approach focusing on people, technology, and processes. Addressing the skills and gender gaps in the cybersecurity sector is paramount, necessitating robust collaboration between the public and private sectors. Houvet emphasized the role of private sector entities in scaling learning initiatives to enhance career opportunities, boost employability, and develop essential future job skills.

On the technology front, advancements like 5G, robotic process automation, and generative AI (genAI) present significant opportunities to bolster cybersecurity defenses. Cisco highlighted that 94% of South African organizations reported phishing attacks in 2023, underscoring the need for advanced cybersecurity technologies such as encryption, cryptography, security information and event management (SIEM) systems, and cloud computing. AI and machine learning are becoming increasingly sophisticated, and blockchain technology is also being employed to enhance security measures.

Space Debris from Failed Network Satellites Poses a Threat to Future Missions

In recent years, the growth of satellite networks has significantly advanced global communication, navigation, and Earth observation. However, the rapid rise in the number of satellites, particularly those forming mega-constellations for global internet coverage, has introduced a pressing issue: space debris. The accumulation of debris from malfunctioning satellites poses a serious risk to future space missions, threatening the sustainability of space operations and the safety of functioning satellites.

The Rise of Satellite Mega-Constellations

The concept of satellite mega-constellations aims to provide high-speed internet access to every corner of the globe. While they hold the promise of bridging the digital divide and enhancing global connectivity, they also contribute to a burgeoning problem of space debris. The sheer number of satellites involved—often thousands per constellation—raises concerns about overcrowding in low Earth orbit (LEO) and the potential for collisions.

Space Debris: An Ominous Consequence

Space debris, also known as space junk, includes defunct satellites, spent rocket stages, fragments from collisions, and other man-made objects left in orbit. When a satellite fails or reaches the end of its operational life, it often becomes a piece of debris. If these objects are not actively deorbited or removed, they remain in orbit, contributing to the debris population. The situation

becomes even more precarious with failed network satellites. These satellites, which were intended to provide global services, instead become a hazard when they malfunction or are abandoned.

A single collision between two debris fragments can create thousands of additional pieces, triggering a chain reaction known as the Kessler Syndrome. This effect can substantially increase the volume of debris in orbit, heightening the risk of further collisions and posing a growing threat to both operational satellites and future space missions.

Threats to Future Missions

The presence of space debris has several implications for future space missions:

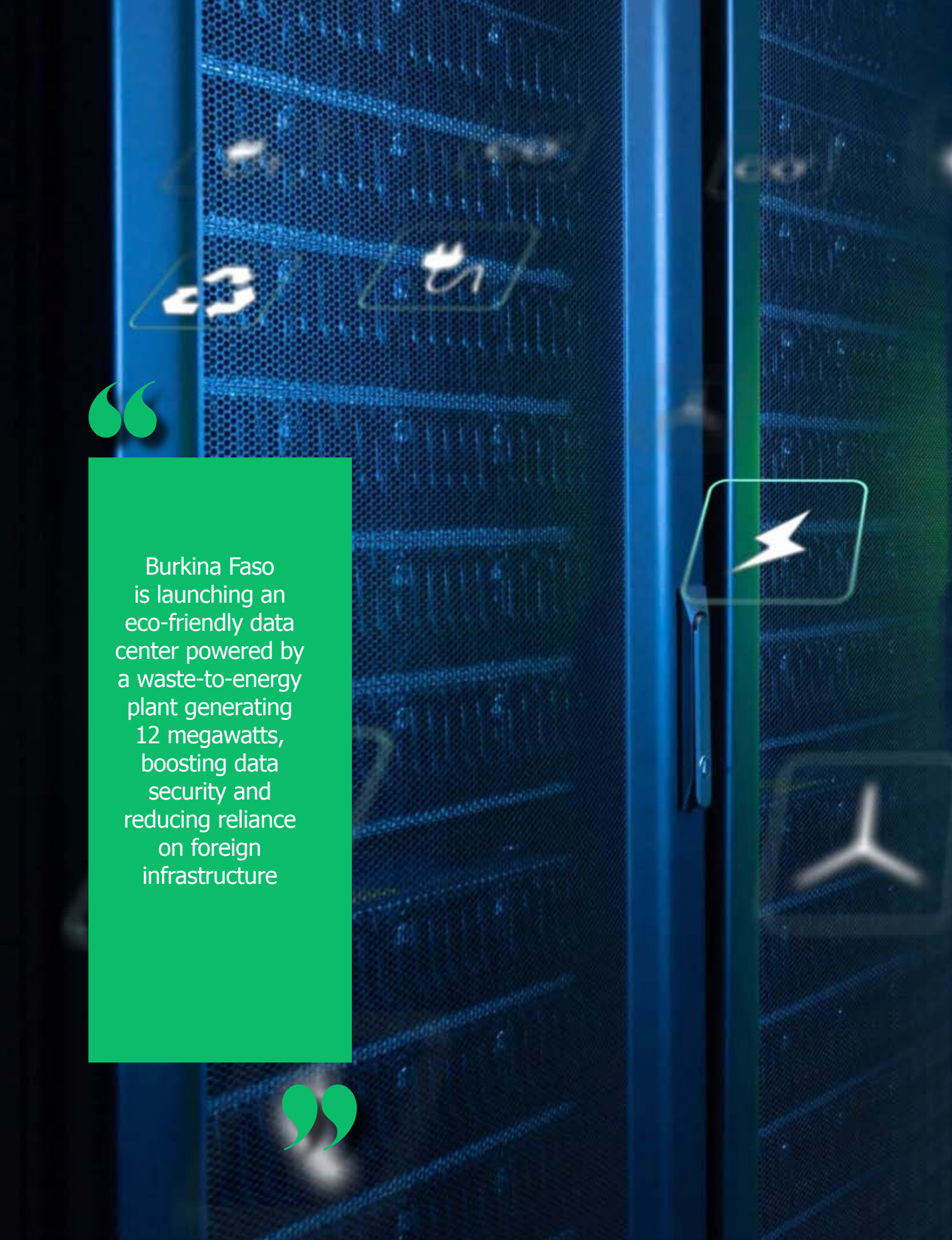
- **Increased Collision Risk:** Satellites and spacecrafts in orbit are at risk of colliding with debris. Even tiny fragments traveling at high velocities can cause significant damage. For instance, a collision with a small piece of debris could compromise the integrity of a satellite's structure or its onboard systems.
- **Operational Challenges:** Space agencies and private companies must meticulously plan satellite launches and maneuvers to avoid collisions with debris. This requires real-time tracking of debris and sophisticated collision avoidance systems. The increasing density of debris complicates these efforts and raises operational costs.
- **Mission Safety and Longevity:** The risk posed by space debris affects not only the safety of space missions but also their longevity. Satellites may need to be equipped with shielding or maneuvering capabilities to mitigate the threat, adding to their cost and complexity.
- **Impact on Future Space Exploration**: The proliferation of debris could hinder future space exploration efforts. Missions to the Moon, Mars, or beyond must navigate through increasingly cluttered orbits, increasing the complexity and risk of interplanetary travel.

Mitigation Strategies and Solutions

To effectively combat the growing menace of space debris, a range of mitigation strategies and solutions must be employed. These approaches are crucial for ensuring the safety of current space operations and preserving the long-term sustainability of orbital activities.

- **Debris Mitigation Measures:** Satellite operators are encouraged to implement measures to reduce the creation of debris, such as designing satellites to deorbit themselves at the end of their missions or using active debris removal technologies. For instance, the European Space Agency (ESA) is testing technologies like robotic arms and nets to capture and deorbit defunct satellites.
- **International Collaboration:** Effective space debris management necessitates international cooperation. Organizations like the United Nations Office for Outer Space Affairs (UNOOSA) and the Inter-Agency Space Debris Coordination Committee (IADC) work to develop guidelines and frameworks for debris mitigation. Collaboration between spacefaring nations and private companies is essential to establish and enforce best practices.
- **Space Traffic Management:** Advanced space traffic management systems can help track and predict debris movements, facilitating collision avoidance. Improved tracking capabilities, such as those provided by the U.S. Space Surveillance Network, play a crucial role in maintaining situational awareness.
- **Regulatory Measures:** Governments and regulatory bodies must establish and enforce regulations for satellite operators, including requirements for debris mitigation and end-of-life disposal plans. These regulations should ensure that satellite operators take responsibility for managing debris associated with their assets.

As the number of satellites and space missions continues to grow, the issue of space debris becomes increasingly critical. Failed network satellites, which contribute to the debris population, pose a significant threat to the safety and sustainability of future space endeavors. Addressing this challenge requires a concerted effort from governments, space agencies, and private companies to implement effective debris mitigation strategies, enhance international cooperation, and advance space traffic management. By taking proactive measures now, we can work towards a safer and more sustainable space environment for the future. TR



> Burkina Faso is launching an eco-friendly data center powered by a waste-to-energy plant generating 12 megawatts, boosting data security and reducing reliance on foreign infrastructure

“Le Burkina Faso lance un centre de données écologique alimenté par une centrale de conversion des déchets en électricité de 12 mégawatts, renforçant la sécurité des données et réduisant la dépendance aux infrastructures étrangères”

AFRICA TELECOM Review AFRIQUE
THE TELECOM INDUSTRY'S MEDIA PLATFORM LA PLATE-FORME MEDIA DE L'INDUSTRIE TELECOM
telecomreviewafrica.com

Lagos lance une plateforme intelligente de santé numérique

Le gouvernement dans l'État de Lagos a signé un accord de concession pour la mise en œuvre de la plateforme intelligente d'information sur la santé, *Smart Health Information Platform, SHIP*, dans l'État.

La *SHIP* est une technologie de santé numérique destinée à fournir des services de santé plus précis, rapides et intelligents dans tous les établissements médicaux, conformément aux objectifs de l'État en matière de santé et d'environnement. Le gouverneur de l'État, Babajide Sanwo-Olu, a supervisé la signature de l'accord à la State House, Marina.

L'accord de concession a été signé entre le Bureau du partenariat public-privé *(PPP)* et la *Digital Health Platform Limited*, avant le déploiement complet de la *SHIP* dans le secteur de la santé de l'État. La *Digital Health Platform Limited* a été désignée pour diriger l'exploitation de la technologie.

Le gouverneur a souligné que la *SHIP* permettrait un système de prestation de soins de santé rapide et efficace, garantissant un accès généralisé aux soins de santé dans tout l'État.

La Tunisie lance un appel d'offres pour des services mobiles 5G

Le ministère tunisien des Technologies de la communication a récemment lancé un appel à candidatures pour les opérateurs télécoms souhaitant obtenir des licences pour installer et exploiter un réseau public de télécommunications *5G* dans le pays. Cette initiative s'inscrit dans le cadre de la stratégie numérique nationale visant à améliorer l'infrastructure numérique et à étendre la couverture haut débit sur tout le territoire.

L'appel d'offres invite les opérateurs intéressés à soumettre leurs propositions au registre central du Ministère avant *14h00 WAT*. Une séance publique d'ouverture des offres se tiendra le même jour à *15h00 WAT*. Cette séance à laquelle tous les soumissionnaires sont invités à participer, inclura l'examen des dossiers administratifs, financiers, techniques et économiques.

Pour être en mesure de prendre part à ce processus, les opérateurs doivent fournir, lors de l'inscription, divers documents, notamment un reçu de paiement non remboursable de *5000 TND (1600 $)* au Trésor public.

Ce lancement fait suite à l'approbation par le gouvernement de la feuille de route de déploiement de la 5G qui prévoit l'attribution à chaque opérateur de *5 MHz* duplex dans la bande de *700 MHz* et de *100 MHz (TDD)* dans la bande des *3.5 GHz*. En outre, trois blocs supplémentaires de *20 MHz* seront disponibles sur demande, avec des bandes de fréquences additionnelles qui seront annoncées lors des phases de déploiement ultérieures. Par ailleurs, les licences seront valables pour une durée de 15 ans, avec des coûts non divulgués.

Actuellement, la Tunisie compte trois opérateurs de réseaux publics de télécommunications mobiles *(2G, 3G, 4G*): *Tunisie Télécom, Ooredoo Tunisie* et *Orange Tunisie*. Le pays dispose également de deux opérateurs de réseaux mobiles virtuels *(MVNO)*ainsi que de plusieurs fournisseurs d'accès Internet, dont *Orange Tunisie Internet, GlobalNet, Hexabyte, Bee, Nety, Next Step, Topnet* et l'*Agence tunisienne de l'Internet (ATI)*.

Selon les statistiques de l'Autorité nationale des télécommunications, la Tunisie compte 16 258 517 abonnés à la téléphonie mobile et 11 583 616 clients enregistrés pour l'Internet mobile.

Ce développement marque une étape cruciale dans l'évolution technologique du pays et promet, par conséquent, d'améliorer considérablement la connectivité et d'encourager l'innovation dans le secteur des télécommunications.

Safia Sayad, directrice des ventes pour l'Afrique du Nord et de l'Ouest, Nokia

Nokia : une nouvelle ère pour les télécommunications en Afrique du Nord

Dans une interview exclusive, Safia Sayad, directrice des ventes pour l'Afrique du Nord et de l'Ouest chez Nokia, aborde l'état actuel et les perspectives futures du marché des télécommunications en Afrique du Nord, ainsi que des avancées technologiques que Nokia apporte à la région, sans oublier les défis et les opportunités dans cette région en rapide évolution.

Le marché des télécommunications en Afrique du Nord connaît actuellement une croissance rapide et comprend un large éventail d'opérateurs télécoms. Pouvez-vous nous donner un aperçu de la situation macroéconomique de vos marchés et des défis spécifiques auxquels vous êtes confrontés?

Le marché des télécommunications en Afrique du Nord connaît effectivement une croissance rapide, tant dans le domaine du mobile que du fixe, et comprend une diversité d'opérateurs à travers la région. Ce marché, desservant une population connectée de plus de 250 millions personnes, est largement soutenu par une jeune population technophile et par l'adoption croissante des smartphones.

D'un point de vue économique, le marché fait preuve de résilience malgré les défis posés par l'inflation. Bien que ces défis aient un impact sur les investissements et entraînent une concurrence accrue dans les marchés plus saturés, on perçoit un aspect positif : en effet, cela incite les fournisseurs de services de communication *(CSP)* à innover davantage et à diversifier leurs offres de services dans de nouveaux domaines.

De plus, les *CSP* mettent un accent accru sur la réduction des dépenses opérationnelles, l'un de leurs plus grands coûts étant l'énergie consommée pour faire fonctionner leurs réseaux. Ils sont également de plus en plus préoccupés par l'impact environnemental et se concentrent davantage sur la réduction de leur empreinte carbone.

En résumé, bien que les marchés nord-africains présentent des opportunités et des défis, l'adoption croissante des nouveaux services numériques augmente la demande pour l'internet à haut débit et les services mobiles.

Du point de vue technologique et pour répondre aux ambitions de vos clients, quels sont les domaines où Nokia est le mieux placé pour créer de la valeur sur ces marchés?

Malgré des investissements significatifs dans les technologies mobiles avancées, comme la fibre optique et les technologies sans fil fixes, les *CSP* continuent de faire face à des défis pour monétiser ces investissements tout en cherchant à réduire leurs coûts opérationnels. Pour surmonter ces défis, ils doivent analyser en profondeur les besoins et les habitudes des clients et fournir des services innovants grâce à des analyses avancées. Il est essentiel qu'ils se rapprochent du segment des entreprises et comprennent leurs besoins afin d'offrir des services au-delà de la simple connectivité, y compris des services à valeur ajoutée. L'intelligence artificielle *(IA)*, en particulier l'*IA* générative, joue désormais un rôle essentiel pour améliorer l'automatisation et l'efficacité dans la fourniture des services appropriés.

En outre, les *API* réseau représentent un atout considérable pour les *CSP*, littéralement en attente d'être monétisées. C'est un véritable changement de paradigme ! Imaginez un développeur en Afrique, ou ailleurs, utilisant la fonctionnalité du réseau d'un *CSP* pour la programmation logicielle. Les possibilités sont infinies, et *Nokia* dispose d'une plateforme appelée Network as Code qui permet de tirer parti de cette économie d'*API.*

Quant aux applications de l'*IA* et du Machine Learning, elles peuvent être utilisées pour superviser le réseau et fournir des informations approfondies grâce à des analyses avancées. À travers l'*AVA Energy Efficiency* de *Nokia,* les *CSP* peuvent réduire leurs coûts énergétiques et leur empreinte carbone jusqu'à 30% sans impact négatif sur les performances ou l'expérience des clients finaux.

Il y a également une demande croissante pour les réseaux privés, avec les grandes entreprises, voire les moyennes, souhaitent avoir leurs propres réseaux sécurisés et fiables pour héberger leurs appareils et applications. *Nokia* propose un système complet appelé Digital One Platform for *Industry 4.0*, qui permet de mettre en place des réseaux privés.

Il est certain que *Nokia* dispose d'une combinaison unique d'expertise approfondie et de solutions variées couvrant plusieurs domaines pour répondre aux défis des *CSP* et des entreprises. Cependant, une collaboration plus large et une ouverture entre les différents acteurs de l'écosystème sont nécessaires pour exploiter leurs capacités uniques et apporter une réelle valeur ajoutée.

Pensez-vous que la sécurité est un grand défi pour les entreprises du monde entier ? Quelles sont vos réflexions sur son importance pour les marchés africains ?

La sécurité est indéniablement un défi croissant pour les entreprises du monde entier, y compris sur les marchés africains où les *CSP* sont la première ligne de défense. Avec l'intégration croissante du *Cloud* – qu'il soit public, privé ou hybride – dans l'architecture réseau, il faudrait absolument que la sécurité devienne une priorité absolue pour chaque *CSP* et entreprise. Les attaques deviennent de plus en plus sophistiquées et les attaquants utilisent désormais l'*IA*. Les *CSP* doivent non seulement introduire des outils de sécurité plus avancés, mais aussi recruter des professionnels de la cybersécurité expérimentés capables de contrer ces attaques.

À la lumière des nouvelles réglementations en matière de sécurité, le marché est tenu de sécuriser les infrastructures critiques et de renforcer la résilience des réseaux. Pour ce faire, *Nokia* accompagne les *CSP* dans leur parcours de sécurité en intégrant des solutions de sécurité spécifiques aux télécommunications dans leurs réseaux. De plus, nous avons intégré l'*IA* générative dans notre solution de sécurité – *NetGuard Cyberdome* – pour assister les ingénieurs en sécurité dans la protection des réseaux critiques des *CSP.* Entraînée sur un large volume de données spécifiques aux télécommunications, notre solution *IA* permet une détection avancée des anomalies, une génération d'informations et des suggestions de remédiation. Elle aide nos clients *CSP* à protéger leurs réseaux et à maintenir la confiance de leurs clients dans un monde de plus en plus interconnecté.

En regardant vers l'avenir, comment voyez-vous le marché des télécommunications en Afrique du Nord évoluer au cours des 3 à 5 prochaines années et comment la stratégie future de Nokia s'aligne-t-elle sur les possibilités du marché?

L'industrie des télécommunications en Afrique du Nord devrait connaître une croissance soutenue au cours des prochaines années, stimulée par l'adoption de la *5G* et une transformation numérique massive. Alors que la région se dirige vers la *5G SA (StandAlone),* nous assisterons à l'émergence d'une gamme complète de nouveaux cas d'utilisation dans les entreprises, permettant des capacités avancées telles que la fabrication intelligente, l'opération à distance et les technologies liées à la réalité virtuelle.

L'avènement de la *5G* en Afrique du Nord, associé à l'adoption croissante du cloud public, entraînera des latences plus faibles, une bande passante plus élevée et une fiabilité accrue. Étant donné que les pays de la région ont une population jeune et technophile, cela ouvrira certainement de nombreuses opportunités. Cependant, tout dépendra de la rapidité avec laquelle ces technologies seront adoptées.

Nokia a une vision technologique orientée vers un avenir où nous verrons davantage de technologies immersives – pensez à la réalité virtuelle et à la réalité augmentée ! Imaginez faire du shopping dans un magasin virtuel où vous pouvez essayer des vêtements, les acheter et les faire livrer chez vous.

Ce sont des possibilités qui se concrétiseront d'ici la fin de la décennie. Des technologies comme la *5G*, l'*IA* et la réalité augmentée permettront d'accéder à cet avenir passionnant. En tant qu'entreprise, *Nokia* continuera d'aider les *CSP* à construire des écosystèmes régionaux et locaux pour permettre ces technologies. TR

Les systèmes de gestion de bases de données en Afrique : pilier de l'innovation numérique

L'Afrique, souvent perçue comme un continent en développement technologique, connaît une transformation rapide grâce à l'adoption croissante des technologies de gestion de bases de données (SGBD). Ces systèmes sont devenus des éléments indispensables pour soutenir l'innovation et le développement économique à travers le continent.

L'essor des systèmes de gestion de bases de données en Afrique

Les *SGBD*, des logiciels clé pour créer, gérer et manipuler des bases de données, jouent un rôle central dans le stockage, la récupération et la gestion des données importantes pour toute organisation moderne. En Afrique, les économies numériques sont en train d'émerger rapidement tandis que les *SGBD* sont devenus indispensables pour soutenir cette croissance.

L'une des principales forces motrices de l'essor des *SGBD* en Afrique est l'augmentation de la pénétration d'Internet et des technologies mobiles. Selon la Banque mondiale, le taux de pénétration d'Internet en Afrique a considérablement augmenté, passant de 10 % en 2010 à près de 40 % en

2020. Cette augmentation a stimulé la demande pour des systèmes capables de gérer de grandes quantités de données de manière efficace et sécurisée, offrant ainsi de nouvelles opportunités pour l'innovation numérique.

L'Impact des SGBD sur divers secteurs

Les *SGBD* ont un impact significatif sur divers secteurs en Afrique, notamment la santé, l'agriculture, la finance et l'éducation.

1. Santé

Dans le secteur de la santé, les *SGBD* sont utilisés pour gérer les dossiers médicaux électroniques *(DME)*, suivre les épidémies et améliorer les soins aux patients. Par exemple, au Kenya, le système de gestion de l'information sur la santé, *DHIS2*, est utilisé pour collecter et analyser les données concernant la santé, aidant ainsi les autorités sanitaires à prendre des décisions éclairées et à améliorer les services de santé publique. Ce système permet également de centraliser les données de divers établissements de santé, facilitant ainsi la surveillance des maladies et la gestion des ressources sanitaires.

2. Agriculture

L'agriculture, un pilier économique majeur en Afrique, bénéficie également des *SGBD*. En effet, les agriculteurs utilisent des bases de données pour suivre les rendements des cultures, les conditions météorologiques et les prix du marché. Par exemple, des plateformes comme *FarmDrive* au Kenya utilisent les *SGBD* pour analyser les données agricoles et fournir des informations essentielles aux agriculteurs. Ces informations permettent d'optimiser les pratiques agricoles, de prévoir les récoltes et de minimiser les pertes, contribuant ainsi à l'amélioration des revenus des agriculteurs et à la sécurité alimentaire.

3. Finance

Le secteur financier africain est profondément transformé par les *SGBD.* Les banques et les institutions financières utilisent des bases de données pour gérer les informations des clients, détecter les fraudes et améliorer l'efficacité opérationnelle. Par exemple, *M-Pesa*, un service de transfert d'argent mobile au Kenya, utilise des *SGBD* pour gérer des millions de transactions quotidiennes, offrant ainsi des services financiers à une population auparavant sous-bancarisée. Cette gestion sécurisée et efficace des transactions, réduit ainsi les risques de fraude et augmente la confiance des utilisateurs dans les services financiers numériques.

4. Éducation

Dans le domaine de l'éducation, les *SGBD* sont utilisés pour gérer les informations des étudiants, suivre les progrès académiques et faciliter la recherche. Les universités africaines adoptent de plus en plus des systèmes de gestion de l'apprentissage qui reposent sur des bases de données pour fournir des contenus éducatifs et suivre les performances des étudiants. Ces systèmes permettent de personnaliser l'apprentissage, d'analyser les besoins des étudiants et d'améliorer la qualité de l'enseignement.

Les défis et opportunités

Bien que les *SGBD* offrent de nombreuses opportunités, leur adoption en Afrique n'est pas sans défis. Parmi les principaux obstacles, figurent le manque de compétences techniques, les infrastructures limitées et les préoccupations en matière de sécurité des données.

1. Manque de compétences techniques

Le manque de compétences techniques constitue un défi majeur. De nombreux pays africains souffrent d'un déficit de professionnels qualifiés en technologies de l'information, ce qui limite la capacité à mettre en œuvre et à gérer efficacement les *SGBD.* Pour surmonter cet obstacle, il est crucial de renforcer les programmes de formation en informatique et d'encourager les initiatives éducatives qui visent à développer les compétences numériques.

2. Infrastructures limitées

Les infrastructures limitées, en particulier dans les zones rurales, posent également un défi de taille. L'accès limité à l'électricité et à Internet entrave l'implémentation efficace des *SGBD*. Pour cette raison, investir dans les infrastructures technologiques

est essentiel pour garantir que tous les secteurs de la société puissent bénéficier des avantages des *SGBD.*

3. Sécurité des données

La sécurité des données est une autre préoccupation majeure. Avec l'augmentation de l'utilisation des *SGBD*, la protection des données sensibles contre les cyberattaques devient vitale. Les gouvernements et les organisations doivent, effectivement, investir dans des mesures de sécurité robustes pour protéger les informations et renforcer la confiance des utilisateurs dans les systèmes numériques.

Perspectives d'avenir

Malgré ces défis, les perspectives pour les *SGBD* en Afrique sont prometteuses. Les investissements dans les infrastructures numériques, l'éducation et la formation peuvent aider à surmonter les obstacles actuels. De plus, la collaboration entre les secteurs public et privé est essentielle pour créer un environnement favorable à l'innovation technologique.

L'adoption croissante des *SGBD* en Afrique est un témoignage de la capacité du continent à embrasser la transformation numérique. En tant que pilier de l'innovation numérique, les *SGBD* continueront de jouer un rôle central dans le développement économique et social de l'Afrique, ouvrant la voie à de nouvelles opportunités et à une croissance soutenue. TR

Cérémonie des prix de la 4ème édition du « Inwi Challenge »

Chakib Benmoussa, ministre de l'Éducation Nationale, du Préscolaire et des Sports, et Azdine El Mountassir Billah, Président Directeur Général d'Inwi, ont présidé la cérémonie de remise des prix aux lauréats de la 4ème édition du programme éducatif *« Inwi Challenge »*, tenue au Centre des Formations et des Rencontres Nationales à Rabat.

Lancé en 2021, ce programme, en partenariat avec le ministère de l'Éducation et Inwi, a dynamisé les établissements scolaires participants, conformément aux objectifs de la feuille de route 2022-2026. Cette initiative promeut l'intégration des technologies de l'information et de la communication dans l'éducation avec, pour objectif, améliorer la qualité des apprentissages et encourager la créativité et la pensée critique chez les élèves.

La quatrième édition a formé plus de 500 enseignants à l'utilisation de *« Minecraft Education »* comme outil pédagogique. Elle a, en outre, impliqué 40 000 élèves dans plus de 1 320 ateliers ludo-éducatifs à travers 470 établissements scolaires.

Dans son discours, le Ministre a souligné l'importance de la technologie numérique pour la transformation du système éducatif, saluant les efforts des partenaires, notamment *Inwi*, pour assurer le succès du programme. Il a également félicité les équipes gagnantes de cette compétition.

Ce programme illustre l'engagement d'*Inwi* envers l'éducation et sa volonté de promouvoir l'innovation et l'excellence par les nouvelles technologies.

Orange : La croissance en Afrique et au Moyen-Orient Booste les Résultats du T2

Orange a attribué les résultats *"remarquables"* de son unité Afrique et Moyen-Orient à une performance solide au deuxième trimestre.

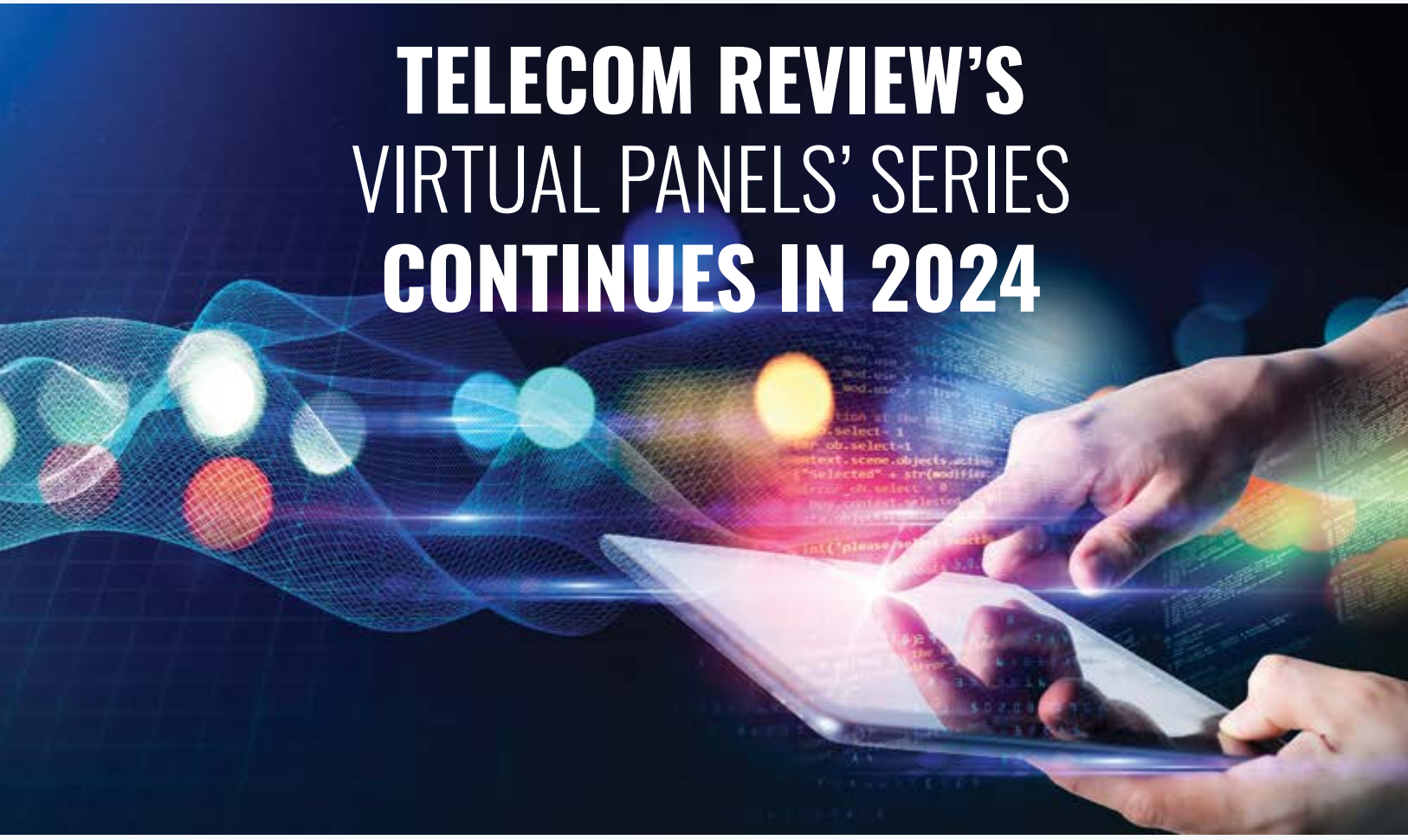
Dans un communiqué, Orange a indiqué que l'*EBITDAaL* du groupe a augmenté de 2,6 % en glissement annuel pour atteindre 3,1 milliards d'euros, tandis que les revenus sont restés stables à 9,9 milliards d'euros. Le revenu net n'a pas été détaillé pour le trimestre, mais il est demeuré stable pour les six premiers mois à 1,1 milliard d'euros.

L'Afrique et le Moyen-Orient ont été les *"principaux contributeurs à cette croissance"*, avec une augmentation des revenus de 10,3 %, stimulée par les données mobiles, le haut débit fixe et *Orange Money*. Le marché domestique de la France a affiché des revenus stables, tandis que l'Europe a enregistré une baisse de 2,2 %.

Au premier trimestre (se terminant le 30 juin), le groupe a enregistré 245,9 millions de nouveaux clients dans le monde, soit une augmentation de 7,3 %.

Christel Heydemann, *PDG d'Orange*, a déclaré: *"Orange a réalisé une très bonne première moitié de l'année avec des résultats solides qui nous permettent de confirmer les prévisions du groupe. Ces résultats, qui incluent notamment une forte augmentation des flux de trésorerie, continuent d'être portés par la performance remarquable de l'Afrique et du Moyen-Orient et l'amélioration solide de l'EBITDAaL en Europe, y compris en France où l'EBITDAaL s'est stabilisé au cours de ce premier semestre."*

TELECOM Review
virtual panels



TELECOM REVIEW'S VIRTUAL PANELS' SERIES CONTINUES IN 2024

Building on previous years' successes, we continue our mission of connecting THE INDUSTRY'S LEADERS

For more information on sponsorships and participation, contact:

Issam Eid | issam@telecomreviewgroup.com
Mohammed Ershad | ershad@telecomreviewgroup.com

Le jumeau numérique : de l'intelligence artificielle à la flexibilité industrielle

Dans un monde où la technologie évolue à un rythme effréné, le concept de jumeau numérique s'est imposé comme une révolution incontournable. Véritable pont entre le monde physique et le monde virtuel, le jumeau numérique utilise l'intelligence artificielle (IA) pour optimiser la flexibilité industrielle et transformer les processus de production. Mais qu'est-ce qu'un jumeau numérique et comment contribue-t-il à l'amélioration des performances industrielles?

Duplicata digitale

Un jumeau numérique est une réplique virtuelle d'un objet physique, d'un système ou d'un processus, alimentée en temps réel par des données provenant de capteurs intégrés dans l'objet physique. Grâce à l'*IA* et à l'Internet des objets *(IoT)*, ces données sont analysées pour simuler, prévoir et optimiser les performances de l'objet ou du système concerné.

À titre d'exemple, un jumeau numérique d'une usine peut reproduire virtuellement l'ensemble des opérations de production. En analysant les données en temps réel, il permet d'identifier les inefficacités, de prévoir les pannes et de tester des modifications sans perturber

pour autant la production réelle.
De plus, un jumeau numérique peut évoluer avec le temps, en intégrant de nouvelles données et en s'adaptant aux changements dans l'environnement de production.

L'IA et le jumeau numérique

L'intelligence artificielle joue un rôle central dans le fonctionnement des jumeaux numériques. En effet, les algorithmes de l'*IA* traitent les grandes quantités de données recueillies par les capteurs pour fournir des informations précieuses et exploitables.

Les technologies du *Machine learning* permettent une amélioration continuelle du jumeau numérique. Enrichie par des données historiques et actuelles, l'*IA* peut détecter des schémas, prévoir des défaillances et proposer des solutions optimisées. Cette capacité d'auto-apprentissage est cruciale pour maintenir la compétitivité et la flexibilité dans un environnement industriel en constante évolution.

L'utilisation de l'*IA* dans les jumeaux numériques permet également une prise de décision plus rapide et plus précise. Par exemple, en cas de panne imminente d'une machine, le jumeau numérique peut suggérer des mesures correctives basées sur des analyses prédictives, évitant ainsi des temps d'arrêt coûteux.

Flexibilité industrielle accrue

La flexibilité industrielle est la capacité d'une entreprise à s'adapter rapidement et efficacement aux changements de la demande, aux nouvelles technologies ainsi qu'aux conditions du marché. Le jumeau numérique, alimenté par l'*IA*, offre plusieurs avantages pour atteindre cette flexibilité:

- **Optimisation des processus :** en simulant différents scénarios, les jumeaux numériques permettent d'optimiser les processus de production, aidant à identifier les goulots d'étranglement et à tester les modifications sans risques pour la production réelle. Cette optimisation continue améliore non seulement l'efficacité, mais réduit aussi les coûts.
- **Maintenance prédictive :** les jumeaux numériques permettent de passer de la maintenance réactive à la maintenance prédictive. Ainsi, en analysant les données des capteurs, l'*IA* peut prévoir les pannes avant qu'elles ne surviennent. Cela réduit les temps d'arrêt imprévus et prolonge la durée de vie des équipements.
- **Innovation accélérée :** les entreprises peuvent tester virtuellement de nouvelles conceptions, procédés ou configurations d'usine. Cette technologie permet d'accélérer le cycle d'innovation grâce à des essais rapides et sans risques. Un constructeur automobile peut, par exemple, utiliser un jumeau numérique pour tester de nouvelles configurations de moteur avant de les produire physiquement.
- **Réactivité au marché :** en surveillant en temps réel les performances et les conditions de production, les jumeaux numériques permettent une réaction rapide aux changements du marché. Les entreprises sont donc en mesure d'ajuster leur production en fonction de la demande, minimisant ainsi les surstocks ou, au contraire, les ruptures de stock.
- **Formation et sécurité :** les jumeaux numériques peuvent être utilisés pour former le personnel, ancien ou nouveau, même sur des procédures complexes, sans perturber la production réelle tout en évitant des erreurs coûteuses. En outre, les jumeaux numériques contribuent à améliorer considérablement la sécurité des travailleurs via la simulation de situations dangereuses.

Cas d'usage réels

Plusieurs industries ont déjà adopté les jumeaux numériques avec succès. Dans le secteur de l'automobile, des entreprises utilisent des jumeaux numériques pour optimiser la production et prévoir les besoins de maintenance des moteurs d'avion avant que des problèmes ne surviennent.

Par ailleurs, dans le secteur de l'énergie, les jumeaux numériques permettent de simuler les conditions de fonctionnement des turbines à gaz et à vapeur et d'optimiser leur performance, réduisant ainsi les coûts de carburant et les émissions de gaz à effet de serre.

De plus, les villes intelligentes utilisent des jumeaux numériques pour gérer les infrastructures urbaines. En simulant les flux de trafic et les consommations énergétiques, les municipalités peuvent améliorer la qualité de vie des citoyens tout en réduisant les coûts. Par exemple, un jumeau numérique d'une ville peut être utilisé pour optimiser les feux de signalisation en fonction du trafic en temps réel, réduisant ainsi les embouteillages et la pollution.

Le jumeau numérique représente une avancée majeure dans l'industrie 4.0. Pour les entreprises industrielles, adopter les jumeaux numériques n'est plus une option, mais une nécessité pour rester compétitives. En investissant dans cette technologie, elles peuvent non seulement améliorer leur efficacité opérationnelle, mais aussi se préparer aux défis futurs d'un monde en constante évolution.

Les avantages du jumeau numérique sont multiples : optimisation des processus, maintenance prédictive, innovation accélérée et réactivité au marché.

Les jumeaux numériques sont appelés à jouer un rôle de plus en plus important dans pour toute entreprise cherchant à innover et à rester compétitive dans un marché globalisé. En combinant l'intelligence artificielle avec les données en temps réel, ils permettent d'optimiser la flexibilité industrielle et de transformer les processus de production. En somme, le jumeau numérique est indubitablement une technologie clé pour le futur de l'industrie. TR

Un avenir télécoms assuré par la puissance de la collaboration

Dans un monde de plus en plus connecté, où les avancées technologiques redéfinissent constamment la manière dont nous interagissons et communiquons, la coopération internationale et les partenariats stratégiques sont devenus une nécessité absolue pour le développement et la modernisation des infrastructures télécoms. En effet, les défis que posent l'ère numérique ne peuvent être relevés efficacement que par des efforts concertés et une collaboration harmonieuse entre les nations et les organisations internationales.

L'importance croissante de la connectivité mondiale

La coopération internationale est cruciale pour le développement de l'Afrique, particulièrement dans le domaine des technologies de l'information et de la communication. Grâce à des partenariats stratégiques avec des organisations internationales et des pays développés, les nations africaines sont en mesure d'accéder à des ressources financières, techniques et humaines indispensables pour moderniser leurs infrastructures numériques.

Cette coopération permet non seulement de réduire la fracture numérique, mais aussi de stimuler l'innovation, de renforcer les capacités locales et de promouvoir une croissance économique inclusive. En travaillant ensemble, les pays africains et leurs partenaires internationaux peuvent faire face aux obstacles communs, tels que l'accès universel à Internet, l'amélioration des compétences numériques et la création d'un environnement propice à l'émergence de startups technologiques. Ainsi, la coopération internationale est un levier essentiel pour le développement durable et la prospérité future du continent africain.

Les priorités nationales en matière de transformation numérique

Propulser un pays vers une économie moderne et inclusive requiert une réelle transformation numérique, parmi d'autres priorités nationales telles que l'amélioration de l'accès à Internet pour tous les citoyens, en particulier dans les zones rurales et marginalisées, afin de garantir une connectivité équitable. La promotion des compétences numériques est également vitale, avec des initiatives de formation et d'éducation visant à préparer la population aux défis et opportunités de l'économie numérique. En outre, l'encouragement à l'innovation technologique est plus qu'essentiel, avec des politiques qui soutiennent les startups et les entreprises technologiques, créant ainsi un écosystème dynamique et innovant. La mise en place de ces priorités permet en effet, de réduire la fracture numérique, de stimuler la croissance économique et de renforcer la compétitivité globale du pays sur la scène internationale.

Les initiatives soutenues en Afrique

Les initiatives soutenues en Afrique jouent un rôle crucial dans le développement technologique et économique du continent. Ces initiatives englobent une gamme de projets, allant de l'amélioration des infrastructures de télécommunications à la promotion des compétences numériques parmi les jeunes et les adultes. Par exemple, des programmes de formation en TIC sont mis en place afin de doter les citoyens des compétences nécessaires pour réussir dans une économie numérique.

Des projets visent également à étendre l'accès à Internet dans les zones rurales et éloignées, réduisant ainsi la fracture numérique. En collaboration avec les gouvernements locaux, ces initiatives encouragent l'entrepreneuriat digital, en fournissant des ressources et des plateformes pour les startups technologiques. Ces efforts combinés contribuent à créer un environnement favorable à l'innovation, stimulant ainsi la croissance économique et améliorant la qualité de vie des populations africaines.

L'impact de la collaboration sur le développement économique

Il est évident que la collaboration à l'international joue un rôle essentiel dans le développement économique, particulièrement dans un monde globalisé. En établissant des partenariats stratégiques, les pays peuvent partager des ressources, des technologies et des expertises qui accélèrent leur croissance économique. En outre, la coopération internationale permet de mobiliser des financements pour des projets d'infrastructure, d'améliorer les compétences locales par le biais de formations et d'accéder à des marchés plus vastes. Les initiatives conjointes entre gouvernements, organisations internationales et entreprises privées ont la capacité de stimuler l'innovation et de favoriser la création d'emplois, tout en aidant les économies à se moderniser, à diversifier leurs industries et à augmenter leur compétitivité globale.

Ainsi, la collaboration n'est pas seulement un catalyseur pour le développement économique, mais elle est aussi indispensable pour bâtir des économies résilientes et durables, via le partage des ressources, des connaissances et des technologies, maximisant ainsi l'impact des efforts de modernisation numérique et réduisant en plus, la fracture numérique

En s'unissant, les nations et les organisations internationales créent un écosystème propice à l'innovation et à l'inclusion numérique. C'est par cette synergie collective que nous bâtirons un monde où chaque individu peut pleinement participer à l'ère numérique, contribuant ainsi à un développement économique et social durable. TR

La détection de spectre : enjeux et avancées technologiques

Dans le paysage numérique moderne, la détection de spectre est devenue un enjeu de taille pour l'optimisation de l'utilisation des fréquences radio. Alors que la demande en bande passante continue de croître de manière exponentielle, les technologies de détection de spectre offrent des solutions innovantes pour gérer efficacement cette ressource limitée. Nous allons explorer dans cet article les enjeux associés à la détection de spectre ainsi que les avancées technologiques qui façonnent ce domaine en mouvement continu

Les enjeux de la détection de spectre

La détection de spectre est essentielle pour maximiser l'utilisation des bandes de fréquences disponibles. Avec l'explosion des dispositifs connectés, des smartphones à l'Internet des objets *(IoT),* la demande en bande passante a atteint des niveaux sans précédent. Les réseaux sans fil traditionnels, bien que robustes, peinent à répondre à cette demande croissante. C'est dans ce cadre-là que la détection de spectre intervient comme une solution viable pour éviter les goulets d'étranglement et améliorer l'efficacité des réseaux.

L'utilisation efficace des fréquences

L'un des principaux défis est d'assurer une utilisation efficace et équitable des fréquences radio. Traditionnellement, les bandes de fréquences sont allouées de manière statique, susceptible d'entraîner une sous-utilisation des spectres alloués à certains services tandis que d'autres sont surchargés. La détection de spectre permet de surveiller en temps réel l'utilisation des fréquences et de redistribuer dynamiquement les bandes disponibles, libérant de cette manière des spectres inutilisés pour les attribuer à des services ayant des besoins urgents en bande passante.

La prévention des interférences

Un autre enjeu majeur est la prévention des interférences entre les différents utilisateurs du spectre. En effet, celles-ci peuvent dégrader significativement la qualité des communications et réduire l'efficacité des réseaux. Grâce à la détection de spectre, il est désormais possible d'identifier et de minimiser les sources potentielles d'interférences, assurant ainsi une transmission plus fluide et fiable des données.

Les avancées technologiques

Les récents progrès technologiques ont considérablement amélioré les capacités de détection de spectre. Ces avancées reposent sur des innovations dans plusieurs domaines, notamment l'intelligence artificielle *(IA)*, le traitement du signal et les technologies de communication avancées.

Intelligence artificielle et apprentissage automatique

L'*IA* et l'apprentissage automatique jouent un rôle de plus en plus important dans la détection de spectre. Ces technologies permettent de développer des algorithmes sophistiqués capables d'analyser de vastes quantités de données en temps réel, d'identifier des schémas d'utilisation et de prédire les besoins futurs en bande passante. À titre d'exemple, des systèmes basés sur l'*IA* peuvent apprendre à partir des données historiques et ajuster ainsi dynamiquement les allocations de spectre pour optimiser l'utilisation et minimiser par conséquent les interférences.

Traitement du signal

Le traitement avancé du signal est également important pour améliorer la détection de spectre, car il permet de filtrer les bruits et de détecter les signaux faibles dans un environnement encombré de fréquences. Des méthodes comme la transformée de Fourier et les algorithmes de filtrage adaptatif sont couramment utilisées pour analyser les spectres de fréquence et identifier les bandes disponibles.

Technologies de communication avancées

Les technologies de communication avancées telles que les radios définies par logiciel *(SDR)* et les réseaux cognitifs, sont au cœur des innovations en détection de spectre. Les *SDR* permettent de reconfigurer dynamiquement les paramètres des radios pour s'adapter aux conditions changeantes du spectre. Quant aux réseaux cognitifs, ils emploient des protocoles intelligents pour surveiller en permanence l'utilisation des fréquences et ajuster automatiquement les transmissions pour éviter les interférences et maximiser l'efficacité.

Applications et perspectives

Les applications de la détection de spectre sont vastes et variées. Dans le domaine des télécommunications, cette détection permet de déployer des réseaux plus efficaces et résilients, capables de s'adapter rapidement aux fluctuations de la demande. Les réseaux mobiles de cinquième génération *(5G)* bénéficient particulièrement de ces avancées, offrant des vitesses de transmission plus élevées et une latence réduite.

Dans le secteur de l'*IoT,* la détection de spectre facilite la gestion des milliers de dispositifs connectés, assurant une communication fluide et sans interruption. De plus, elle ouvre la voie à des applications innovantes dans des domaines vitaux pour la population tels que la santé, les transports et la gestion des infrastructures.

Indubtablement, la détection de spectre représente une avancée majeure dans la gestion des ressources de fréquences radio et continue d'évoluer, ouvrant la voie à un avenir où la connectivité sera plus fluide, plus rapide et plus fiable. Face à une demande en bande passante toujours croissante, elle offre des solutions efficaces pour optimiser l'utilisation des spectres, prévenir les interférences et améliorer la qualité des communications. Une collaboration internationale et des efforts de recherche concertés seront essentiels pour exploiter pleinement le potentiel de cette technologie et répondre aux besoins du monde numérique en constante évolution. TR

> La détection de spectre représente une avancée majeure dans la gestion des ressources de fréquences radio, ouvrant la voie à un avenir où la connectivité sera plus rapide et plus fiable

Technology Chiefs Delve Into 5G-Advanced

Join us for an insightful discussion with the experts on 5G-Advanced and beyond

Place: Virtual

Les Leaders Technologiques Explorent le 5G-Advanced

Rejoignez-nous pour une discussion approfondie avec des experts sur le 5G-Advanced et au-delà.

Lieu : Virtuel

GITEX Global

Stay abreast of the latest in technology trends and in-depth industry insights at the largest and impactful tech event in the MENA and South Asian region.

Place: Dubai World Trade Center, UAE

GITEX Global

Restez au fait des dernières tendances technologiques et des connaissances approfondies de l'industrie lors de l'événement technologique le plus important et le plus marquant de la région du Moyen-Orient et de l'Asie du Sud.

Lieu : Dubai World Trade Center, EAU

MWC Kigali

MWC Kigali, Africa's leading event, is a global focal point for networking, discovering the latest industry innovations, and showcasing cutting-edge technologies.

Place: The Kigali Convention Centre

MWC Kigali

Le MWC Kigali, événement phare de l'Afrique, constitue un point de convergence mondial pour le réseautage, l'exploration des dernières avancées industrielles et la mise en avant des technologies les plus innovantes.

Lieu : Centre de convention de Kigali

Telecom Review Leaders' Summit 2024

The Telecom Review Leaders' Summit, now in its 18th edition, stands as the premier event in the ICT industry, shaping global telecommunications. Returning to Dubai on **December 10-11, 2024**, it gathers top executives and leaders for strategic discussions and partnerships.

Place: Dubai-UAE

Telecom Review Leaders' Summit 2024

Le Telecom Review Leaders' Summit maintenant dans sa 18e édition, est l'événement phare de l'industrie des TIC, façonnant les télécommunications mondiales. De retour à Dubaï les **10 et 11 décembre 2024**, il réunit les plus hauts dirigeants pour des discussions stratégiques et des partenariats.

Lieu : Dubai-EAU

Mises à jour sur :
www.telecomreviewafrica.com

TELECOM Review TV
telecomreview.tv

WATCH LIVE
WATCH **NOW!**

WATCH THE ICT CONTENT ON THE ONLY TV WEBSITE

WWW.TELECOMREVIEW.TV

Visit **telecomreview.tv** and get enlightened about the latest news, trends, services, projects and plans in the ICT industry, featuring fundamental interviews with esteemed leaders in the telecom and ICT sector.

Leading Global ICT Media Platforms

Middle East

Arabia

Africa

Americas

Asia