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stc: Powering Kuwait's Digital Economy Evolution

Eng. Maziad Alharbi,
CEO, stc Kuwait

stc

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Eng. Maziad Alharbi, CEO, stc Kuwait

stc: Powering Kuwait's Digital Economy Evolution

In an exclusive interview with Telecom Review, stc Kuwait CEO Eng. Maziad Alharbi expounded on stc's role in Kuwait's digital economy evolution and shared insights on the company's initiatives to fulfill consumer, B2B and public sector demands, as well as their sustainability agenda, among other topical matters.

The Kuwait telecom market has historically been one of the most advanced in the region. How do you see the evolution of the market moving forward and the level at which it is keeping up with the latest trends (AI, ICT services, etc.)?

The telecom industry in Kuwait has consistently maintained a pioneering position in both regional and global markets. Kuwait was among the first nations to introduce innovative telecom and digital solutions, which in turn initiated a competitive market landscape. Additionally, the early adoption of 5G technology introduced a range of capabilities that further positioned the country as a global leader. This strong foundation of robust connectivity services has played a pivotal role in driving the adoption and expansion of digital solutions across the country, and it continues to be a driving force enabling digital transformation in line with Kuwait's Vision 2035.

Due to its robust foundational capabilities, Kuwait is well-equipped to usher in the next phase of industrial evolution. Prominent hyperscalers, such as Google and Oracle, among others, have already pledged or announced their intentions to launch their cloud services and extend their operations within Kuwait's market. More recently, the Kuwaiti government signed with Google Cloud to manage their digital workloads. The agreement will leverage Google Cloud's know-how and capabilities to increase the level of efficiency within the government sector, digitize the country's operations, ease the sharing of data between various governmental institutions and execute other programs that can empower the economy.

Within the private sector, local entities, such as stc, are investing significantly in the ICT sector with the aim of introducing substantial technological solutions that aim to benefit both governmental bodies and the private sector. Furthermore, Kuwait has made considerable progress in the realm of AI, with notable entities like Kuwait News recently unveiling innovative concepts like virtual news presenters. Taken together, these developments suggest that Kuwait will persist in its role as a regional leader in technological advancements.

In terms of 5G deployment, Kuwait's nationwide coverage is an embodiment of the country's readiness for the future, with stc at the forefront of this transformation, ensuring robust solutions and proper systems are firmly set in place. This ultra-fast, high-bandwidth technology has not only reintroduced how people interact with digital platforms but also catalyzed the government's digital transformation strategy. As part of this transformation, the government aims to introduce comprehensive platforms that will digitally streamline the broad range of public services

for citizens seamlessly and with great ease of access. Smart cities have also been introduced under the government's digital transformation strategy, which will be based on a comprehensive and integrated plan in line with Kuwait's 2035 vision.

stc has been very active in the Kuwait market historically, with a number of acquisitions and big investments and by supporting digitization efforts in the country. How will stc help to continue the evolution of the Kuwaiti digital economy and its telecom and ICT sectors?

stc is highly committed to driving the evolution of Kuwait's digital economy through a comprehensive and versatile strategy. Our initial priority lies in the relentless enhancement of our connectivity services, with the aim of delivering an unparalleled experience to users throughout the nation. We appreciate that superior connectivity underpins the digital economy, and as such, we tirelessly endeavor to uphold high network

> In terms of 5G deployment, Kuwait's nationwide coverage is an embodiment of the country's readiness for the future

availability and offer a premier service of the highest quality for our customers in Kuwait. Given the investment we made early on to build a solid 5G infrastructure, we are fully equipped to provide nationwide 5G coverage, reinforcing our leadership in fiber and DSL connectivity through strategic ISP acquisitions. This has supported our journey in delivering comprehensive coverage and connectivity to our customers, demonstrating our position as a technology-agnostic connectivity leader.

Our strategic approach is further emphasized by the alignment of our investments in the broader ecosystem. Companies under stc Kuwait's umbrella are market leaders passionately dedicated to assisting both the public and private sectors in satisfying their varied service needs. Their proficiencies cover a broad spectrum of offerings, extending from essential cloud and ICT services such as data centers and secure private networks to sophisticated applications encompassing cybersecurity and digital transformation.

Moreover, our dedication to persistent investment in refining our offerings and solutions is unwavering. With several strategic acquisitions, such as QualityNet and E-Portal Holdings, we managed to provide a range of innovative and new-to-market services that cater to corporates through our specialized business arm, solutions by stc. These initiatives, as well as others, embody stc Kuwait's strategic vision, allowing us to utilize our vast capabilities to create synergies and integrate our various solutions. We believe that this, in return, will support and fortify the growth ambitions of the Kuwaiti economy, positioning it for success in the evolving digital era.

What role should the Kuwaiti government and the different sector players in the market assume to help continue the evolution of the sector?
The Kuwaiti government has played a pivotal role as a strong catalyst for the growth and development of the sector. As pioneers in implementing privatization initiatives, they have fostered a highly competitive market environment that encourages innovative concepts. This proactive approach has not only attracted investors but has also been instrumental in driving the historical evolution of the sector. The government has also initiated its digital transformation strategy, which will trickle across various entities within both the public and private sectors. The announced eGovernment platforms will integrate features that will ease numerous activities on behalf of citizens, provide instant validation and ease the shift from traditional methods to a digitized world.

Looking ahead, the government can continue to serve as an enabler by ensuring the establishment of effective regulatory frameworks that can align the objectives of various providers with the Kuwait 2035 vision. This will create an environment that is conducive to attracting foreign investment to the country and encouraging local companies to expand their operations in a dynamic way. Promising signs of progress in this direction have already surfaced, especially following the recent ICT announcements mentioned earlier. To sustain and amplify these positive developments, a structured approach is the optimal way to move forward. This involves not only attracting regional and international conglomerates but also empowering local players to broaden their operations by providing them with the necessary framework and resources to operate efficiently. By achieving the right balance, the government can further enhance the sector's growth trajectory and solidify Kuwait's position as an attractive destination for both domestic and foreign investment opportunities.

Consumer demand for connectivity and digital services is at its peak. How will stc act to keep up with this demand, and what strategic projects are you aiming to deliver? Are there any initiatives involving 5G and IoT that will help lift up the core business?
Consumer demand for superior connectivity and innovative digital services has indeed reached an all-time high. stc is strategically positioned to meet this demand increase with an unwavering focus on delivering an unrivaled connectivity experience to our customers. Well-known for their technological savviness and elevated expectations concerning network quality, Kuwait customers have set high expectations for an optimum online experience, and we are wholeheartedly committed to meeting these demands. These expectations have been a driving force in our introduction of various connectivity solutions that are pegged to be the leading in the region. To manage these pioneering network upgrades, stc has been consistently investing in maintaining and developing its infrastructure and related systems. Our position as innovators in the region is well established; we pioneered the introduction of 5G standalone technology in Kuwait, allowing users to experience exceptional download speeds and superior service quality.

Moreover, we have been at the forefront of offering innovative IoT solutions, including our collaboration with General Motors to provide in-vehicle connectivity for its OnStar emergency service. This partnership has allowed us to deliver IoT applications for vehicle management and infotainment subscription services, thus further enhancing the connected experience for Kuwaiti consumers. We have also partnered with various local players and start-ups to introduce new-to-market concepts that leverage our experience and know-how. These initiatives build on and contribute to the company's commitment to continuously offer the latest solutions available in the modern digital world to assist corporate customers in achieving higher levels of operational and productivity efficiency. As an integral step in empowering businesses to take their visions forward, we actively invest in R&D to discover and design innovative solutions that solve real-world problems.

Giving customers the best-in-class digital experience is proving to be one of the critical elements of any successful telecom operator. How is stc evolving its digital customer experience?
We have recently introduced a new facelift and upgrade to the mystc Kuwait app and web experience, enhancing the digital journey for our customers. Our app serves as the central hub for our customers' integrated experience, offering an array of cutting-edge features and functionalities.

The app boasts an extensive range of capabilities, empowering users to manage their subscriptions, add or remove services, handle roaming settings, pay bills, recharge prepaid lines and access our self-service platforms. Additionally, it seamlessly integrates with our Qitaf loyalty program, enabling users to earn and redeem points across stc services and our network of partners. To enhance convenience, we have incorporated our eStore within the app, allowing customers to effortlessly purchase the latest devices and accessories, which are conveniently delivered directly to their doorstep.

The enhancement of the mystc app is an ongoing process where we will be introducing new features and services to further elevate the customer experience. Our goal is to ensure that the app remains at the forefront of our innovative business model, providing our customers with an exceptional digital journey.

Our home connectivity solutions, baity fiber and baity 5G, offer customers an immersive in-home experience with faster downloads, steady speeds at low latency, exceptional coverage and enhanced gaming capabilities. stc's baity 5G utilizes the best outdoor router to capture the best 5G signal, which is then distributed across the user's home using a mesh wi-fi system, providing users with the best connection speed and stability across their home. And baity fiber guarantees users the optimal gaming and streaming experience through the best latency/ping and unlimited capacity download and upload speeds.

In terms of upgrading the digital customer experience through connectivity, stc launched its 5G standalone technology, dubbed "FULL 5G," providing better speeds, lower latency and improved coverage. The technology allows our customers to enjoy the full gaming experience with lower pings and better latency. The exclusive solution also improves indoor coverage so that stc customers can stream their favorite movies or TV shows from wherever they are with download and upload speeds synched to perfection. Providing this one-of-a-kind connectivity solution builds on our longstanding commitment to progressively enhance and develop our range of offerings while enabling digital transformation, an approach that aligns with the objectives under Kuwait's 2035 vision.

The B2B and public sectors are big areas of importance for telecom operators. We have already seen stc execute a number of acquisitions in this space in Kuwait and in the region as a whole. What are the long-term objectives, and how will stc serve this segment in the future?
The B2B and public sectors hold significant strategic importance for telecom operators, with their

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potential to stimulate the economy and serve the community in multiple facets. Recognizing this potential, stc has prioritized establishing a strong presence within these sectors, as evidenced by our proactive acquisitions and service expansions. With the ever-evolving digital world, we believe that it is key to introduce innovative technologies that can accommodate the growth trajectories within each sector.

As early as 2019, stc began to offer mobility services and undertook two major acquisitions to build a comprehensive and integrated portfolio. The successful acquisition of Qualitynet, a leading ISP and fixed services provider, allowed us to further consolidate our position within the B2B and public sector services domains. After rebranding Qualitynet to solutions by stc in early 2020, we continued our growth strategy by acquiring e-Portal Holding, a renowned ICT services provider, along with its subsidiaries, including JMT and CDN, in 2022. These strategic moves have solidified our standing as one of the top B2B and ICT providers in Kuwait.

We provide a comprehensive range of services specifically tailored to B2B and public sector organizations. From fundamental connectivity and system integration to advanced cybersecurity, digital transformation, and managed services, our goal is to become a one-stop shop with integrated solutions. Our primary objective is to provide a complete experience, serving as a trusted partner for large enterprises, public sector clients, and mega projects alike. Our dedicated team brings expertise in delivering customized solutions to meet specific customer needs.

In addition, we recognize the vibrant SME community's pivotal role within the country. We are committed to offering standardized ICT services that align with their dynamic needs, having already launched a variety of services targeting this sector with plans for continued expansion in the future. Our strategic vision is centered around delivering comprehensive solutions within the sectors we serve. By integrating our capabilities, providing customized solutions to large enterprises and public entities, and supporting the growth of SMEs, we are confidently positioned to shape the future of ICT services in Kuwait.

What role will stc Kuwait play in different ICT infrastructure services such as data centers, hosting, colocation and cloud-based services? Are there any plans to partner or work with hyperscalers to serve different customer segments and verticals?

We are highly committed to our strategic vision of ensuring the availability of comprehensive ICT infrastructure services in the Kuwaiti market. Presently, our value proposition includes a wide spectrum of hosting, colocation and cloud-based services, which will be significantly bolstered in the near future. Our objective is to become the preferred ICT provider in Kuwait, catering to the diverse needs of our growing customer base, which operates in various sectors.

Our ambitious plan to fortify our ICT infrastructure capabilities includes an expansion of our own data center facilities. This expansion will offer greater capacity and reliability to meet the ever-evolving demands of our customers. Beyond infrastructure, we aim to enhance our digital capabilities. For instance, we are investing in state-of-the-art technologies like chatbots and robotics, which will provide more efficient, streamlined customer interactions, and we are integrating e-payment solutions across our services to improve customer convenience.

Additionally, we are actively establishing alliances with our esteemed regional and global partners, with plans to launch an extended portfolio of cloud-based services. With these strategic partnerships, we will leverage the expertise and resources of our partners to deliver tailor-made solutions addressing the specific needs of the Kuwaiti market. These collaborations will not only amplify our service portfolio but also ensure seamless integration and interoperability with global cloud ecosystems.

The successful acquisitions we have completed have helped us establish robust capabilities in both software and hardware. This, in turn, enabled us to deliver flexible, scalable cloud services to our customers more efficiently. As a leading provider of comprehensive and innovative ICT services, we have solidified our position in the market, complemented by our extensive product line and strategic partnerships with some of the most well-known hyperscalers around the world. By merging our in-house advancements with the power of our partnerships, we remain steadfast in our commitment to driving the digital transformation agenda in Kuwait and delivering unrivaled value to our customers.

What steps is stc Kuwait taking towards driving an agenda around sustainability?

Sustainability is at the core of stc's corporate strategy and is deeply embedded into our operations and initiatives. In line with our objectives, the United Nations Sustainable Development Goals (SDGs) and Kuwait's 2035 vision, we have outlined an ambitious three-year strategy to drive our sustainability agenda forward.

Earlier this year, we launched a comprehensive sustainability program that promotes sustainable practices and values both within and outside our organization. A dedicated awareness campaign, integral to this program, is aimed at educating and informing stakeholders about our sustainable efforts. Initiatives focused on creating sustainable environments, waste and water management, and energy conservation have been launched. We are also exploring the implementation of a paperless workplace as part of our digital transformation, contributing not only to efficiency but also to environmental preservation. Our commitment to building a green-friendly environment extends to our data centers, where we aim to incorporate sustainable infrastructure.

Social responsibility is another critical aspect of our strategy. We are fostering a cultural transformation internally, promoting the empowerment of ideas and the continual investment in talent. Externally, we have been actively involved in several sponsorships and ventures, particularly those focused on youth, sports, education, health and entrepreneurship. Our extensive CSR framework includes a diverse range of events, programs and activities that aim to empower the community we serve while making a lasting impact on the younger generation. A majority of these initiatives have been organized in collaboration with local entities and institutions.

Governance is another key pillar of our sustainability agenda. We continue to maintain our ISO certifications and have enhanced our operational model to further improve cyber and data privacy. Our "Purple Code" and ethics campaigns further ensure that we operate according to the highest ethical standards. In our commitment to advancing gender equality, we are taking steps to ensure equal opportunities and fair representation across all levels of our organization. Moreover, we are proud of our continuous efforts to earn international awards and recognitions, as they reflect our dedication to maintaining excellence in all aspects of our operations.

In addition to stc group's Sustainability Report, we are pleased to announce that stc Kuwait will publish its standalone Sustainability Report in 2024, as a testament to our unflagging dedication to transparency and social responsibility. This report will underscore our commitment to our customers, investors, employees, retailers and other stakeholders, offering detailed insights into our sustainability efforts and achievements. TR

> Sustainability is at the core of stc's corporate strategy and is deeply embedded into our operations and initiatives

Saoud Al Riyami, Acting Chief Business and Wholesale Officer, Ooredoo Oman

Ooredoo Oman: A Strong Wholesale Player Investing in Oman's Digital Future

In an exclusive interview with Telecom Review, Saoud Al Riyami, acting chief business and wholesale officer, Ooredoo Oman, shared how developing infrastructure is key to staying on top of and satisfying the evolving digital requirements of customers, among other valuable insights.

How do you ensure a seamless and reliable customer experience for B2B customers?

Our corporate customers have seamless access to high-quality products and services, including cutting-edge digital solutions. The business-to-business market, from small and home offices (SoHos) and small and medium-sized enterprises (SMEs) to larger corporate customers, requires products and services that speak to their own specific business needs. Customizable, flexible and able to grow and adapt, our products are all about setting the pace in the market and making sure we're providing solutions that enable every business to thrive. We're definitely leading the way in offering a highly personalized experience, including Oman's first "build your own" plans and even our "office in a box."

At the same time, companies need undisrupted and reliable connectivity — a network they can rely on with strong redundancies in place. In June, Ooredoo Oman became the first in the country and in the region to provide nationwide 5G coverage, revolutionizing connectivity for all, including businesses. And alongside our network strength comes cybersecurity, great value, transparency and our well-known customer support and experience, with dedicated account managers, a B2B call center and, of course, our B2B App.

Businesses are doing more and more digitally, whether contacting support, subscribing to or managing plans, and they can do all of this and more with our App. But it's more than that. Plans and services need to be offered and administered digitally, thereby optimizing convenience for customers as well as providing us with the ability to offer fully scalable and flexible services. Currently, digital plans make up around 14% of the business postpaid base, and this number is growing at a rapid pace.

One of our major achievements in 2022 was the launch of our business eShop. Along with the B2B App, we are always looking for ways to enhance the user experience, and these digital channels do just that. The App provides a central online point for real-time monitoring, management and administrative tasks, handled quickly and efficiently, whereas our eShop allows customers to browse both devices and services to optimize their businesses.

We continue capitalizing on and developing transformative technologies such as cloud solutions, IoT, SD-WAN and other high-growth sectors. This allows us to gain a competitive edge by addressing these demands effectively, and ultimately, we retain customers who value one-stop solutions that streamline operations, improve efficiency and reduce costs.

How does Ooredoo Oman support SMEs and SoHos?

SMEs and SoHos are the backbone of local businesses and the national economy. Most of these small businesses in Oman have a strong value proposition and a significant impact on our communities and the economy.

As drivers of Oman's digital transformation, Ooredoo focuses on supporting the requirements of all businesses. With excellent fixed and mobile services and smart solutions in place, we continue to elevate our service offerings to support small enterprises to grow, succeed, digitalize and optimize their operations. This in turn supports their integration into key markets, reduces overall costs and thus maximizes growth and revenues.

With the proper support from Ooredoo as a full communications provider, these entities can continue to create job opportunities for Omanis and contribute to Oman's economic development in line with Vision 2040.

We also have a host of specifically designed, tailored solutions and services for them to help them navigate a fast-changing economic landscape. Indeed, we are now one of Oman's leading ICT service providers and have a full and growing ICT portfolio in line with our customers' increasingly sophisticated needs.

Our company's growing portfolio includes several highly innovative, dynamic, and flexible business products, services and solutions, covering both mobile and fixed technologies. Smart, state-of-the-art solutions offered by Ooredoo to businesses include our 'office in a box' Maktabi, customisable and flexible telecoms plans, IdeaHub Smart Screen, Closed-Circuit Television (CCTV), and Private Automatic Business Exchange (PABX) to name but a few. We also partner with leading providers to enhance our ICT offerings; such as CISCO, Huawei and a host of indirect sales channel partners, to provide value-added services to other SMEs. Such partners provide smart solutions to customers who want top-notch solutions and also support in digitising certain aspects of their operations.

How does wholesale contribute to the overall growth and success of Ooredoo Oman?

As a digital leader in Oman, we are the nation's alternate wholesale operator. By investing in our wholesale portfolio and working with key market players to undertake mega-projects and developments that support Oman in becoming a technologically advanced and knowledge-based economy, we can position ourselves as a strong wholesale player.

Our primary focus remains providing a range of wholesale services, including capacity, managed services, telepresence, content provision and content delivery networks (CDNs), investment in data centers, subsea cables, infrastructure and co-location, among others. We leverage the strength of Ooredoo Group as an international wholesale operator to provide innovative telecom solutions to other operators and hyper-scalers or large cloud service providers like Microsoft, Google, Facebook, Skype and Yahoo.

And by investing in transformative technologies that both broaden international connectivity, increase accessibility and strengthen the digital communications ecosystem across Oman, the region and the world, we can become a leading hub for innovation and economic growth in the region.

Indeed, in 2021, we successfully bid for and won the tender to provide able landing facilities to "2Africa" (2AF) at Salalah and Barka, joining a global consortium of communications operators. The 2Africa cable system is one of the largest subsea projects in the world, connecting 46 cable landing stations in 33 countries in Africa, Asia and Europe.

It forms part of our strategy to be a major player in providing transit access facilities to major international operators and hyper-scalers through Oman, leveraging our network and connectivity to the GCC and beyond. This will open new wholesale revenue streams for the future and allow Ooredoo to continue investing in the future of digital across Oman and the region.

What are your business goals when it comes to Vision 2040 and providing ICT solutions?

Oman's Vision 2040 is a strategic roadmap for long-term development that envisages a diversified economy driven by innovation and being suitably equipped to compete in the global knowledge and information economy. The demand for high-quality telecommunications and ICT services, including the demand for high-speed, high-capacity technologies, will increase further.

The development of our ICT solutions and the rollout of 5G are the main areas of our commitment to the nation. We are finding new ways of segmenting our business to keep us ahead of the curve when it comes to competition and implementing technology.

At the heart of our growth plans are our cutting-edge products, services and solutions for businesses, as well as network expansion. Ultimately, the telecoms sector must continue to embrace the goal of becoming a fully digital society. By investing in people and leading technology projects, we are helping to drive this and are contributing to society and the economy, both now and into the future.

What innovative strategies has Ooredoo adopted to stay competitive in the evolving B2B telecoms industry?

Our commitment to our customers and the community drives our aim for continual improvement and innovation. Developing our infrastructure is key to staying ahead of and meeting the evolving digital requirements of our customers. We continue to invest in IoT services and our network, spreading low-latency international connectivity to service high-end requirements.

In 2021, for example, we celebrated the inauguration of our new flagship data center when the 7,000-sqm facility was completed well ahead of schedule. The centerpiece of our IT infrastructure has a power capacity of 2.5 megawatts and guarantees around 99.98%+ uptime, according to an internationally recognized framework.

We also focus on fostering strategic partnerships with key technology providers, allowing us to expand our service portfolio and offer comprehensive one-stop solutions to B2B customers.

And finally, there is our customer-centricity — something that is a notable priority for us. Through continuous improvement and evolution based on customer feedback, we strive to evolve our customer journey and experience constantly. TR

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The transformational power of GenAI is its ability to create contextual new content, which is made possible by training neural networks on enormous volumes of data and applying techniques that help AI models understand what to focus on. With these mechanisms, a generative AI system can identify word patterns, relationships and the context of a user's prompt. Companies that invest in using specialized or proprietary data — such as BSS/OSS data — to enrich GenAI models can achieve a significant competitive advantage over generic, publicly available GenAI tools.

Generative AI and Telcos: The Critical Role of IT

Powered by transformational foundational models, such as advanced Large Language Models (LLMs) from OpenAI and Google, GenAI has proven to be exceptional at human-like interactions with the ability to generate content in many forms.

So how will this impact the telecom industry?

GenAI has the potential to significantly increase telco productivity across the business and make leaps in customer experience, especially in customer care and sales and marketing. For example, chatbots will become an exceptional front-end tool, as they can discuss issues and requests with a more personalized approach using customer data and details. Agents will have their own personal assistant that is able to find data from knowledge bases and quickly guide them to more accurate responses.

From a marketing perspective, GenAI can create new and personalized content much faster, such as articles, blogs and social media posts, and can provide better advice on customer requests to close a sale. On the operations side, GenAI solutions will be able to provide: streamlined configuration; smarter recommendations; simplified network planning, installation and configuration; and a faster learning curve.

Overcoming GenAI Challenges

However, as with every emerging technology, there are many challenges associated with the widespread use of GenAI — especially its use in the telecom industry — which will require new thinking and approaches. The first one revolves around getting access to proprietary telco data without violating privacy laws. As one of the most significant impacts of GenAI will stem from its ability to quickly run through customer data sets and utilize the information for custom content, there is a need to protect personally identifiable information. Telcos must also ensure that they are protected from security threats made by those using GenAI to infiltrate their systems, and they will need to keep up with a constantly changing data set rather than just fine-tuning data in real time.

Along with privacy and security concerns, other challenges surrounding the use of GenAI include an overestimation of the technology's capabilities. GenAI utilizes the data it receives to produce content, but its abilities are imperfect in the sense that it can misconstrue facts and generate incorrect information. Large AI foundational models are also very costly to implement and require a significant amount of training in order to ensure they work properly for a telco's internal processes.

Despite these challenges, telcos are making moves toward bringing GenAI into their businesses. But to make the most of GenAI functionality, they will need to rely on the data provided by their BSS/OSS systems for training and ongoing problem solving. GenAI will need telco BSS/OSS integration to be truly revolutionary. In fact, about 90 percent of telco GenAI use cases will require this integration, including care digital assistants, personalized sales assistants, catalog configuration, hybrid RAN configuration and more.

Some of the most immediate applications are likely to be the use of billing and usage data for personalization of marketing materials and product recommendations; improved chatbot functionality through additional context; history and insight provided by billing, usage data, data stored in inventories, order management tools and other BSS repositories; and the generation of synthetic data for better predictive modeling and improved anomaly detection.

Harnessing GenAI and BSS/OSS for Business and Operational Improvements

GenAI will improve IT business and network operations in the following ways to deliver value and productivity gains to telcos:

1. **Lowering costs:** Telcos will be able to decrease customer support costs without compromising the quality of experience. This includes improved first-contact resolution, better time to resolution and reduced cost per contact. On the network and business operational side, telcos will require fewer technical staff and staff needed for their user interface and business processes.
2. **Supporting provisioning and troubleshooting:** GenAI has the potential to be highly useful for workforce assignment and dispatch to customer premises by offering virtual assistants that provide real-time support for provisioning and maintenance. GenAI can provide troubleshooting assistance for premise-based network problems, which can be further personalized based on intelligent customer segmentation.
3. **Increasing revenue:** Telcos will gain a faster time to value through the rapid creation of business ideas in BSS (offers, promotions and discounts, for example), quicker sales conversion and faster design and testing of new services.
4. **Improving prediction and optimization:** The generation of new data sets also has a wider implication in the training of predictive models and improving the optimization of systems. GenAI can produce synthetic data to improve a sparse data set for model training for predictive maintenance or the detection of unusual calling patterns indicating fraud.
5. **Delivering a superior customer experience:** Telcos will find that using GenAI to pull data from their BSS/OSS will result in higher net promoter scores, customer satisfaction and customer effort scores.

With GenAI utilizing stored data from their BSS/OSS systems, telcos can achieve more efficient and effective processes and customer interactions, ensuring they make the most of this revolutionary technology. TR

By Ari Banerjee, Senior Vice President of Strategy, Netcracker Technology

> BSS/OSS integration will be critical for telcos to reap the full benefits of this transformative technology

Vodafone Oman's 5G Next Network: Pioneering the Nation's Green-Field Future

In the dynamic world of telecommunications, Vodafone Oman has emerged as a beacon of innovation and progress, leading the charge with its ground-breaking 5G Next network. Unlike traditional operators, Vodafone Oman has embarked on a visionary journey, establishing a greenfield 5G network from day one.

This strategic move has positioned Vodafone Oman as a true trailblazer, drawing inspiration from successful green-field operators worldwide and shaping the landscape of Oman's telecom industry. As 5G continues to redefine connectivity, Vodafone Oman's unique approach signifies a rising trend that places agility and innovation at the heart of 5G deployment strategies.

Vodafone Oman's story finds resonance in the success stories of other green-field operators across the globe. These pioneers have set a precedent for redefining telecom landscapes by harnessing the power of 5G technology from the ground up. Companies such as Rakuten Mobile in Japan and Jio in India have demonstrated the transformative potential of greenfield 5G networks. Rakuten Mobile's cloud-native approach and Jio's aggressive expansion have led to enhanced connectivity experiences, resonating with Vodafone Oman's commitment to a smarter, faster future.

The telecom industry is witnessing a paradigm shift as green-field 5G operators take center stage. These innovators are unencumbered by legacy infrastructure, enabling them to deploy cutting-edge technologies with unprecedented speed. This emerging trend highlights the strategic advantage of starting anew, allowing operators to seamlessly integrate AI, cloud computing and IoT into their network architecture.

Vodafone Oman's proactive stance reflects a broader movement toward future-proofing networks for the demands of the 4th industrial revolution.

Vodafone Oman's journey toward establishing a 5G Next network has been marked by remarkable milestones. The company's visionary approach to a virtualized and cloud-based infrastructure positions Oman at the forefront of the digital revolution. By embracing AI-enabled capabilities, Vodafone Oman's network can adapt and evolve with unprecedented agility, making it a true asset in Oman's march toward the 4th industrial revolution.

The company's commitment to sustainability is evident in its energy-efficient network design. With a mere four racks powering its operations, Vodafone Oman sets a new standard for eco-conscious telecom networks. This not only reduces the carbon footprint but also aligns with the global push for sustainable business practices, reinforcing Vodafone Oman's role as a socially responsible telecom leader.

5G Standalone Network: A Game-Changer

Central to Vodafone Oman's success is driving innovation, and one recent success was the first Voice and Data sessions over 5G Standalone New Radio in Oman. This monumental achievement underscores its technical prowess and unwavering dedication to innovation, as well as a commitment to pushing the boundaries of 5G technology.

Its 5G Next network redefines the user experience by offering unparalleled speeds, lower latency and efficient data usage. Unlike competitors, Vodafone Oman's nationwide network operates without speed caps, enabling seamless connectivity for both business and leisure. Crystal-clear Volte calling over the fast, reliable 4G network exemplifies Vodafone Oman's dedication to superior quality in communication.

The company's commitment to comprehensive coverage is evident in its innovative use of 5G radio frequencies. The deployment of low-band (700 MHz) for extended outdoor coverage and better indoor penetration, alongside mid-band (2600 MHz) for increased capacity, demonstrates Vodafone Oman's meticulous attention to ensuring uninterrupted connectivity across diverse environments.

Vodafone Oman's pioneering spirit and innovative 5G Next network have positioned the company as Oman's next-generation telecom leader.

Drawing inspiration from successful green-field operators globally, Vodafone Oman has harnessed the transformative potential of 5G to set new standards in connectivity. As the telecom industry embraces the green-field trend, Vodafone Oman stands as a testament to the power of innovation and agility in shaping the future of telecommunications.

The rising trend in 5G telecommunications encompasses several key areas that are shaping the evolution of connectivity and communication networks worldwide. These trends highlight the transformative potential of 5G technology and its impact on industries, societies and economies. Some of the prominent rising trends in 5G telecommunications include:

Edge Computing and IoT Integration: 5G's low latency and high bandwidth capabilities are driving the integration of Internet of Things (IoT) devices and edge computing. This trend enables real-time data processing, analysis and decision-making at the network's edge, paving the way for applications like smart cities, industrial automation and autonomous vehicles.

Industry-Specific Solutions: 5G is facilitating tailored solutions for various industries, such as healthcare, manufacturing, agriculture and logistics. These industries are leveraging 5G's capabilities to enhance efficiency, productivity and innovation through remote surgery, predictive maintenance, precision agriculture and more.

Private 5G Networks: Enterprises are increasingly deploying private 5G networks to meet specific connectivity needs within their facilities or campuses. These networks offer enhanced security, reliability and customization options, fostering advancements in areas like smart factories and critical infrastructure.

AI and Automation: The synergy between 5G and artificial intelligence (AI) is driving automation across various sectors. AI-powered analytics and automation are being harnessed to optimize network management, enhance user experiences and enable autonomous systems.

Augmented Reality (AR) and Virtual Reality (VR): 5G's high-speed, low-latency capabilities are poised to revolutionize AR and VR experiences. Immersive applications, such as virtual meetings, remote training and interactive entertainment, are becoming more accessible and engaging.

Smart Cities and Urban Connectivity: 5G is a linchpin in the development of smart cities, enabling connected infrastructure, real-time monitoring and data-driven decision-making. Enhanced connectivity supports initiatives like smart traffic management, waste management and energy optimization.

Network Slicing: Network slicing allows the creation of multiple virtual networks within a single physical infrastructure, each tailored to specific requirements. This trend enables operators to offer diverse services with varying performance characteristics, catering to the unique needs of different users and industries.

Enhanced Mobile Broadband (eMBB): 5G's eMBB capabilities offer significantly faster download and upload speeds, revolutionizing the mobile experience for users by enabling seamless streaming, high-quality video conferencing and immersive content consumption.

Collaborative Ecosystems: The 5G landscape is characterized by collaborations between telecom operators, technology vendors, device manufacturers and other stakeholders. These ecosystems drive innovation and the development of interoperable solutions that maximize 5G's potential.

Global Rollout: As more countries and regions deploy 5G infrastructure, the technology is becoming increasingly accessible to a larger portion of the global population. This widespread adoption is accelerating the realization of 5G's transformative impact on industries and societies.

By embracing sustainability, technical excellence and user-centric design, Vodafone Oman's 5G Next network redefines Oman's digital landscape, propelling the nation toward a future characterized by unprecedented connectivity and boundless possibilities. TR

Harnessing Global Connectivity to Generate New Revenue Streams

Digital transformation investments in the Middle East, Türkiye and Africa (META) are projected to more than double between 2021 and 2026, with spending expected to reach over $74 billion by 2026, according to the latest forecast of the International Data Corporation (IDC). This surge in investment, growing at a compound annual growth rate (CAGR) of 16%, highlights the region's increasing focus on digitalization, which is set to account for 43.2% of all ICT investments in 2026.

With the widespread adoption of transformative technologies like 5G and IoT across the region, industries such as connected vehicles, logistics and smart cities are experiencing a surge in international opportunities. Organizations in the META region are now putting their digital and tech investments to the test across various business dimensions, including customer experience, operations and fiscal management.

Recognizing the accelerating pace of digitalization in the region, China Mobile International (CMI) has introduced iConnect ONE, a cutting-edge service model customized to empower operators in the region's rapidly evolving digital landscape. By leveraging CMI's extensive network infrastructure and global resources, carriers can scale up their operations and meet the growing demand for enhanced connectivity and expanded service portfolios.

Streamlined Services for Agile Business Management

CMI's iConnect ONE — Omni Network Enablement — serves as a comprehensive platform that streamlines services and offers tailored solutions to meet the evolving demands of carriers in the Middle East.

This one-stop-shop approach provides convenient access to global roaming, data connectivity, 5G and Internet of Things (IoT) offerings and other value-added services (e.g., clearing, VoIP and digital content platforms), empowering carriers to expand their reach and capitalize on new revenue streams while optimizing costs. Through the iConnect Customer Portal, carriers can efficiently manage their daily operations, access business insights and leverage professional consulting services.

By outsourcing operations to iConnect ONE, carriers can lower costs, enhance their offerings and focus on their core competencies while still providing a comprehensive suite of services to their customers. For example, CMI's viable IoT business model, such as IMSI (International Mobile Subscriber Identity), is necessary to support and facilitate the ongoing development of IoT roaming.

Extensive Global Network and Unparalleled Support

CMI's extensive global network serves as a strong backbone for delivering a wide range of capabilities through iConnect ONE. With over 230 points of presence (PoP) worldwide and investments in numerous submarine and terrestrial cables, CMI offers customers unparalleled connectivity and the ability to capitalize on global business opportunities.

The recent launch of the Oman Muscat MC1 PoP further strengthens CMI's network infrastructure in the region. Located in the operator neutral Equinix MC1 data center, the MC1 PoP will connect multiple submarine cable systems such as 2Africa and IEX, connecting Asia, Europe and Africa.

This strategic expansion positions CMI as a regional hub for seamless connectivity to major global markets and customers, particularly in Oman, which plays a crucial role as a network hub bridging Asia, Europe and Africa.

As a leading provider of data center, cloud and IoT solutions, CMI boasts extensive computing network resources globally. Notably, CMI is the sole Asian operator investing in the record-breaking 2Africa submarine cable project. Designed to be the longest subsea cable ever deployed, 2Africa will revolutionize international connectivity by linking Africa, the Middle East, Europe and Asia, serving approximately 3 billion people and representing 36% of the global population. Together with CMI's SEA-ME-WE 5 and AAE-1 subsea cable resources, the cable system will further extend connectivity to China and Southeast Asia. This investment further solidifies CMI's position as a key player in delivering seamless and robust connectivity on a global scale.

Accelerating Digitalization Through Collaboration

CMI is committed to driving digitalization globally. Through strategic collaborations with local operators, CMI is providing innovative solutions for their end customers and helping them tap into the immense potential of 5G technology.

Earlier this year, CMI announced a strategic partnership with Zain Omantel International (ZOI) aimed at advancing Machine-to-Machine (M2M), Internet of Vehicles (IoV) and Internet of Things (IoT) technologies across the Middle East. This collaboration brings together the expertise and resources of two industry leaders, leveraging CMI's technical capabilities and ZOI's extensive global network and wholesale industry knowledge.

CMI has also joined forces with du, a subsidiary of Emirates Integrated Telecommunications Company PJSC, in a strategic partnership focused on promoting the Internet of Vehicles in the UAE. The collaboration aims to provide support to Chinese automobile manufacturers entering the UAE market, leveraging CMI's expertise and du's local market presence.

Furthermore, CMI and Saudi Telecom stc have signed a memorandum of strategic cooperation to strengthen the connectivity of IoT applications and enhance the level of digital services. This partnership highlights their shared commitment to driving digitalization and delivering innovative solutions in Saudi Arabia.

With extensive experience and successful deployment of 5G networks, CMI is well-positioned to drive the digital transformation of the industry. By collaborating with local operators and introducing innovative solutions, CMI aims to accelerate digitalization in the Middle East, enabling carriers to unlock new growth opportunities, strengthen their market position and contribute significantly to the ongoing digital revolution in the region. TR

Artificial Intelligence: How to Leverage the Opportunities and Avoid the Pitfalls

Artificial intelligence (AI) is transforming our world in unprecedented ways. From healthcare to education, business to entertainment, AI is reshaping how we live, work and play. But as AI becomes more powerful and pervasive, it raises serious ethical questions that we cannot ignore.

AI has the potential to make our lives better, but it also poses risks to our fundamental values, such as fairness, human rights and privacy. For example, AI is increasingly used in judicial systems worldwide, where it can help with decision-making, legal research and litigation. But AI can also be biased, opaque and intrusive, undermining the trust and legitimacy of the justice system. That's why organizations like UNESCO have proposed a global standard-setting instrument on the ethics of AI to ensure that AI respects human dignity and serves the common good.

A global AI race has thus emerged, aimed at developing and deploying AI applications on the one hand and setting the rules and norms that govern them on the other. China, for instance, is rolling out some of the world's earliest and most detailed regulations for AI, especially for generative AI, the technology that powers OpenAI's ChatGPT and Google's Bard chatbots. Meanwhile, the EU proposes a comprehensive AI law to protect fundamental rights and ensure human oversight of AI. AI regulation in the US is still in its preliminary stages, with no federal legislation dedicated to AI yet.

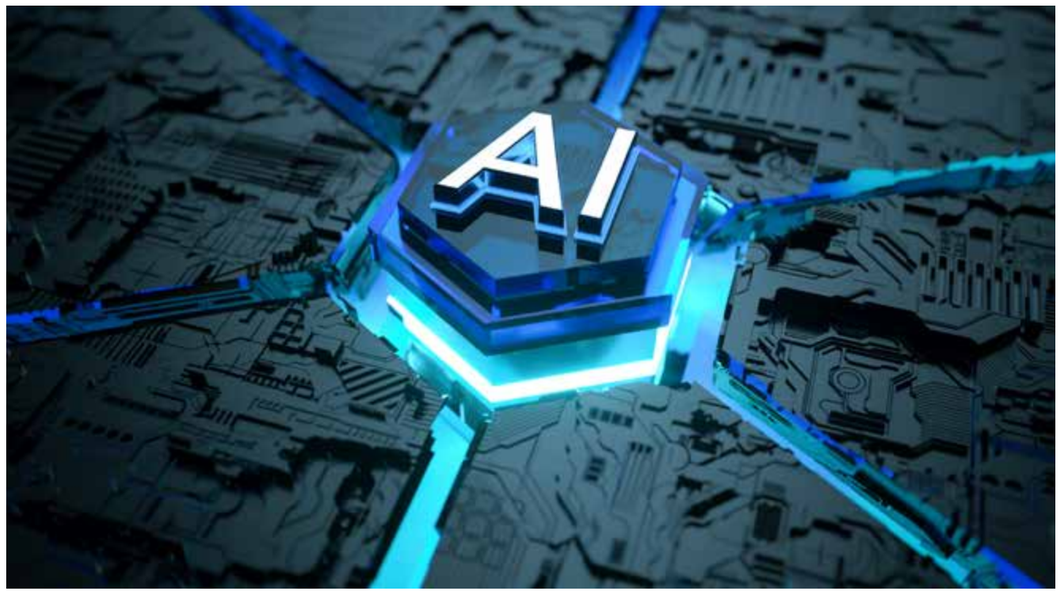
The stakes are high, as AI will have a substantial economic impact in the coming years. According to a PwC study, AI could boost global GDP by 14% by 2030, with the greatest AI-powered economic gains being in China (26% boost to GDP in 2030) and North America (14.5% boost), equivalent to a total of $10.7 trillion and accounting for almost 70% of the global economic impact.

China is determined to become a world leader in AI. The Chinese government has invested heavily in this technology to become a world leader by 2030. The country is also home to some of the world's biggest and most innovative AI companies.

For example, the Chinese technology giant Huawei is exploring AI innovations in various domains, such as telecommunications, cloud computing and consumer electronics. Huawei is also promoting AI education and talent development and collaborating with top universities and research institutes to advance the field of AI. The company has established several AI research centers worldwide, collaborating with top universities and research institutes to advance the field of AI and develop innovative technologies.

One of Huawei's remarkable achievements in AI is its contribution to pharmaceutical R&D and new drug discovery. Last year, Huawei's Rotating Chairman, Ken Hu, revealed how an AI-aided drug design service powered by Huawei Cloud helped a team of researchers from Xi'an Jiaotong University develop a new broad-spectrum antimicrobial drug in just one month, reducing R&D costs by 70%. This is a remarkable feat, considering it usually takes over $1 billion and 10 years to bring a new drug to market.

AI can also help us tackle one of humanity's biggest challenges: climate change. Extreme weather events are becoming more frequent and intense, threatening lives and livelihoods worldwide. We, therefore, need better techniques to predict, prepare for and mitigate their impacts. A whitepaper by IDC and Baidu estimates that AI technology can contribute up to 70% of carbon emissions reductions by 2060. AI's environmental capabilities go further and can help reduce greenhouse gas emissions, transition to a low-carbon economy and much more.



Huawei Cloud recently published a paper on the Pangu Weather AI model in one of the world's top scientific journals, Nature. The paper describes the process of developing a precise and accurate global AI weather forecast system based on deep learning using 43 years of data. Pangu-Weather is the first AI prediction model to demonstrate higher precision than traditional numerical weather forecast methods. The model enables a 10,000x improvement in prediction speed, reducing global weather prediction time to seconds.

The Pangu-Weather model demonstrated higher precision during scientific trials than traditional numerical prediction methods for forecasts covering 1 hour to 7 days. The model can accurately predict, in a matter of seconds, fine-grained meteorological features, including humidity, wind speed, temperature, and sea level pressure.

In May 2023, Typhoon Mawar was recorded as the world's strongest tropical cyclone of the year thus far. According to the China Meteorological Administration, Pangu-Weather accurately predicted the typhoon's trajectory five days before it changed course in the eastern waters of the islands of Taiwan.

In the Middle East, Qatar is at the forefront of countries adopting trailblazing technology and integrating artificial intelligence in line with Qatar National Vision 2030. The country's priority is to nurture broad AI ecosystems built on public-private partnership models to boost AI joint efforts that can accelerate AI research, establish regulations, cultivate talent, and empower growth and development in all verticals and sectors.

AI is not just a technology but a social phenomenon affecting us all. We have the opportunity and the duty to shape its future in a way that benefits humanity as a whole. Let's not waste it. TR

By Dr. Abdulrahim Al-Hour, Experienced Journalist, Academic and Economic Expert

> AI is not just a technology but a social phenomenon affecting us all

Virtual Reality: The Future of Immersive Experiences

Recent developments in virtual reality (VR) technology have completely changed the way we consume digital material and impacted a variety of sectors in recent years. Virtual reality has captured the attention of people all over the world with its immersive gaming experiences and virtual adventures to far-off locations. Since its debut, this imaginative technology has advanced significantly, with ongoing progressions and innovations pushing the limits of what is achievable in the virtual world.

The concept of "artificial reality" was originally established in the 1960s, when virtual reality technology began to take shape. The development of immersive virtual experiences did not, however, make considerable headway until the latter half of the 20th century. The development of inexpensive head-mounted displays (HMDs) and motion tracking technologies in the 1990s paved the way for the modern VR systems we know today. These developments opened up a world of possibilities for entertainment, education and training by enabling users to physically and visually engage with their virtual surroundings. With improvements in graphics rendering, haptic feedback and motion capture, VR technology has developed over time, making virtual experiences ever more lifelike and compelling.

Today, VR is not just a technology for video games; it has also made inroads into industries like healthcare, architecture and even space exploration, foreseeing a time when such technology will be seamlessly integrated throughout our daily lives. Virtual reality continues to evolve with ongoing advancements in hardware, software and content creation, promising a future where the boundaries between the real and virtual worlds blur even further.

Virtual Reality's Applications in Various Industries

With its unmatched immersive experiences that transport users into virtual worlds, VR has the power to completely alter the entertainment business. VR has already had a big influence on gaming, enabling users to fully immerse themselves in virtual worlds and interact with their surroundings in novel ways. VR has the ability to transform not just gaming but also other types of entertainment, like movies and concerts. With VR, viewers may get a front-row seat to a live event or feel as though they are a part of the plot while watching a movie, which improves the entire viewing experience. Theme parks and virtual theme park experiences may also make use of VR to let tourists explore fantasy worlds and go on exciting adventures. The potential for VR entertainment applications is endless as the technology develops, and they promise to reimagine how we interact with and consume entertainment material.

Virtual reality has the potential to change the entertainment business in many ways, in addition to gaming. One fascinating use of VR is in the field of immersive storytelling, where it can transfix viewers within a tale and let them experience it from a first-person point of view. Here, they may inhabit the role of a character in a film or television program, interacting with the setting and ultimately affecting the conclusion of the plot. The audience might have memorable and very intimate experiences thanks to this degree of involvement. Virtual reality may also improve live performances by providing viewers with virtual front-row seats to plays, concerts and athletic events. This can allow viewers to feel physically present, even if they are thousands of miles away.

Furthermore, VR can provide novel prospects for theme parks and attractions, where guests can explore magical realms, go on adventurous journeys and communicate with virtual characters. Virtual reality has enormous potential and promise for the entertainment industry, with the ability to completely change how we interact with and consume material as well as provide new opportunities for innovation and narrative inventiveness.

Challenges in Immersive VR Experiences

Creating truly immersive experiences in virtual reality comes with its fair share of challenges. One of the primary hurdles is achieving a high level of realism in both visual and audio experiences. The graphics must be of exceptional quality to convince users that they are truly present in a virtual world. Attaining this level of realism requires powerful hardware and advanced rendering techniques that can accurately replicate the complexities of real-world environments. Similarly, audio plays a critical role in such world-building, as it helps create a sense of presence and spatial awareness. The challenge lies in creating convincing and dynamic soundscapes that accurately reflect the user's position and movement within the virtual environment.

Additionally, making interactions in the virtual realm appear effortless and natural is another difficulty. Interactions with items and characters must seem natural and responsive to users. This calls for highly developed tracking and input technologies that can precisely record the user's gestures and motions. Another level of complexity comes through the addition of realistic physics and haptic feedback, which require an exact simulation of how objects behave and react to human interactions.

Moreover, for immersive experiences to be fully successful, occasional occurrences of motion sickness must also be overcome. Some users of VR may experience pain and confusion, especially when moving quickly or when their bodily movements don't match what is happening in the virtual environment. To reduce motion sickness and make sure users have a comfortable experience throughout, protective approaches must be implemented, including minimizing latency, improving frame rates, and introducing smooth locomotion mechanisms.

Last but not least, developing content for VR has its own set of difficulties. Compared to traditional media, designing these immersive experiences calls for a new methodology. The challenge is to create interesting and novel storylines, captivating gaming mechanisms and simple yet compelling user interfaces that expressly convey the enormous powers and possibilities of virtual reality.

Despite these obstacles, the progressive and substantial development of VR technology and the full commitments of developers and content producers are pushing the limits of immersion and bringing us closer to truly transformational and realistic virtual experiences. TR

> The progressive and substantial development of VR technology and the full commitments of developers and content producers are pushing the limits of immersion

How Ecosystem Players Are Shaping the Future of Technology

In today's rapidly evolving technological landscape, the power of collaboration and synergy across various ecosystems is crucial. Different stakeholders, including governments, academia, developers, startups, tech executives and even enterprising youth, play pivotal roles in driving technology advancement and shaping the future of innovation. By leveraging their unique strengths, these ecosystems fuel progress, foster innovation and create fertile ground for breakthroughs. Let's explore the power and contributions of each ecosystem to such advancements in technology:

Governments
Governments play a crucial role in technology advancement by providing a supportive framework through policies, regulations and investments. They establish research and development initiatives, foster public-private partnerships and promote innovation ecosystems. Governments also allocate resources for infrastructure development, broadband connectivity and digital inclusion, ensuring that technology reaches all segments of society. By creating an enabling environment, governments empower other ecosystems to thrive and contribute to technological progress.

As examples of this prioritization and focus, Saudi Arabia's Vision 2030 and the UAE's Vision 2071 showcase the MENA region's resolute commitment to embracing a future powered by technology. These visionary programs reflect a bold determination to elevate regional economies into dynamic and prosperous entities driven by knowledge and efficiency. Already, the MENA region is propelling itself towards the forefront of technological advancements, particularly in the realms of digitalization and sustainability.

In alignment with this trajectory, it becomes imperative to augment investments in R&D and cultivate a robust pipeline of research talent. Governments in the region have already taken proactive measures by championing cloud-based innovation and facilitating digital transformation.

Academia
Academic institutions are at the forefront of essential research, knowledge creation and talent development. They cultivate a culture of intellectual curiosity, critical thinking and experimentation. Through cutting-edge research, academia pushes the boundaries of technology, discovers new concepts and drives innovation. Collaboration between academia and industry facilitates knowledge and technology transfer as well as the commercialization of research findings. Academia also equips future generations with the necessary skills and knowledge to fuel technological advancements moving forward.

Academic institutions are actively engaging with telecommunications companies, showcasing the synergy between the two domains. One notable collaboration is between Benya and Galala University. Their partnership aims to foster the exchange of knowledge and expertise, capitalizing on their combined resources. Galala students will also benefit from valuable opportunities, such as summer internships and scholarships, while Benya will gain access to the university's periodic scientific research outcomes.

Additionally, Huawei takes pride in its collaboration with King Faisal University as part of its continuous efforts to support universities in Saudi Arabia and nurture ICT talent that meets the industry's demands. Similarly, Zain KSA has signed a memorandum of understanding (MoU) with the University of Tabuk to foster collaboration and share deeper expertise. This collaboration aims to promote education and empower youth in the field of ICT.

Developers
Developers, comprising software engineers, coders and programmers, are the driving force behind technological implementation. They leverage their expertise to create software applications, algorithms and systems that power innovation. Developers contribute to technology advancement through open-source projects, collaborative platforms and hackathons. Their contributions enable rapid prototyping, iterative development and the democratization of technology. The vibrant developer community fuels innovation and serves as a catalyst for disruptive ideas.

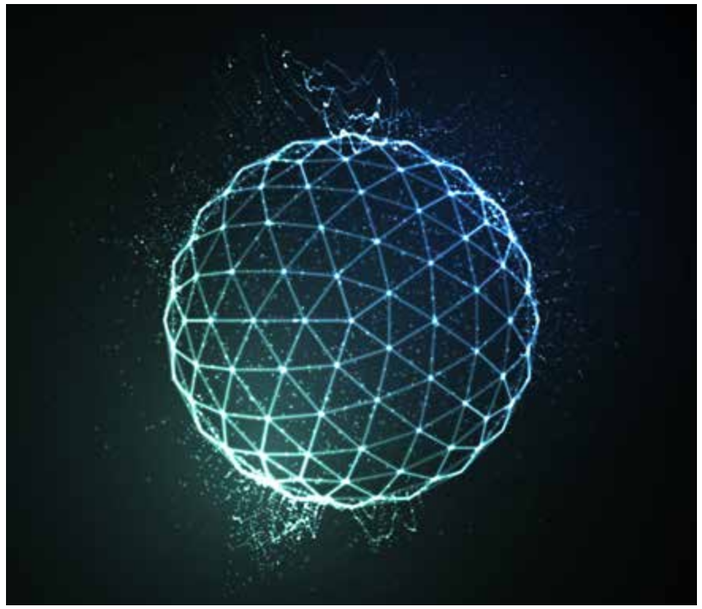
e& made a significant announcement earlier this year, revealing its strategic partnership with Code.org, a global non-profit organization dedicated to training students to code and enhancing their computational thinking. This collaboration aims to join the international movement in raising awareness and encouraging the teaching of computer science among the upcoming generation of students and academics in the UAE, as well as e&'s operating markets across the Middle East, Asia and Africa.

Startups
Startups bring an entrepreneurial spirit and agility to the technology landscape. They often tackle emerging challenges and disrupt traditional industries with innovative solutions. Startups thrive on risk-taking, experimentation and the ability to pivot quickly. By leveraging emerging technologies and novel business models, startups drive market innovation, create jobs and attract investments. Many successful startups scale up to become industry leaders, further propelling technology advancement.

By leveraging their unique strengths, these ecosystems fuel progress, foster innovation and create fertile ground for breakthroughs

Research indicates that the tech startup ecosystem in the MENA region is experiencing remarkable growth, as evidenced by the substantial influx of funding. In 2022 alone, startups secured an unprecedented $3.94 billion in investments, with notable concentrations of deals occurring in the UAE, Saudi Arabia and Egypt. Leading this surge are three sovereign wealth funds, namely Mubadala and ADQ in the UAE, along with the Public Investment Fund (PIF) in Saudi Arabia.

Furthermore, the Dubai Future District Fund has made significant contributions to the tech startup landscape by expanding its portfolio to encompass 16 startups and an investment fund. This initiative has played a pivotal role in propelling Dubai's status as a global hub for innovation, future technologies and digital applications, cementing its position as a prominent test bed on the international stage.



Tech Executives

Tech executives, including industry leaders, entrepreneurs and visionaries, shape the strategic direction of technology advancement. Their expertise in market dynamics, industry trends and technological landscapes guides decision-making and resource allocation.

Tech executives drive corporate innovation by investing in research and development, fostering partnerships and driving technological adoption within their organizations. Through thought leadership, they inspire the industry and influence the trajectory of technology advancement.

Youth

Today's youth, as digital natives, possess an innate affinity for technology. They bring fresh perspectives, creativity and an adaptive mindset to the tech-focused world. Engaging and empowering the youth in technology-related initiatives, such as coding camps, robotics competitions and innovation challenges, fosters a culture of innovation from an early age. Young minds often think unconventionally and challenge existing paradigms, leading to breakthroughs and disruptive innovations.

The primary objective of the UAE Hackathon is to optimize the competencies of young individuals and refine the skills of the winners through seamless integration with innovation centers, business accelerators and technology incubators. By nurturing and empowering talented individuals, the UAE Hackathon fosters a culture of entrepreneurship and innovation. This not only drives economic growth and technological advancements in the region; it also builds the technology leaders of tomorrow.

Conclusion

The power of different ecosystems lies in their collective contributions to technology advancement. Collaboration and synergy among these stakeholders foster innovation, drive research and development, enable entrepreneurial ventures and empower the next generation of technologists. By leveraging their unique strengths, these ecosystems fuel progress, shape the future of technology and create a positive impact on society as a whole. The collective power of these ecosystems is instrumental in pushing the boundaries of what is possible and driving transformative technological advancements. TR

> The collective power of these ecosystems is instrumental in pushing the boundaries of what is possible and driving transformative technological advancements

TRA: Ooredoo Oman, Omantel Record High 5G Data Speeds in Dhofar

Oman's Telecommunications Regulatory Authority (TRA) recently issued a report on the quality of telecommunication services at tourist sites in the Dhofar Governorate.

The surveys are carried out by the governing body with the use of specialized measuring instruments and approved approaches that replicate the user's experience. The goal is to increase awareness and promote competition within the sector.

Conducted between July 31 and August 3, 2023, the latest report includes measurements within Attin Square, Ain Hamran, Dahariz Beach, Al-Haffa Market, Al-Mughsail, Wadi Darbat, Al-Haffa Walk and Sha'at.

For Ooredoo Oman, the highest data download speed for 5G data service peaked at 505 Mbps, with an average of 311 Mbps, while in Wadi Darbat, it reached the maximum of 1303 Mbps, with an average of 421 Mbps.

For Omantel, the highest download speed for 5G data service in Sahel Atin was recorded at 263 Mbps, with an average of 95 Mbps, while in Wadi Darbat, it was achieved at 164 Mbps, with an average of 49 Mbps.

The most important telecom service indicators are measured, including coverage level, data download speed and percentage of successful calls.

Bahrain Leads Among GCC Countries in Offering Affordable Fiber Broadband Services

The latest Arab Price Benchmarking Report confirms Bahrain's position as one of the Arab region's most competitive telecommunications markets. The report highlights the country's telecom services as being among the most competitively priced in both Gulf Cooperation Council (GCC) countries and the wider Arab world.

The report highlights notable reductions in residential fixed broadband prices (18.6%) and in mobile broadband (16%) between 2021 and 2022, attributed to the TRA's efforts in promoting competition within the broadband market. As a result, Bahrain ranks among the top 20 countries worldwide in fiber penetration, according to the 2023 Fiber to the Home (FTTH) Broadband Global Ranking, published by FTTH Council Europe.

Also, mobile prices in Bahrain are the most affordable in the GCC, with a decrease of up to 58.5% between 2021 and 2022. This significant drop can be attributed to the introduction of new mobile packages offering lower prices and enhanced benefits.

The report also highlights that Bahrain's leased line prices are among the cheapest in the GCC, below the Arab average, and on par with the Organization for Economic Cooperation and Development (OECD) average.

Bahrain's telecommunications industry is rapidly growing, with a 7.6% growth in fiber broadband subscriptions and a 7% increase in fixed broadband data usage between 2021 and 2022. The Kingdom's commitment to providing high-speed internet services is evidenced by the fact that 86% of all residential premises are now able to buy fiber broadband. As of June 2023, 68% of households have active fiber connections, and 42% of households have wireless home broadband (5G), which means that all households in Bahrain have access to ultra-fast broadband services. The latest residential survey highlights that 100% of people in Bahrain utilize internet services, and 100% of households have access to ultra-fast internet services.

TRA's General Director, Philip Marnick, affirms: "A competitive market ensures that consumers and businesses obtain their desired services at reasonable prices. It is good to see the recognition of our leading position and competitive prices in the latest Arab benchmark report. Consumers in Bahrain benefit from some of the lowest prices for the essential services required to engage in the digital society. Everyone in Bahrain is using the internet, and all of us can access ultra-fast broadband services. We are pleased to see the collective efforts made by industry players and the TRA, as evidenced by our ranking among the top 20 countries globally for both fiber rollout and fiber service adoption. Moreover, the TRA acknowledges the need for further action to ensure Bahrain becomes one of the world's best-connected destinations, where all consumers can purchase the services they require at competitive prices."

UAE Ranks Highest in Arab Region in UN's Frontier Technologies Readiness Index

In a significant achievement, the United Arab Emirates (UAE) has claimed the top spot in the Arab region in the Frontier Technologies Readiness Index, as reported in the latest Technology and Innovation Report issued by the United Nations Conference on Trade and Development (UNCTAD). His Excellency, Engineer Majed Sultan Al Mesmar, has expressed his pride in this remarkable accomplishment, highlighting the UAE's leading and pioneering position on the global stage.

The Frontier Technologies Readiness Index, a key component of UNCTAD's Technology and Innovation Report, assesses countries' readiness to embrace and harness frontier technologies, such as artificial intelligence, blockchain, and renewable energy, among others. The index considers factors like technological infrastructure, innovation capacity, and policy frameworks.

Engineer Majed Sultan Al Mesmar, in his statement, underscored the significance of this achievement, stating that it reflects the UAE's commitment to innovation and technology-driven progress. He praised the relentless efforts of the nation in fostering an environment conducive to technological advancements, research and development.

The UAE's top ranking in the Arab region underscores its dedication to becoming a global technology hub, attracting talent and investments from around the world. This accomplishment solidifies the nation's position as a leader in the adoption and utilization of frontier technologies for economic growth and sustainable development.

Digital Dubai's DESC Targets Private Sector Cybersecurity

Launched as a collaboration between DESC and CREST, the Cyber Force Program is designed to regulate government, semi-government and critical information infrastructure (CII) entities' engagement with cybersecurity service providers.

During the workshop, the criteria DESC identified to ensure the quality of cyber service provision in the Emirate were introduced. In order to secure approval from DESC, service providers need to possess the essential skills and qualifications mandated and adhere to the legal regulations of Dubai. Gaining endorsement from the Dubai Electronic Security Center enhances the credibility and trustworthiness of these service providers.

His Excellency Yousuf Al Shaibani, CEO of the Dubai Electronic Security Center, said: "The Dubai Electronic Security Center is committed to supporting the Dubai Government in its ambitious plans to establish the Emirate as a world leader in innovation, digital transformation, and cybersecurity. We strive to play our part in positioning Dubai as one of the safest cities in cyberspace as the Emirate moves forward with its plans to digitalize every aspect of life for its citizens, residents and visitors."

"Dubai Electronic Security Center's collaboration with CREST to introduce the Cyber Force Program — and our role in setting criteria for companies looking to engage with Dubai Government entities — was a notable milestone in implementing the Dubai Cyber Security Strategy, where international collaboration is outlined as a key guiding principle," Al Shaibani added.

The Cyber Force Program emphasizes three primary aspects: skills and competence, methodology and reporting. Individuals and businesses offering services within the program should maintain DESC-approved qualifications and execute services using approaches and techniques acknowledged by DESC. Lastly, it enforces meticulous reporting standards, demanding that reports and recommendations align with established benchmarks.

Cisco Appoints New EMEA President

Oliver Tuszik has been announced as the next president of Cisco Europe, Middle East and Africa (EMEA). With over 10 years of experience at Cisco, Tuszik most recently held the position of senior vice president of the Cisco Global Partner Sales and Routes to Market business, where he supported Cisco's expansive global ecosystem of partners and advocated for customer needs.

Prior to this appointment, Tuszik had over 25 years of leadership experience across Europe for Cisco, including as CEO of Computacenter in Germany and in various other IT companies. For Tuszik, this represents a homecoming, as he successfully led Cisco Germany between 2013 and 2018.

Tuszik's appointment comes as Cisco accelerates efforts to securely connect technology, people, governments and businesses across the world. As IT and ecological priorities become more prevalent, all industries have had to reconsider business models and supply chains to become more agile, resilient and sustainable. In his new role, Tuszik will be enabling this through Cisco's ecosystem, partners and customers to advance significant digitization and innovation across EMEA.

"I have had the privilege to work with the largest organizations and brightest minds around the globe, and by far, EMEA has the biggest untapped opportunity on the world stage. The power, innovation capability and talent diversity of the countries is unmatched," said Tuszik. "Technology is the most critical component to accelerate digitisation and enable industry transformation for the region. From secure and sustainable infrastructure to transformative technologies in AI to empowering the future of work, Cisco is literally at the heart of making it possible."

"Oliver has had an incredible impact in his ten years at Cisco. He has repeatedly proven to be one of the most inspirational leaders at the company and is one of the strongest advocates for our customers and partners that I have come across. I can't wait to see what our amazing team in the region will accomplish under his leadership," said Jeff Sharritts, EVP and chief customer and partner officer, to whom Tuszik will report.

USB Type-C to Become Saudi Arabia's Standard Charging Port in 2025

Saudi Arabia is embarking on a transformative path towards enhancing the compatibility and efficiency of charging solutions for mobile phones and electronic devices nationwide, beginning in 2025.

The phased implementation strategy charts a comprehensive two-way course to ensure a seamless transition. From January 1, 2025, this changeover will impact all manner of devices, from smartphones, tablets and digital cameras to e-readers, portable gaming consoles and headphones, to name just a few. In addition, this inaugural phase will include essential companion devices such as portable navigation systems, speakers and wireless routers.

And finally, by April 1, 2026, this standardization mandate will extend to the charging ports of laptops as well.

The forthcoming transition, orchestrated collaboratively by the Saudi Standards, Metrology and Quality Organization and the Communications, Space and Technology Commission, heralds a new era of streamlined connectivity.

The universally acclaimed and utilized USB Type-C connector has emerged as the singular standardized global connectivity portal and is poised to replace a multitude of charging interfaces slowly being phased out in its favor.

The initiative notably seeks a tangible reduction of electronic waste, particularly the annual disposal of chargers and cables for mobile devices, currently totaling over 2.2 million units. This reduction will lead to a significant alleviation of environmental burdens and translate to an aggregate savings of more than SR 170 million for consumers within the Kingdom.

Over time, companies and suppliers will adjust their product lines to dutifully reflect the new standards and regulations.

Cybersecurity and Cloud Computing: Overcoming Risks to Usher In a Revolution

Cybersecurity and cloud computing are revolutionizing how businesses run, store and safeguard their data and systems. However, they also present unique difficulties as well as relevant opportunities for risk management.

Advantages of Cloud Computing

Scalability, flexibility, cost-effectiveness and innovation are just a few advantages that cloud computing has for risk management. The customer can access and control its data and systems utilizing cloud services from any location, at any time and on any device. Without spending money on pricey hardware or software, the user can also modify resources and capacity to meet their needs and desires. To enhance risk identification, assessment and mitigation, cloud computing also enables the customer to make use of the newest technologies and solutions from cloud providers, such as analytics, machine learning and artificial intelligence.

Risks in the Cloud

There are some risks associated with cloud computing that anyone involved in this technology should be aware of and prepare for.

Some of the more frequent examples include data breaches, data loss, service interruptions, vendor lock-in, compliance problems and legal liability.

These dangers may be brought on by nefarious activities, careless actions, technical malfunctions, business disputes or legislative changes.

In each of these cases, the user has to make sure that the cloud strategy, governance and security structure are clear and thorough to reduce these risks.

Additionally, it's important to pick cloud service providers wisely and routinely check and audit their compliance and performance.

Some common risks in the cloud are:

1. Cloud Misconfiguration: Protect against buying a cloud app or virtual environment that does not come fully secured and specific to your business.
2. Access Controls: Be sure all cloud administrators know their roles and have a mindset of security.
3. Backups: Because cyberattackers will go after your cloud backups before announcing themselves, always have cold, off-site backups.

> Cybersecurity is a must to protect data and systems from cyber threats in the present day

Cybersecurity's Benefits and Risks

Cybersecurity is a must to protect data and systems from cyber threats in the present day. These attacks could come as malware, ransomware, hackers, and phishing or denial-of-service attacks.

In addition to protecting against such perils, cybersecurity may improve the company's reputation and strengthen the trust of its customers, partners and regulators by reducing the likelihood and/or effect of cyber events. Additionally, by allowing the customer to provide more dependable and secure goods and services and by adhering to the necessary standards and laws, cybersecurity can give the customer a competitive edge.

However, cybersecurity also involves some risks that need to be considered and managed. Over-reliance, under-investment, skill gaps, complexity and flexibility are a few of the frequent hazards associated with cybersecurity. These risks may result from over-reliance on technology, under-investment in security precautions, a lack of skilled and experienced staffing, poor overall threat management and a failure to adapt to the environment's and customers' changing expectations. The customer must adopt a comprehensive and proactive strategy for cybersecurity that considers people, processes and technology in order to handle these risks. He must fully invest in cybersecurity capability upgrades, testing, training and awareness.

Cloud Computing and Cybersecurity to the Rescue!

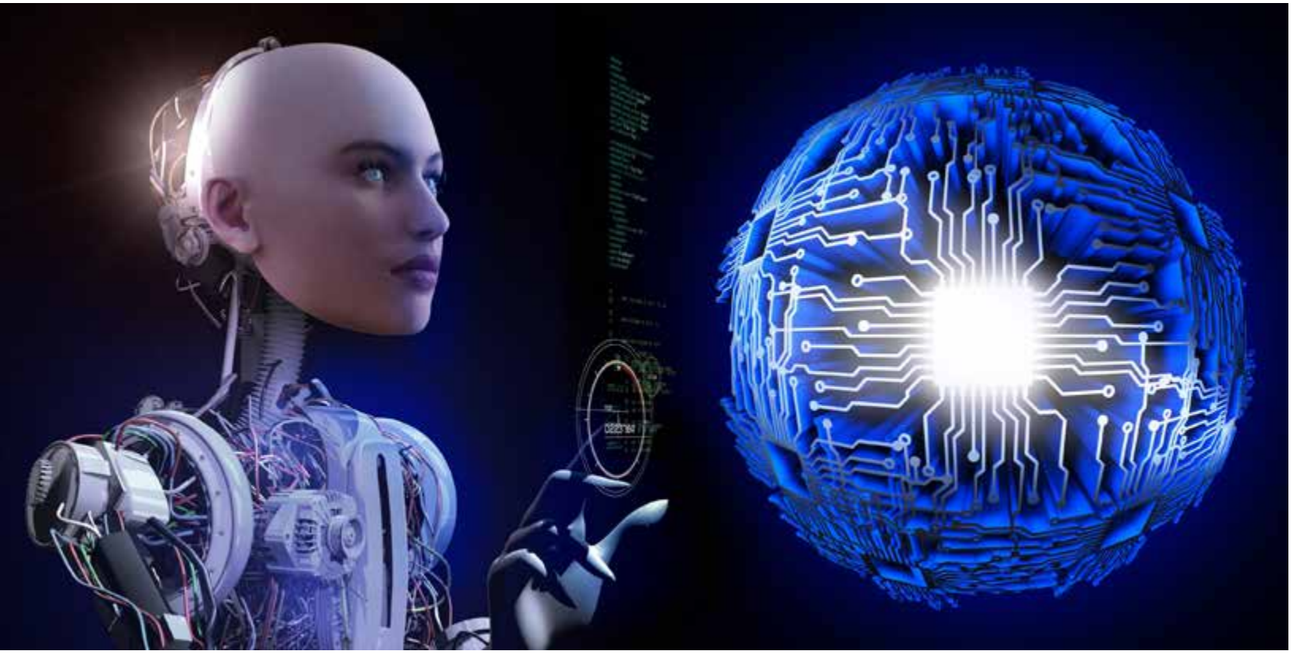
Despite the dangers, cloud computing and cybersecurity also present a wide range of risk management options that can help a company develop and add value. Utilizing cloud-based solutions to gather, analyze and visualize data from diverse sources helps improve risk intelligence and analytics. Cloud-based applications can be used to share data and feedback, improving risk communication and collaboration. Utilizing cloud-based technology and models allows for the creation of novel risk solutions and proactive services. To provide greater value and convenience, consumers can interact with new collaborators and partners via cloud-based systems.

Security Results From Best Practices in the Cloud

It is crucial to align security strategies with business objectives and risk appetite to assess risks and opportunities, implement controls and measures, monitor performance and compliance, and learn from experiences. Such planning will help maximize the benefits and reduce the risks of cloud computing and cybersecurity for risk management.

It's crucial to rank potential risks in order of importance and impact. Such risk management procedures can be improved by swiftly and openly reporting any problems or incidents. Indeed, a regular review of these tools and tactics can guarantee their applicability and efficacy moving forward and maximize the overall impact of a company's cybersecurity and cloud computing endeavors. TR

> Cloud computing and cybersecurity also present a wide range of risk management options that can help a company develop and add value



Assessing the Power and Risks of Artificial Intelligence

One of the most pressing questions of our day is how well humans fit in a sophisticated, ever-expanding digital world that not only broadens the scope of human capabilities but also has the potential to compete with or perhaps even replace them. Over the past 50 years, robots and computers have gradually displaced humans in higher cognitive tasks that were formerly the domain of the human brain, such as language, mathematics, probabilistic reasoning and decision-making. Initially, only in relatively simple computational and manipulation tasks has this progress been made. A crucial question is how to enhance the productive interactions between humans and artificial intelligence (AI). Many scientists and philosophers believe that when these interactions increase in complexity, the results may be beyond our comprehension and lead to drastic changes in our society as well as our personal lives in the near future.

Addressing the Risks Posed by Artificial Intelligence

Leaders who wish to change their perspective from retrospect to foresight must better understand the sorts of risks they are taking on, their interdependencies and their root causes. With this in mind, what follows are five pain points that may lead to AI perils and hazards. The first three — data issues, technological issues and security issues — are connected to what may be referred to as "AI enablers."

Data Problems

The quantity of unstructured data being ingested from sources including the web, social media, mobile devices, sensors and the Internet of Things has expanded, making it harder to ingest, sort, connect and use data effectively. As a result, it's easy to make mistakes like accidentally utilizing or disclosing private data that was anonymized. For instance, a patient's name may be removed from a portion of a medical record utilized by an AI system, but it might still appear in the piece of the record that contains the doctor's notes.

Technological Problems

The performance of AI systems may suffer from challenges with technology and operational procedures across all working environments. One noted financial institution, for instance, encountered difficulties when its compliance software failed to identify trading concerns since the data feeds no longer contained all customer activities.

Security Problems

The possibility for fraudsters to use seemingly innocuous marketing, health and financial data that businesses collect to power AI systems is a new problem. If security measures are insufficient, these threads may be woven together to construct fraudulent identities. Even though the targeted firms are unsuspecting collaborators and may otherwise be very good at protecting personally identifiable information, they nonetheless risk customer backlash and regulatory consequences.

Moreover, when harmful data or code infiltrates an AI system, "model poisoning" can occur. This kind of assault has the potential to damage the system and lead it to deliver harmful or inaccurate results.

Because they are open-source, some AI systems, like ChatGPT and comparable chatbots, are more susceptible to model poisoning, assaults and resultant data breaches.

Human Extinction by Artificial Intelligence

These concerns are not new. Warnings about AI are almost as old as the invention of the technology itself and have been a major theme in science fiction for most of the last century.

With the emergence of a new phase of extremely intelligent AI chatbots like ChatGPT, concerns about artificial intelligence systems outsmarting people have increased. Countries all around the world are rushing to create legislation for the emerging technology; indeed, the European Union is setting the standard with

> The performance of AI systems may suffer from challenges with technology and operational procedures across all working environments

> Establishing ethical norms and rules for the development and usage of AI is crucial to ensuring that technology is utilized responsibly and for the benefit of society

its AI Act, which is anticipated to be passed later this year.

And if the common citizen is worried about impending AI extinction, what can they do to help? Studying the situation and understanding the dangers are the first steps. The next stage would be to increase awareness among people in positions of authority, such as government officials.

Balancing Innovation and Responsibility: The Need for Regulation in the Age of AI

There is rising concern about the need for AI regulation as AI technology develops and permeates more aspects of our everyday lives. Numerous moral and cultural problems, such as those involving privacy, prejudice and responsibility, are fueled by the development of artificial intelligence. As a precaution, several nations and organizations throughout the world are starting to investigate and put into place policies that are targeted at reducing these hazards. These rules may be in the form of more official laws and regulations, guidelines or best practices. The General Data Protection Regulation (GDPR), which establishes standards for data privacy and protection, and the Algorithmic Accountability Act, which promotes accountability and transparency in algorithmic decision-making, are two examples of regulatory initiatives. Regulatory measures to encourage the ethical and responsible use of this technology are expected to increase as the research and use of AI continue to grow.

The complexity of AI makes these difficulties much worse. The possible threats that AI systems could bring to our society are not, as of yet, well understood. Three different levels of AI system opacity have been defined: those that are intentionally kept opaque because organizations or governments seek to protect their trade secrets; those that come from a lack of technical literacy because they are too complex for the average person to understand; and those that result from the intricate features of machine learning systems — in other words, those that even programmers find difficult to understand.

The Evolution of Artificial Intelligence

AI's future holds both promise and uncertainty. On the one hand, artificial intelligence technology has the power to transform a wide range of facets of our daily lives, including healthcare, transportation and education. On the other hand, as AI develops and becomes more effective, there is an increasing need to restrict its possible harmful effects. If AI is not controlled, it may lead to the creation of autonomous weaponry and biased decision-making systems, to name just a few of the harmful potentials.

Establishing ethical norms and rules for the development and usage of AI is crucial to ensuring that technology is utilized responsibly and for the benefit of society. In order to achieve this, it may be necessary to restrict specific uses of AI, demand human supervision for crucial choices made by AI systems and encourage openness and responsibility in AI development. By implementing these measures, we can harness the power of AI while reducing any possible hazards and making sure that it is beneficial to society as a whole. TR

5G-Driven Traffic Now Dominates du's Mobile Network

du, from Emirates Integrated Telecommunication Company (EITC), reached a new milestone in the advancement of its 5G technology. With more than half of its mobile network traffic now driven by 5G usage, du is setting the pace in unlocking the vast potential of this cutting-edge connectivity while providing a premium and unique experience to its customers.

This rise in 5G-driven traffic not only contributes to faster and more dependable connectivity but also opens a world of possibilities for du customers who wholeheartedly embrace and trust the capabilities of the telco's 5G. Its advanced features and use cases enable seamless access to benefits such as advanced streaming, immersive gaming and enhanced virtual reality experiences.

du CTO Saleem AlBlooshi said: "At du, we have invested and lead in the 5G technology space since [its] launch in 2019. Our customers trust our state-of-the-art 5G technology and have embraced it to enjoy the best mobile experience, including superior speed, latency, and consistent speeds during peak hours on our 5G network. This trust has now manifested itself in 5G traffic becoming the most dominant traffic in our mobile network. 5G traffic has exceeded 51% of the overall mobile traffic, representing a major milestone by carrying traffic that is more than the 4G and 3G traffic combined. We also take this opportunity to encourage more of our customers to embrace superior 5G technologies by upgrading their handsets via our suite of new, available smartphones that support 5G."

For du, 5G technology is a journey that it will steadfastly invest in and upgrade to, including next-generation technologies like 5G-Advanced, where the digital-first telco will continue to provide its customers with the best-in-class mobile broadband experience.

Salam Collaborates With Oracle to Drive 5G Innovation Across Middle East

Recently recognized as Saudi Arabia's fastest-growing and most innovative telecom brand, Salam — part of the Mawarid Media & Communications Group (MMCG) and Mawarid Holding Company — will begin utilizing Oracle Communications' monetization and unified operations solutions to help quickly deliver differentiated services to its consumer and enterprise customers.

"Salam aims to provide customer-centric offers that help create a digital society in line with the Kingdom's Vision 2030 digital transformation plans," said Ahmed Al-Anqari, CEO, Salam. "With Oracle, we have a future-ready digital strategy to accelerate our time to market for 5G and other digital services. With a modular pre-integrated stack, we avoid the costly and time-consuming process of complex integrations and high level of customizations. This means we can launch, orchestrate, and monetize new offerings as the market demands while delivering an excellent experience for our customers in the process."

Founded in 2005, Salam has quickly become a leading locally grown telecom company at the heart of the Kingdom's communications modernization efforts. Oracle's technologies will provide the modern technology architecture to help support and extend Salam's digital abilities and expedite the launch of wide-ranging services.

Clearly Aligned Technology Strategy and Business Vision

By implementing Oracle Cloud Scale Monetization and Oracle Unified Operations solutions — together with Oracle CRM Sales — Salam will replace its legacy systems with a modern, end-to-end stack. These solutions will enable Salam to offer unique promotion bundles across various customer segments. And through automated orchestration, Salam will be able to accelerate time to revenue for existing and new digital services, such as 5G-enabled streaming, AR/VR gaming and IoT-connected devices.

Salam chose Oracle based on its in-depth industry knowledge, its extensive portfolio of communications applications and its proven success with complex telecom transformation projects.

"As Salam continues on its impressive transformation journey, it's critical to have powerful, next-generation applications that enable business efficiency and empower growth opportunities," stated Jason Rutherford, senior vice president and general manager, Oracle Communications, Applications. "Salam has built its company reputation around innovation, elevating traditional telco offerings with a unique, experience-led presence in the market. We're honored to be the trusted technology partner in enabling their vision to create a more digital society in the Kingdom."

Zain KSA Partners for World's First Zero-Carbon 5G Network

Zain KSA, a leader in telecom and digital services, has joined forces with Red Sea Global (RSG), the visionary developer responsible for pioneering regenerative tourism havens like the Red Sea and Amaala. This strategic collaboration heralds the unveiling of the world's inaugural zero-carbon 5G network, poised for its debut at the Six Senses Southern Dunes resort, a pivotal jewel within RSG's flagship locale, the Red Sea.

This cutting-edge, zero-carbon 5G network, thoughtfully tailored for the Red Sea, stands as the resort's latest technological marvel. Conceived with a dual commitment to both humanity and the environment, this innovative 5G network is primed to provide guests with unparalleled 5G connectivity speeds within the region. Notably, it will derive all its power from renewable sources, drawing energy from an expansive array of over 760,000 solar panels meticulously erected by Red Sea Global to energize the vast expanse of the Red Sea destination.

Sultan Bin Abdulaziz Al Deghaither, executive officer engineer at Zain KSA Chief, said: "As a leading provider of telecommunications and digital services, we are immensely proud of this achievement that will certainly pave our way to becoming a pioneering sustainable technology provider. By collaborating with "Red Sea Global", one of the world's most visionary developers of sustainable development, we reaffirm our commitment to a shared vision that balances achieving human prosperity with the preservation of nature and its sustainability for future generations, as outlined by Saudi Vision 2030."

Announcing the Zain partnership, John Pagano, group CEO, noted: "We aspire to be global pioneers of regenerative tourism development, adopting 100% renewable energy at our flagship destination, the Red Sea, and working towards the achievement of a 30% net conservation benefit by 2040. These ambitious goals demand ambitious partners, and our collaboration with Zain KSA transcends telecommunications, extending into sustainability and environmental protection."

He added, "Zain KSA has demonstrated a deep understanding of our requirements and provided us with the services and solutions necessary to achieve our strategic objectives. Together, we are determined to make a meaningful impact that sets new standards in sustainable development."

Utilizing cutting-edge 3D printing innovation, the project aims to accomplish three key objectives: conservation of the ecosystem, curbing emissions through the use of sustainable energy, and addressing visual discrepancies. The structures have been meticulously constructed to seamlessly merge with the distinctive and dynamic environment of the Red Sea.

Telecom Egypt Shows Notable Gains in Consolidated Revenue and Customer Trust

Telecom Egypt, a prominent player in the telecommunications industry, has announced its operational achievements for the financial period concluding on June 30, 2023. The results were presented in accordance with Egyptian accounting standards, as reflected in the consolidated financial statements.

In this successful H1 2023 period, Telecom Egypt saw an impressive 38% increase in consolidated revenues, reaching a remarkable EGP 28.1 billion. This substantial growth was primarily attributed to a notable 75% surge in revenues from wholesale business units, a pivotal contributor accounting for 71% of the overall revenue rise. The performance of retail business units further supplemented this positive trajectory.

Customer trust and base expansion were evident as Telecom Egypt showcased appreciable growth in its clientele across all services compared to the same period last year. Fixed telephone subscribers increased by 5%, while fixed high-speed internet customers saw an 8% rise. Mobile service subscribers reached an impressive 12.6 million, signifying a noteworthy 7% growth year-on-year (YoY).

Financially, Telecom Egypt showed strength with a 48% surge in profit before interest, taxes, depreciation and amortization, amassing EGP 12 billion. This achievement translated to a robust profit margin of 43%, bolstered by an upswing in revenues from high-margin services.

Operating profit showcased exceptional performance, escalating by 54% after excluding certain non-operational elements. This growth was instrumental in counterbalancing the impact of a 38% increase in depreciation and amortization costs.

Notably, net profit after taxes surged to EGP 6.7 billion, further reaching EGP 7 billion after neutralizing the influence of specific extraordinary items. This remarkable 67% YoY growth was underpinned by robust operational performance, increased investment income and effective management of higher financing costs.

stc Kuwait Sees Success in Mobile VPN Testing

The Kuwait Telecommunications Company, known as stc, has proven to be an outstanding digital pioneer, providing innovative services and platforms to its customers, driving Kuwait's digital transformation forward. The company has now proudly announced the successful completion of a pilot test for its groundbreaking Mobile VPN technology. This accomplishment firmly establishes stc as the first telecommunications operator in Kuwait to achieve this remarkable feat. The expert implementation of Mobile VPN highlights stc's technical prowess and unwavering dedication to delivering dependable and secure mobile communication solutions. This pioneering technology empowers mobile users by granting them smooth and secure connectivity to both public and private networks.

The inventive solution put to the test by stc tackles the difficulties that emerge from inadequate cooperation between public and private networks and less-than-optimal intelligent transformation. This solution empowers organizations to securely access government and campus private networks from any location and at any time. Through Mobile VPN, users can effortlessly establish connections to both public and private networks, eliminating the need to switch cards or numbers. This fosters improved collaboration, elevated security and uninterrupted connectivity. This achievement is a notable stride into this era of digital transformation and efficiency, further cementing stc's role as a front-runner in the telecom and digital solutions sector.

The pilot trial demonstrates stc's steadfast commitment to broadening its range of services and upholding its competitive and pioneering stance in the telecommunications sector. By becoming the first telecom operator in Kuwait to accomplish this landmark achievement, stc has reinforced its role as a frontrunner in providing transformative solutions to both businesses and individuals.

Vodafone Qatar's Network Performance Excels in 2022 QoS Audit by CRA

Vodafone Qatar's network performance has garnered recognition in the recently released 2022 Quality of Service (QoS) Audit of Mobile Networks. This comprehensive evaluation, undertaken by the Communications Regulatory Authority (CRA) of Qatar from June to October 2022, highlights Vodafone Qatar's commitment to providing top-tier connectivity.

The CRA's annual QoS audit encompasses a range of metrics, including call setup success rate, call drop rate and data service performance, among others. Vodafone Qatar's outstanding results in the audit reflect its unwavering dedication to delivering exceptional connectivity solutions to both consumer and business segments throughout the nation.

The audit report indicates significant progress, notably in data download speeds, which soared to 823.2 Mbps from 580.7 Mbps in the previous year. Moreover, the voice quality index for calls experienced an elevation to 3.96 points from the preceding year's 3.88 points. The percentage of unsuccessful calls experienced a substantial reduction from 1.06% in 2021 to a mere 0.18% last year, with an impressive 99.6% success rate for calls during the audit period.

Sheikh Hamad Abdulla Jassim Al Thani, chief executive officer at Vodafone Qatar, said: "We are delighted to receive such positive results in the 2022 Quality of Service Audit from the CRA. This achievement underscores our continuous efforts to provide the people of Qatar with world-class connectivity solutions and unmatched user experiences. Vodafone Qatar's investment in cutting-edge technology and infrastructure, coupled with our relentless focus on customer satisfaction, has enabled us to maintain our position as a preferred telecommunications partner in the nation."

Ramy Boctor, chief technology officer at Vodafone Qatar, stated: "Our results reflect how Vodafone has successfully harnessed emerging technologies to deliver unparalleled connectivity experiences. Our consistent investment in technologies such as fiber connectivity and 5G in recent years has enabled us to achieve remarkable improvements in data speeds, voice quality and network reliability. These all come as part of our commitment to pushing the boundaries of innovation in order to provide our customers with the most advanced and seamless connectivity solutions available."

In the current year, Vodafone Qatar has achieved a remarkable feat by achieving internet speeds of 100 Gbps on its fiber network, setting a new standard in the process. Notably, Vodafone Qatar has become the first telecommunications service provider in the Middle East to exclusively offer "Gigabit only" speeds for residential connectivity. This accomplishment has established a fresh yardstick within the region and solidified Vodafone Qatar's unwavering commitment to furnishing cutting-edge technology and top-tier services to its valued clientele.

The Ethics of Technology: Balancing Innovation and Responsibility

In today's rapidly evolving technological landscape, the Ethics of Technology have become an increasingly pressing and complex issue. As innovation continues to push boundaries and transform various aspects of our lives, it is crucial to strike a delicate balance between progress and responsibility. The Ethics of Technology delves into the moral and ethical implications that arise from the development, deployment and use of technology in society.

Advancements in fields such as artificial intelligence, robotics, biotechnology and data analytics have the potential to revolutionize industries, improve efficiency and enhance our quality of life. However, alongside these benefits, ethical considerations also emerge. Questions arise regarding privacy, security, fairness, accountability and the impact of technology on individuals, communities and the environment.

This delicate balance between innovation and responsibility necessitates a thoughtful examination of the ethical dimensions of technology. It involves critically assessing the potential risks and unintended consequences associated with emerging technologies, as well as establishing guidelines and frameworks to ensure their ethical use.

The Ethics of Technology explores topics such as algorithmic bias, data privacy, autonomous systems, genetic engineering, social media influence and the ethical implications of Big Data. It encompasses interdisciplinary perspectives from philosophy, sociology, law, psychology and various other disciplines to address the multifaceted nature of ethical challenges in the technological realm.

Ultimately, navigating the ethics of technology requires collaborative efforts from policymakers, industry leaders, academics and society as a whole. By engaging in open dialogues, setting ethical standards and promoting responsible innovation, we can strive to harness the transformative power of technology while upholding ethical principles and safeguarding the well-being of individuals and the greater society.

The Breakdown: Ethical, Fair and Beneficial Innovation in Detail

By considering the below points, we can strive to strike a balance between technological innovation and the responsibility to ensure that technology is used in an ethical, fair and beneficial manner for society as a whole:

- **Ethical considerations:** With technological advancements, it's crucial to prioritize ethical considerations in the development and deployment of technology. This involves ensuring privacy protection, data security and transparency in how technology operates. Ethical frameworks and guidelines can be established to guide the decision-making process.
- **Inclusive and fair access**: Technology should be designed and implemented in a way that promotes inclusivity and equal access for all members of society. Efforts should be made to bridge the digital divide and minimize any potential biases or discrimination that may arise from the use of technology.
- **Responsible AI development:** Artificial Intelligence (AI) technologies should be developed and deployed responsibly. This includes addressing issues related to bias, accountability and transparency in AI algorithms. Regular audits and assessments can help identify and mitigate any unintended consequences or harmful impacts.
- **Collaboration with stakeholders:** Collaboration between technology developers, policymakers and various stakeholders is vital to ensuring responsible and ethical use of technology. Engaging in open dialogue and soliciting feedback from diverse perspectives can help identify potential risks and address societal concerns.
- **Regulation and governance:** Governments and regulatory bodies play a crucial role in establishing policies, standards and regulations to govern the use of technology. Striking a balance between innovation and responsible use requires a collaborative effort between industry and regulatory bodies to ensure compliance and accountability.
- **Continuous monitoring and evaluation:** Regular monitoring and evaluation of the impact of technology on society are necessary to identify any unintended consequences or negative effects. This can involve conducting impact assessments, soliciting user feedback and making necessary adjustments to ensure technology remains beneficial and aligned with societal values.
- **Ethical design principles:** Incorporating ethical design principles, such as privacy by design and user-centric design, can help ensure that technology is developed with ethical considerations in mind from the early stages. This includes involving diverse perspectives and considering the potential impacts on individuals and communities.
- **Public awareness and education:** Promoting public awareness and education about the responsible use of technology can empower individuals to understand and navigate the potential implications. This can include initiatives to enhance digital literacy, promote responsible online behavior and raise awareness about ethical considerations.

Navigating the Intersection of Technology Ethics in Tomorrow's World

The future of the ethics of technology holds immense significance as we navigate a world increasingly shaped by innovation and advancement. Collaboration will play a crucial role in shaping the future of technology ethics. Such cooperation between technology developers, policymakers, researchers and various stakeholders will be essential in ensuring that ethical considerations are at the forefront of technological advancements.

Regulation and governance will also continue to evolve to keep pace with technological advancements. Governments and regulatory bodies will establish policies, standards and regulations to govern the use of technology. Striking a balance between innovation and responsible use will require ongoing engagement between industry and regulatory bodies to ensure compliance, accountability and the protection of societal values.

In addition, public awareness and education will be crucial in shaping the future of technology ethics. Promoting public awareness about the responsible use of technology and enhancing digital literacy will empower individuals to understand and navigate the potential implications. Initiatives will be undertaken to educate individuals about the ethical considerations surrounding technology, encourage responsible online behavior and foster a culture of digital citizenship.

As we look ahead, the future of the ethics of technology holds great promise. By proactively addressing ethical challenges, fostering collaboration, implementing robust frameworks and promoting awareness, we can best ensure that technology continues to drive innovation while being used in a way that is ethical, fair and beneficial to society as a whole. The future lies in embracing responsible technology ethics as a fundamental pillar of our technological advancements. TR

5G and the Internet of Things: Enabling a Connected World

In today's rapidly evolving technological landscape, the integration of 5G and the Internet of Things (IoT) is revolutionizing the way we connect and interact with the world around us. As the demand for faster, more reliable and ubiquitous connectivity grows, the convergence of these cutting-edge technologies is paving the way for a truly connected future. The fifth-generation wireless technology, commonly known as 5G, promises remarkable advancements in data transfer speeds, capacity and latency reduction. With its ability to handle massive amounts of data in real-time, 5G serves as the backbone for the seamless integration of IoT devices, propelling us towards a hyper-connected ecosystem.

The Internet of Things, on the other hand, refers to the vast network of interconnected devices, sensors and objects that communicate and exchange data with each other. From smart homes and cities to industrial automation and healthcare systems, IoT applications span various sectors, transforming the way we live, work and interact.

Together, 5G and IoT create a powerful synergy, unlocking unprecedented opportunities for innovation and connectivity. The high-speed, low-latency capabilities of 5G enable IoT devices to transmit and receive data instantaneously, facilitating real-time decision-making, automation and remote control. This convergence has the potential to reshape industries, enhance efficiency and improve the quality of life for individuals and communities worldwide.

In this interconnected world, imagine a future where autonomous vehicles communicate seamlessly with smart traffic systems, enabling efficient and safe transportation. Picture smart grids intelligently managing energy distribution, optimizing consumption and reducing environmental impact. Envision healthcare systems empowered by IoT-enabled devices, revolutionizing patient care by providing remote monitoring, timely interventions and personalized treatments.

However, along with these advancements come challenges that must be addressed. Security, privacy and data management become critical considerations as the number of connected devices proliferates. Balancing the potential benefits with ethical and regulatory concerns is essential to ensuring a trustworthy and inclusive digital ecosystem.

As we embark on this journey towards a connected world, it is crucial to understand the transformative power of 5G and IoT. By embracing this technological revolution responsibly, we can unlock the full potential of a connected future, driving innovation, sustainability and progress.

How 5G is Revolutionizing the Internet of Things

From reinventing industries to transforming our daily lives, the convergence of 5G technology and the Internet of Things is ushering in a new era of connectivity and possibilities. With its lightning-fast speeds, ultra-low latency and massive device capacity, 5G is unlocking the true potential of IoT and propelling us into a future where everything is seamlessly connected.

One of the key ways in which 5G is transforming the IoT landscape is through its ability to handle massive data transfers in real time. With the exponential growth of IoT devices and the sheer amount of data they generate, traditional networks often struggle to keep up. However, 5G's high bandwidth and low latency enable IoT devices to transmit and receive data instantaneously, facilitating real-time decision-making and unlocking new possibilities for automation and efficiency.

Moreover, 5G's network slicing capabilities allow for the creation of dedicated virtual networks tailored to the specific requirements of different IoT applications. This means that critical IoT devices, such as those used in healthcare or autonomous vehicles, can be given priority access to network resources, ensuring reliable and uninterrupted connectivity. This level of customization and reliability is paramount in sectors where split-second decisions and uninterrupted connectivity are crucial.

Additionally, 5G's enhanced network capacity enables the seamless integration of a vast number of IoT devices. This means that smart cities, for example, can deploy countless sensors and devices to monitor and optimize various aspects of urban life, from traffic management and energy consumption to waste management and public safety. The sheer scale and efficiency of 5G networks make it possible to create

truly interconnected ecosystems where devices communicate and collaborate to streamline operations and enhance the quality of life for residents. The enhanced security features of 5G technology are instrumental in safeguarding the IoT ecosystem. With an exponentially increasing number of connected devices, ensuring the privacy and integrity of data becomes paramount. 5G's advanced encryption protocols and authentication mechanisms provide robust security measures, protecting sensitive information and mitigating the risks associated with IoT vulnerabilities.

5G technology is revolutionizing the Internet of Things by providing the necessary infrastructure and capabilities to support the massive scale and complexity of IoT deployments. With its unparalleled speed, low latency, network slicing and enhanced security features, 5G is empowering industries, driving innovation and transforming our world into a seamlessly connected ecosystem. As this transformative journey continues, the potential for IoT applications powered by 5G is virtually limitless, promising a future where technology works harmoniously to enhance our lives and reshape our world.

With 5G and IoT, smart homes are poised to reach new heights of automation, efficiency and convenience. Imagine a home where every device, from thermostats to security systems, seamlessly communicates and responds to your needs. 5G's ultra-fast speeds and low latency enable real-time monitoring and control, allowing homeowners to remotely manage and personalize their living spaces. From energy management to enhanced security, smart homes powered by 5G and IoT offer a more sustainable, secure and comfortable lifestyle.

Beyond smart cities and homes, IoT and 5G have the power to revolutionize a number of other connected environments, including manufacturing, healthcare and transportation.

For example, telemedicine, remote patient monitoring and real-time data sharing between medical professionals are all made possible by 5G-enabled IoT devices.

Further, Intelligent traffic management, self-driving cars and seamless vehicle-to-vehicle communication are all made possible by 5G connectivity in the transportation sector. In a similar way, 5G and IoT in manufacturing make it possible to build "smart factories," where machines and connected devices are used to improve productivity, decrease downtime and optimize production processes.

All together, the combination of 5G and IoT is integrating our technology of today and further connecting our world of tomorrow. TR

Despite Restrictions, Huawei Achieves Impressive 15% Net Profit Margin in H1 2023

Huawei Rotating Chairwoman Sabrina Meng said: "Huawei has been investing heavily in foundational technologies to harness trends in digitalization, intelligence, and decarbonization, focusing on creating value for our customers and partners. In the first half of 2023, our ICT infrastructure business remained solid, and our consumer business achieved growth. Our digital power and cloud businesses both experienced strong growth, and our new components for intelligent connected vehicles continue to gain competitiveness."

In H1 2023, Huawei generated around US$42.9 billion in revenue, with a year-on-year increase of 3.1% and a net profit margin of 15%. The company's ICT infrastructure business contributed US$23.05 billion, its consumer business US$14.3 billion, its cloud business US$3.3 billion, its digital power business US$3.3 billion and its intelligent automotive solution (IAS) business US$137.8 million.

Reasons Behind Huawei's YoY Increase
The company experienced year-on-year growth both inside and outside of China and says there are two main reasons behind this huge year-on-year increase. First, it has continuously optimized its management systems, improved the efficiency and quality of its operations, and refined its sales strategy and product mix. These actions have had a very positive impact on its profits. Second, in the first half of 2023, the company recorded partial gains from the sale of certain businesses.

Huawei says the industry and global markets will remain rife with uncertainty for the rest of 2023. Nevertheless, it will continuously build out its mechanisms for global business continuity management and an agile operations management system. Huawei is confident that it can meet its annual business targets and continue creating value for customers and society at large.

Five Strategic Initiatives
Huawei successfully rolled out its new MetaERP system in the first half of this year. But the US has continued to tighten restrictions on Huawei. Even in such an uncertain environment, the company is confident that it will continue making breakthroughs. Moving forward, it will implement five strategic initiatives.

First, it will help industries go digital, intelligent and green to unlock new growth opportunities.

Second, it will optimize its business portfolio to enhance resilience.

Third, it will strengthen the synergy between chips, software, hardware, devices, networks and clouds to hone its unique competitive edge.

Fourth, the company will succeed through quality and make Huawei synonymous with such high quality in the ICT industry.

Fifth, it will invest heavily in R&D to ensure a high level of business continuity and enhance product competitiveness.

Performance Breakdown Per Segment
In the consumer business, Huawei announced that this year the launches of its flagship products will return to normal. In the first half of 2023, Huawei unveiled two brand-new flagship smartphones. In the carrier business segment, Huawei announced that it will launch a full lineup of commercial 5.5G network equipment by 2024 to help its customers prepare for commercial 5.5G deployment. Huawei Cloud has adhered to the strategy of "Everything as a Service" in its mission to become the cloud foundation and enabler of industry digitalization. Huawei Digital Power has seen steady growth, taking advantage of the broader trend of carbon neutrality.

Nokia Welcomes Zain KSA Executive Team to Its HQ in Finland

Nokia's President and CEO, Pekka Lundmark, welcomed Eng. Sultan A. AlDeghaither, CEO, Zain KSA, and its executive team to Nokia's headquarters in Finland. The meeting of the two telecom leaders is aimed at deepening the partnership on 5G, digital transformation, innovation and sustainability.

The two companies have enjoyed a long-term relationship in developing comprehensive digital transformation for KSA's socio-economic development by empowering individuals, businesses and government agencies with the latest reliable, innovative technologies and products.

Nokia partners with service providers through its Global Partner Program, providing them with a broad set of solutions and deep experience in delivering mission-critical infrastructure across a wide range of industries.

In March, Zain KSA and Nokia signed an MoU with the aim of maximizing efficiency and accelerating its sustainability efforts, in line with Saudi Vision 2030 as well as the Saudi Green and Middle East Green Initiatives. The MoU was signed during the Mobile World Congress (MWC23) in Barcelona.

iot squared Climbs to New Heights With Machinestalk Acquisition

stc Group, an engine of digital transformation in the MENA region, announces that iot squared, a joint venture between the Public Investment Fund (PIF) and stc Group, is completing a highly successful first year since its establishment by signing a binding agreement to acquire 100% of Machinestalk, a pioneer provider of IoT solutions and applications in Saudi Arabia. The acquisition will accelerate iot squared's growth and solidify its position as the leading provider of IoT solutions in the region.

iot squared delivers industry-leading IoT solutions that provide real-time insights into Saudi Arabia. Since its establishment in 2022, iot squared has played a significant role in the adoption of IoT technologies in various sectors and has collaborated with industry leaders to advance the IoT eco-system in the Middle East in order to revolutionize multiple sectors and advance local digital transformation plans.

The acquisition represents an important milestone in the collaboration between PIF and stc as this reflects the major investment strategy in the products and services in the ICT industry, including investments in digital clouds, cybersecurity, fintech and digital entertainment. These investments contribute to driving digital transformation and contribute to Saudi Arabia's Vision 2023 in leading digitization in the region.

Machinestalk is one of the largest Saudi companies in the IoT domain, founded in 2015 as a subsidiary of NOMD Holding. It has actively contributed to the Kingdom's telematics domain over the past years, delivering diversified solutions focused on smart mobility with additional capabilities in smart buildings and facilities, smart cities and industrial IoT. It is active across the IoT stack, with core capabilities in IoT platforms and applications and additional capabilities in IoT sensors, networks and services.

Othman Al Dahash, CEO of iot squared, said: "We are pleased to announce signing a binding agreement to acquire 100% of Machinestalk, which steers to an exciting new chapter in our growth story. As we continue to strengthen our position as the national IoT champion, in line with our BOLD strategy, we are eager to play a pivotal role in supporting Saudi Arabia's ambitions to lead the region's digital transformation and adoption of emerging technologies. Furthermore, by fully realizing the potential of IoT and unlocking the value of connected things, we are committed to enabling a 'connected Kingdom' and turning the knowledge-based economy from a concept into reality."

Netcracker Receives Highest Ranking in Network Service Orchestration Market

Analyst firm GlobalData has awarded Netcracker the highest ranking out of 15 companies in its competitive landscape assessment of the Network Service Orchestration market segment, which involves automating the full lifecycle of services.

GlobalData assessed companies on several key criteria, including integration and interworking, production experience, solution components and standards, and interface support.

Netcracker Digital OSS — part of Netcracker Digital Platform — achieved the highest position in GlobalData's report due to a number of factors, including support for a fully microservice-based environment; the most extensive deployments of single- and cross-domain service orchestration; production deployments running on the major public clouds; support for a broad set of APIs and standards organizations; and a full suite of ecosystem partners and preconfigured templates.

Also Read: Netcracker Recognized for Groundbreaking RAN and Edge Orchestration Technology

Building upon this foundation, Netcracker Intelligent Operations Automation encompasses preintegrated solutions that combine Digital OSS functions, including intent-based Service Orchestration, real-time federated inventory and smart Service Assurance, with AI/analytics to deliver hyperautomation and agility within and across multiple network domains, cloud platforms and service partners. Benefits for operators include rapid service agility, dynamic network slicing and continuous network optimization, driving new monetization opportunities.

"We have successfully delivered the most network service orchestration production deployments to operators around the world and are honored to lead the way in this exciting space," said Ari Banerjee, SVP of Strategy at Netcracker. "This leadership position from GlobalData is extremely meaningful to us and validates the significant research and development investment we have committed to in order to keep our solutions competitive in the market."

AWS Harnesses Generative AI to Expand New Offerings

Amazon Web Services (AWS) is making significant strides in the realm of generative artificial intelligence (AI), unveiling a host of groundbreaking innovations that underscore its commitment to cutting-edge technology.

At the annual AWS Summit held in New York, Swami Sivasubramanian, vice president of database, analytics, and ML at AWS, highlighted the growing influence of generative AI. He noted, "Generative AI has captured our imagination for its ability to create images and videos, write stories and generate code."

Breaking New Ground

AWS is amplifying its offerings with a noteworthy expansion of its fully managed foundation model (FM) service for Amazon Bedrock. This enhancement introduces Cohere as an FM provider, showcasing models like Command and Embed. Moreover, the latest foundation models from Anthropic (Claude 2) and Stability AI (Stable Diffusion XL 1.0) are now integrated, accompanied by an innovative feature allowing the creation of fully managed agents with just a few clicks, making it accessible for builders without requiring additional expertise.

The introduction of AWS HealthScribe, a HIPAA-eligible service, is poised to revolutionize healthcare software. This service empowers healthcare software developers to craft clinical applications employing speech recognition and generative AI. AWS HealthScribe, driven by Amazon Bedrock, aims to streamline clinical documentation, facilitating faster integration of generative AI capabilities for healthcare software providers. This feature eases the incorporation of generative AI into applications, commencing with general medicine and orthopedics, without the burden of managing the underlying ML infrastructure or training healthcare-specific Large Language Models (LLMs).

Empowering Skill Development

AWS is forward-looking in its approach to talent development, acknowledging the need for upskilling as generative AI continues to evolve. To address this, AWS has unveiled seven free and cost-effective on-demand training series designed to equip a wider audience with the knowledge, tools and capabilities to grasp, implement and utilize generative AI.

Leading the Way With NVIDIA

As a pioneering hyperscale cloud provider, AWS is setting a precedent by making NVIDIA's H100 GPUs available for general production use. Amazon EC2 P5 instances, fueled by NVIDIA H100 Tensor Core GPUs, along with AWS's state-of-the-art networking and scalability, are now accessible for general use. These instances are ideally suited for the rigorous demands of training and running inference for complex Large Language Models (LLMs) in compute-intensive generative AI applications, such as question answering, code generation, video and image creation, and speech recognition.

BNET's Fiber Network Coverage Reaches More Than 500,000

Bahrain Network (BNET) hosted a ceremony at its headquarters in celebration of successfully connecting over 500,000 addresses with fiber optic networks and services.

The achievement comes in line with BNET's ongoing strategy to expand local fiber network coverage, which aims to accelerate the economic growth and diversification of the national telecommunications sector. The milestone is also a result of collaboration between members of executive management and the BNET team.

During the ceremony, Shaikh Ali bin Khalifa AlKhalifa, Chairman of BNET, said: "We would like to express our sincere gratitude and appreciation to His Royal Highness Prince Salman bin Hamad Al Khalifa, the Crown Prince and Prime Minister, for his strategic vision of the future of the telecommunications sector. I would also like to extend my thanks to members of the Ministry of Transportation and Telecommunications and the TRA, which have enabled this achievement to further serve our national objectives. We also commend the hard work and dedication of all those who have contributed to this accomplishment, from members of the executive management to our team. Furthermore, we remain committed to adopting an innovative approach that aligns directly with the Kingdom's vision to enhance the digital sector and provide elevated services that will enhance the overall experience of consumers."

Ahmed Jaber Al Doseri, CEO of BNET, added: "We are proud to have achieved this milestone in line with the Kingdom's directives to boost the telecommunications and digital sectors in Bahrain through various partnership opportunities. This achievement is also a testament to the efforts of the local leaders and talents among our dedicated team at BNET. As part of our key role to contributing to the 5th National Telecommunications Plan, we look forward to expanding fiber network coverage in Bahrain, further driving economic growth and diversification in the sector."

BNET continues to adopt the latest innovative technologies with the aim of providing access to the world's leading fiber-optic network services for all licensed service providers in the Kingdom in line with fair and equal terms and conditions.

Data Center Network Technologies and the Future of Cloud Computing

The future of cloud computing has become a subject of immense interest and speculation for technology experts and industry observers alike. As we dig deeper into this predominant technological evolution, it becomes evident that data center network technologies are assuming a central and influential position in molding the global telecommunications landscape before us.

These advancements in data center networks are proving to be crucial industry drivers, enabling the seamless integration and efficient functioning of cloud-based services and applications on a global scale. With the ever-increasing demand for faster and more reliable communication services, data center network technologies are playing a pivotal role in enhancing connectivity, scalability and overall performance, making them indispensable in shaping cloud computing and its impact on the telecommunications industry. As businesses and individuals alike embrace the potential of cloud computing, the evolution of data center networks remains a key aspect to pay attention to, as it holds the potential to revolutionize how we interact and communicate in the digital world of tomorrow.

What is Cloud Computing?

Cloud computing is a groundbreaking technology that enables data and program storage and access over the internet instead of on personal or business computer hard drives. This paradigm shift has sparked a revolutionary reconfiguration of the business landscape. The innovation has already empowered companies to slash IT costs, boost operational efficiency and elevate their adaptability, all in one fell swoop. However, the potential of cloud computing goes beyond these initial advantages. It extends to the transformative influence of data center network technologies in the global telecommunications sphere. These cutting-edge advancements are shaping the telecommunications level, paving the way for seamless integration, heightened connectivity and enhanced scalability worldwide. As we envision the future of cloud computing, the role of data center network technologies becomes increasingly essential, laying out an assured path toward a more interconnected, agile and efficient digital ecosystem.

> This paradigm shift has sparked a revolutionary reconfiguration of the business landscape

The Impact of Data Center Network Technologies

At the core of cloud computing lies the fundamental role of data center network technologies, which serve as the crucial infrastructure enabling the seamless delivery of cloud services.

> At the core of cloud computing lies the fundamental role of data center network technologies

These encompass a diverse array of components, ranging from servers, storage systems and networking equipment to more sophisticated software that efficiently manages and controls these valuable resources. As cloud computing progresses, these data center network technologies evolve in tandem, maximizing efficient adaptation while catalyzing transformative shifts throughout the telecommunications sector. Such dynamic development paves the way for continuous and marked changes that shape both the current development as well as the future direction of the telecommunications industry.

Among the notable influences of data center network technologies on the global telecommunications landscape is that of software-defined networking (SDN). SDN represents an innovative approach to networking by decoupling the control plane from the data plane within network devices. This separation empowers network administrators to efficiently manage network services through a higher-level abstraction of underlying functionalities. The embrace of SDN has ushered in a new era of flexibility and scalability for telecommunications companies by empowering them to offer more adaptive and scalable services, thus increasing their competitiveness in the market.

The burgeoning impact of data center network technologies has also brought edge computing into the spotlight. Edge computing involves processing data at the network's edge, where it originates, rather than at a centralized data center. This strategic approach reduces latency, improves performance and enhances the user experience. In the telecommunications realm, companies effectively utilize edge computing to best deliver real-time services, including seamless video streaming and immersive online gaming.

Furthermore, data center network technologies are playing a pivotal role in propelling the adoption of artificial intelligence (AI) and machine learning (ML) throughout the telecommunications industry. AI and ML algorithms thrive on vast volumes of data and high-performance computing resources, both of which are readily provided by data centers. Telecommunications companies are leveraging the potential of AI and ML to optimize their networks, predict and avert network failures and offer personalized services, among a host of other pivotal applications.

Simply put, data center network technologies are exerting a profound impact, not only on the trajectory of cloud computing but also on the global telecommunications industry as a whole. These technologies empower telecommunications companies to provide flexible and scalable services, harness the potential of edge computing and embrace AI and ML for network optimization, et al. As these advances in data center networks progress, they are bound to instill further transformative changes within the telecommunications industry. Therefore, gaining a comprehensive understanding of these technologies, their utilization and their momentum is imperative for anyone invested in the future of cloud computing and telecommunications. TR

Canada Releases Spectrum Outlook for 2023-2027

Access to fast, dependable and reasonably priced Internet and wireless services stands as a crucial requirement for the people of Canada. This is why the Canadian government is persistently working to open up additional spectrum resources, aiming to enhance the quality, coverage and affordability of telecommunications services.

François-Philippe Champagne, the Honorable Minister of Innovation, Science and Industry, has unveiled the Spectrum Outlook for the period spanning 2023 to 2027.

This document delineates the government's strategies for leveraging spectrum to furnish cost-effective, high-caliber telecom services. These strategies encompass facilitating the swift rollout of 5G technology, enhancing connectivity in rural areas, endorsing the utilization of wireless technologies as tools against climate change and promoting the advancement of relations with Indigenous Peoples.

Furthermore, the Spectrum Outlook presents the government's roadmap for releasing spectrum over the forthcoming years, ensuring an ample supply of spectrum for the services that Canadians rely upon.

"The Government of Canada will continue to make more of this important public resource available and ensure it is quickly put to use to strengthen the telecom services Canadians depend on," stated Champagne.

Continuing its momentum from various achievements in spectrum management following the release of the 2018-2022 Spectrum Outlook, the government is unwavering in its commitment to the "use it or lose it" principle regarding spectrum utilization. This approach ensures that allocated spectrum is promptly employed for the collective benefit of all Canadian citizens.

India's 5G Spectrum Auction Sets Stage for Technological Leap

India's Department of Telecommunications (DoT) has requested the Telecom Regulatory Authority of India (TRAI) set a reserve price for various bands to be sold in the upcoming 5G spectrum auction.

However, it appears that the 6 GHz band is not included in this request. Last year's spectrum sale had some unsold bands, including the 600 MHz and 2300 MHz bands, which will be put up for sale again. Additionally, spectrum in or above the 37 GHz band will also be available. Therefore, the spectrum on offer will range from 600 MHz to at least 37 GHz.

As expected by many commentators, the lack of a decision regarding the allocation of the 6 GHz band means that it will not be part of the planned sale. This issue has sparked a dispute between operators who want auctions for the 6 GHz band and Wi-Fi proponents who seek access to as much of the band as possible.

However, the DoT has not yet made a final decision on this matter. TRAI will release a consultation paper on the auction in the coming weeks. Nevertheless, it is unlikely that the bidding process will be highly competitive.

Vodafone Idea (Vi) is facing financial difficulties and is lagging behind its competitors, Reliance Jio and Bharti Airtel, in terms of 5G rollout. However, Bharti Airtel and Vi have permits expiring in 2024 in several areas.

In the previous auction, which concluded on August 1, 2022, 71% of the available spectrum was sold.

Huawei and Ericsson Forge Long-Term Patent Cross-Licensing Accord

In a groundbreaking move, global technology giants Huawei and Ericsson have sealed a long-term, comprehensive patent cross-licensing agreement. This accord encompasses patents deemed essential to a vast spectrum of standards, including 3GPP, ITU, IEEE and IETF standards for 3G, 4G and 5G cellular technologies. It extends across both companies' sales of network infrastructure and consumer devices, ushering in a new era of collaboration and innovation by granting each party global access to the other's patented, standardized technologies.

Alan Fan, Head of Huawei's Intellectual Property Department, expressed his enthusiasm, stating, "We are thrilled to formalize this long-term global cross-licensing agreement with Ericsson. Recognizing the substantial contributions each of our companies has made in the realm of standard essential patents (SEPs) for mobile communication, this agreement signifies our commitment to creating a robust patent environment where intellectual property is duly respected and safeguarded."

Over the past two decades, Huawei has emerged as a leading contributor to mainstream ICT standards, encompassing cellular, Wi-Fi and multimedia codecs. Notably, in 2022, Huawei ascended to the pinnacle of the European Patent Office's applicant ranking, with a staggering 4,505 patent applications to its name.

Nokia in the US: Fiber-Optic Broadband Electronic Production Starts in 2024

Nokia has become the first telecom company to announce the manufacturing of fiber-optic broadband network electronics products and optical modules in the US for use in the Broadband Equity, Access and Deployment (BEAD) program.

Vice President of the United States, Kamala Harris, said: "Our investments in broadband infrastructure are creating jobs in Wisconsin and across the nation, and increasing access to reliable, high-speed internet so everyone in America has the tools they need to thrive in the 21st century."

Using thin strands of glass to transmit data with light, fiber-optic networks have become the backbone of today's digital economy and are used to connect everything to fast, reliable gigabit data services. Seventy percent of fiber broadband lines in North America are powered by Nokia.

Pekka Lundmark, President and CEO of Nokia, said: "By bringing the manufacturing of our fiber-optic broadband access products to the US, BEAD participants will be able to work with us to bridge the digital divide. We look forward to bringing more Americans online."

In partnership with Sanmina Corporation, Nokia will manufacture in the US several fiber-optic broadband products at Sanmina's state-of-the-art manufacturing facility located in Pleasant Prairie, Kenosha County, Wisconsin, bringing up to 200 new jobs to the state.

Revolutionizing the 19th Asian Games Through 5G Advanced Technologies

Preparations are in full swing for the 19th Asian Games, to be held in Hangzhou, China, in September. Aside from the most anticipated sports competition, the future of technology is expected to also take center stage with the introduction of cutting-edge 5G Advanced technologies. These ground-breaking innovations, created and developed by China Telecom Zhejiang Branch and ZTE Corporation, promise to revolutionize how we watch sporting events.

5G-A: The Next Generation Network
With its astounding dual-10Gbps bandwidth, the 5G-A network is intended to provide an unrivaled viewing experience during the Asian Games. Using ZTE's cutting-edge 1.6G Hz bandwidth radio units, this network can effortlessly support simultaneous 8K video live broadcasts, enabling real-time streaming for a large number of viewers and broadcasters. The maximum download rate climbs to 25Gbps, showcasing the superior network experience that 5G-A offers.

5G-A Reconfigurable Intelligent Surface, Achieving High-Rate Seamless Coverage
The incorporation of Reconfigurable Intelligent Surface (RIS) technology is one of the most significant components of 5G-A. RIS, a unique multi-antenna technology derived from electromagnetic hypermaterials, shows enormous promise due to its low-cost, low-power characteristics. Its implementation improves base station signal propagation and beam control, improving 5G signal quality and boosting base station coverage. According to the head of China Telecom's Smart Asian Games project, RIS boards have the potential to increase coverage areas by more than 30% by intelligently reflecting or transmitting base station signals.

Together with ZTE, China Telecom Zhejiang Branch has completed commercial RIS verification in Asian Games Village, achieving 10Gbps network coverage for blind spots in typical scenarios of underground garages and stores. The measured data shows that, after RIS is deployed, the UE downlink rate is increased by 6 times and the uplink rate by 20 times, while the cost of RIS is only one tenth of that of small cells. In addition, when the user moves within the garage and store, the dynamic RIS reflection beam can always accurately track the user in real time with stable signal strength and user rate.

Nigerian Regulator Approves Wide Array of Phone Models for Market

The Nigerian Communications Commission (NCC) has granted approval for the marketing of 2,155 phone models within the country. The regulatory body has stated that these various devices have undergone testing and met its established rigorous certification standards.

Chinese conglomerate Transsion, the manufacturer behind the Tecno, Infinix and Itel brands, holds approval for 545 phone models, which accounts for 25% of the total number. Other models come from companies like Huawei, Samsung, Nokia, Ericsson, Xiaomi, ZTE, Vivo, Apple, HTC, Wiko, Panasonic, Asus, Apple, Google, Gionee, Alcatel, Oppo and more.

The regulatory approval of these phone models aligns with the NCC's efforts to combat counterfeit and substandard phones that are rampant in Nigeria.

According to the latest official statistics, Nigeria holds the largest telecommunications market in Africa, with a population of 213.4 million people and 220.08 million mobile subscriptions.

Rogers 5G Now Available in Toronto's Subway

Rogers Communications' customers can now talk, text and stream on 5G in tunnels and stations in the busiest sections of Toronto's TTC subway. Rogers also upgraded the cellular network, providing all riders with more reliable access to 911 service in these areas as part of its phased network upgrade and expansion work.

Starting on August 23, 2023, Rogers customers can connect to Rogers 5G on the subway in the following areas:

- On Line 1: All stations and tunnels in the Downtown U; plus Spadina and Dupont stations
- On Line 2: Thirteen stations from Keele to Castle Frank; plus the tunnels between St. George and Yonge stations
- All TTC riders in these areas also now have more reliable access to 911 service.

"Toronto is a world-class city and TTC riders deserve a transit system with world-class cellular service," said Tony Staffieri, President and CEO, Rogers. "That's why Rogers stepped up to do what's right for Toronto transit riders. We're working hard to modernize and expand the network so all riders can reliably access 911 and connect to 5G everywhere across the subway system, including underground."

Since acquiring BAI Canada just a few months ago, Rogers has been working closely with the TTC to upgrade the legacy cellular infrastructure to support all wireless operators in Toronto, while continuing to provide service to Freedom Mobile customers. Rogers is modernizing the wireless network with fibre, new radio equipment and more spectrum bands to provide 5G connectivity and improve the quality of the 3G/4G network.

WhatsApp Steps Up to Challenge Zoom

WhatsApp, the popular messaging platform owned by Meta, has been on a roll lately, unveiling a series of exciting updates to elevate its user experience. In its latest move, the company has announced the introduction of screen sharing during video calls, further solidifying its stance as a multifaceted communication powerhouse.

With this dynamic enhancement, WhatsApp steps into the realm of established video conferencing giants like Microsoft Meet, Google Meet, Zoom and Apple's FaceTime, offering users an immersive screen-sharing feature that is both versatile and intuitive. Whether it's collaborating on work documents, sharing vacation plans with friends, or offering tech support to family members, the new screen-sharing option allows users to seamlessly present a live view of their screen during calls.

"Whether sharing documents for work, browsing photos with family, planning a vacation or shopping online with friends, or just helping grandparents with tech support – screen sharing lets you share a live view of your screen during the call," Meta stated. The announcement was accompanied by a social media post from Meta's CEO, Mark Zuckerberg, showcasing the feature in action during a group WhatsApp call.

Initiating screen sharing is a breeze: users can simply tap on the "Share" icon and choose between sharing a specific application or their entire screen. As an added bonus, WhatsApp enthusiasts can now enjoy landscape mode for video calls, providing a wider and more immersive viewing and sharing experience on their mobile devices.

This exciting addition is not confined to a single platform. The screen share feature is being rolled out for Android, iOS and Windows Desktop users, with landscape mode becoming available for all iOS and Android users.

Somalia Bans Tiktok and Telegram for Indecent Content Concerns

Somalia has taken steps to regulate online platforms, including popular video-sharing app TikTok, messaging app Telegram, and online betting site 1XBet. The decision, announced by Communications Minister Jama Hassan Khalif, aims to curtail the dissemination of explicit content and propaganda. Khalif cited concerns that these platforms were being exploited by "terrorists and immoral groups" to spread disturbing images and misinformation. Internet service providers have been instructed to comply with the ban by August 24, 2023.

The move comes against the backdrop of the Somali government's military campaign against the armed group al-Shabab. Al-Shabab members have been known to use TikTok and Telegram to showcase their activities. Meanwhile, users of TikTok in Somalia, who use the platform for income generation and promotion, have voiced opposition to the ban, citing its potential impact on their livelihoods. TikTok has yet to comment officially on the situation, pending official communication about the ban.

Telegram, on the other hand, has highlighted its consistent efforts to remove terrorist content in Somalia and globally. This development also places TikTok in a unique position, having faced previous bans due to alleged connections with the Chinese government while simultaneously being considered a platform for free expression in some regions, as observed in Senegal.

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