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EMBRACING THE DIGITAL AGE: du's Journey of Record-Breaking Success

FAHAD AL HASSAWI
CEO, du

**Breaking Glass Ceilings,
Building Bridges: Celebrating
Women's Leadership in ICT**

**How International
Expansion Drives
Growth for GCC Telcos**

**The Importance of
Spectrum: Trends
to Watch in 2024**

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4



- Embracing the Digital Age: du's Journey of Record-Breaking Success

10



- Empowering Connectivity: Omantel's Evolution in the Digital Era

13



- The Global Infrastructure Journey of BNET and Its Secrets in Shaping the Future

15



- e&life: Enriching Digital Lifestyle Offerings Through Innovation

17



- Empowering Innovation: Börje Ekholm and Ericsson's Path to Technological Leadership

22



- Empowering Telecom Providers: Netcracker's Initiatives for Digital Evolution

20 Open Access Fibre: The When, Where and How

24 Sofrecom's Insight: ICT's Carbon Footprint and Data Center Sustainability Efforts

30 Breaking Glass Ceilings, Building Bridges: Celebrating Women's Leadership in ICT

35 How International Expansion Drives Growth for GCC Telcos

41 Optimizing Agriculture: AI Solutions for Efficient Greenhouse Operations

43 The Reliability of Self-Driving Cars

45 The Importance of Spectrum: Trends to Watch in 2024

51 Telcos' Role in Intelligent Transportation Systems



Lifesaving Jewelry: Will You Say "I Do"?

A compact antenna, designed to fit seamlessly within a ring, now facilitates the transmission of medical data to both healthcare professionals and individual patients. This groundbreaking wireless sensing technology is considered an Internet of Medical Things (IoMT).

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Microsoft is unveiling a fresh pricing structure for its Copilot for Security chatbot, slated for launch on April 1st. Utilizing extensive language models, this chatbot assists cybersecurity experts.

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Fahad Al Hassawi, CEO, du

Embracing the Digital Age: du's Journey of Record-Breaking Success

In an exclusive interview with Telecom Review, du's CEO, Fahad Al Hassawi, elaborated on the company's commitment to fostering a more prosperous future grounded in knowledge and innovation. He discussed various aspects, including du's remarkable financial performance, ongoing commercial initiatives, digital innovation endeavors, expansion in fintech, robust workforce, sustainability objectives, and key targets set for 2024.

du delivered a historic financial performance in 2023. How did this underscore the company's commitment to digital transformation and accelerated growth?

du has demonstrated its unwavering commitment to digital transformation and accelerated growth through its historic financial performance in 2023. The company's record-breaking revenues, expansion of gross margins, and investment in core infrastructure and IT illustrate its dedication to embracing the digital age and meeting ever-changing customer demands. Furthermore, the company's alignment with government initiatives and support for economic and social development in the UAE reflects its role as a key partner in the country's digital growth journey.

The company's full-year revenues increased by 6.9% to AED 13.64 billion, highlighting the sustained demand for mobile services and strong growth in postpaid and fixed services. du's EBITDA surged by 12.8% to AED 5.80 billion, showcasing the expansion of gross margins and disciplined cost management. The net profit reached an impressive AED 1.67 billion, a 36.8% increase year-over-year, reflecting strong EBITDA growth. This remarkable performance underscores the company's ability to drive top-line growth and margin expansion.

In terms of operating highlights, du witnessed an 8.3% growth in its mobile customer base, reaching 8.6 million subscribers. Strong net additions in the last quarter were driven by a significant increase in prepaid customers, benefiting from seasonality and promotional campaigns. The postpaid customer base also grew by 10.5% year-over-year to 1.6 million, driven by data-centric plans and attractive offers.

The fixed customer base saw a robust 12.6% year-over-year growth, ending the year with 604,000 subscribers. This impressive performance was a result of ongoing commercial efforts in various product categories and the successful implementation of du's broadband strategy.

From a financial perspective, du experienced significant growth in revenues, with Q4 revenues growing by 7.3% year-over-year to AED 3,558 million, and full-year revenues growing by 6.9% to a record-breaking AED 13,636 million. Mobile service revenues also saw a substantial increase of 6.2% year-over-year, reaching AED 6,105 million for the full year.

du's capital expenditure (CapEx) in Q4 2023 amounted to AED 759 million, while the full-year CapEx was AED 2,198 million, remaining stable compared to the previous year. The focus of CapEx was on the expansion of the 5G network, deployment of fiber, and the transformation of the existing IT and network infrastructure.

The company has achieved significant operational milestones, including expanding the 5G network to 98.5% population coverage and increasing the digitalization of customer touchpoints. du has been recognized with multiple industry awards for its innovative product offerings.

du remains aligned with the country's strategic plans, complies with the directives of the wise leadership, and supports the vision for a more prosperous future built on knowledge and innovation. The company has also provided extensive support for government initiatives and policies aimed at accelerating economic and social development in the UAE.

What factors contributed to du's record-breaking results?

du's historic financial performance in 2023, with record revenues, gross margin, and EBITDA, reflects its strong performance in the core business and accelerated growth in new business ventures. The company remains committed to its digital transformation strategy, investing in core infrastructure and IT, and enhancing customer experience. du aims to reinforce its leadership in the core business through a differentiated digital-first approach, disruptive customer-centric innovation, and operational efficiencies.

du's achievement of these results can be attributed to a combination

of key factors in line with the CEO's strategy. Firstly, du has capitalized on a strong macroeconomic environment, demonstrating the company's ability to thrive in a competitive industry. This financial stability has allowed du to invest in its brand and customer experience, ensuring continued success. The expansion of its 5G coverage has positioned the company at the forefront of technological advancements, offering customers faster speeds and enhanced connectivity.

du has strategically focused on segments that leverage technological innovation, employee development, and sustainability. Moreover, du has proven its ability to collaborate effectively with partners on various projects, including mobile services, cloud computing, and other ICT solutions. These collaborations have accelerated digital transformation in the UAE, showcasing du's commitment to innovation and delivering impactful technological solutions.



du aims to reinforce its leadership in the core business through a differentiated digital-first approach, disruptive customer-centric innovation, and operational efficiencies





The company remains committed to providing its customers with best-in-class solutions that address their evolving technology needs and supporting the UAE's vision



What are the ongoing commercial efforts in various product categories that support du's successful nationwide 5G implementation? What is the status of du's 5G coverage, and how does it enable digital innovation?

du's ongoing commercial efforts in various product categories have been instrumental in supporting its successful nationwide 5G implementation. These efforts include the expansion of du's 5G coverage, which now reaches an impressive 98.5% of the population. This extensive coverage ensures that a vast majority of customers across the UAE can benefit from the high-speed and low-latency capabilities of 5G technology.

In addition to expanding coverage, du has also prioritized the digitalization of its customer touch-points, with over 80.7% of customer interactions now taking place online. This shift towards digital channels has not only improved the efficiency and convenience of customer experiences

but has also allowed du to leverage data and analytics to personalize services and offerings for its customers.

du has fostered strategic partnerships with key institutions in the UAE. These partnerships enable du to collaborate with industry leaders and leverage their expertise in driving digital innovation.

In addition to these efforts, du has also made significant advancements in multi-carrier aggregation technologies within its commercial wireless network. By aggregating carriers within the C-Band and 2.6 GHz bands, du can deliver data speeds three times faster than what is currently available to users in the UAE. This enhancement is particularly significant for du's home wireless services, which have gained popularity among users. The multi-carrier aggregation allows du's subscribers to enjoy bandwidth-intensive applications such as artificial intelligence (AI), 8K video

streaming, metaverse functionalities, and UHD cloud gaming without any compromise on performance or quality.

As du continues to invest in and upgrade its 5G technology, including the adoption of 5G-Advanced, the company remains committed to providing its customers with best-in-class solutions that address their evolving technology needs and supporting the UAE's vision for greater technology usage and innovation in all aspects of the country's development.

As a leading digital telco, du will work on building a 5G-Advanced country in the UAE. Why is this important? How will 5G-Advanced enable digital innovation further? Can you provide details on du's smarthouse project, which is utilizing 5G technology?

As a leading digital telco in the UAE, du is dedicated to spearheading the development of a 5G-Advanced country. This strategic initiative holds immense importance as it will pave the way for increased digital innovation and drive the transformation of industries across the nation. One of the key advantages of 5G technology is its ability to enable digital innovation on a whole new level. With 5G, the UAE will experience ultra-fast and low-latency connections, unlocking unprecedented opportunities for businesses and consumers alike. From autonomous vehicles to smart cities, the possibilities are endless.

To showcase its commitment to this vision, du has embarked on a groundbreaking project in collaboration with Huawei. The company has unveiled the world's first 5G-Advanced demonstration Villa. This architectural marvel is a testament to the seamless integration of cutting-edge technologies, offering an unparalleled smart home experience.

The 5G-A Villa serves as a glimpse into the future of connected living, empowered by a staggering 10 Gbps network. It showcases the convergence of various applications

such as naked-eye 3D and XR, adding a new dimension to user experiences. By offering incredible 10 Gbps connectivity indoors, du is redefining the boundaries of internet connectivity for its valued subscribers.

Moving forward, du remains committed to building the best 5G networks in the UAE and exploring the commercial use of 5G-Advanced technology. The 5G-A Villa represents just the beginning of this journey as the limitless potential of 5G-Advanced technology continues to unfold. With the latest FWA solutions, du is poised to unlock vast business opportunities and reimagine the concept of smart home living.

du's focus on building a 5G-Advanced country in the UAE is crucial for enabling digital innovation and shaping the future of industries. Through groundbreaking projects—like the smarthouse and partnerships with industry leaders like Huawei, Nokia and Ericsson—du is paving the way for a connected and technologically-advanced nation.

In what ways has du leveraged ICT to drive digitalization?

du has collaborated with government entities to leverage ICT and drive digitalization in several impactful ways. For instance, the successful completion of the Dark Factory project for Industry 4.0 highlights du's contribution to integrating robotics and automation in manufacturing, driving efficiency, productivity, and sustainability.

Additionally, du's collaboration with the Dubai Municipality has transformed the park experience for visitors through a seamless ticket journey initiative. As of December 2023, eight parks have implemented this platform, enabling ticketless entry and ensuring a hassle-free user experience.

Furthermore, du's partnership with the Environment Agency Abu Dhabi (EAD) has resulted in the development of the naha community app. This groundbreaking app promotes environmental awareness,

climate action, and sustainability, particularly among the youth, through personalized digital platforms.

du has also played a key role in supporting various government entities in their digitalization efforts. For example, they have provided top-tier data centers to host ENBD's complete IT systems, reflecting the trust placed in du's exceptional data center services for optimal performance, reliability, and security.

Moreover, the collaboration between du and Microsoft has led to the launch of an ICT marketplace, offering customers a comprehensive digital platform to access a wide range of innovative ICT solutions.

Finally, du's technology has enabled the launch of smart services for the Dubai Digital Park in Dubai Silicon Oasis (DSO). These services promote a holistic and integrated platform for district management, breaking traditional information silos and fostering a more responsive and efficient ecosystem in Dubai.



du's focus on building a 5G-Advanced country in the UAE is crucial for enabling digital innovation and shaping the future of industries



What initiatives has du taken in the fintech sector, and how have they contributed to the company's success?

The convergence of telecommunications and financial services has created a significant opportunity for telcos to enter a rapidly growing payment and digital banking market. EITC has taken a strategic initiative to enter the fintech sector in line with its vision for development and innovation in the UAE. It has received licenses from the Central Bank of the UAE to offer new digital financial services, positioning the company at the forefront of the evolving fintech landscape in the region. These licenses enable EITC to introduce financial solutions that will contribute to the development of a modern and future-ready financial ecosystem in the UAE.

This development aligns with the ongoing initiatives of the UAE government to promote financial technology and foster innovation, competition, and financial inclusion by promoting a cashless society. By leveraging its core capabilities, EITC aims to empower individuals and businesses with convenient, secure, and efficient solutions that simplify their financial transactions and meet their diverse needs. EITC's entry into digital financial services will enhance the UAE's financial landscape, focusing on customer-centric solutions. This shows EITC's commitment to innovation and adaptability to the digital era. EITC aims to contribute to the UAE's growth and be a pioneer in fintech collaboration and innovation.

Could you provide insights into the strategies implemented by du that aim to foster employee engagement and promote a positive culture within the organization?

du's commitment to fostering a strong, efficient, and innovative workforce is evident through its emphasis on values and culture. The organization has achieved remarkable results in the Culture & Employee Engagement Index survey conducted through Glint, showcasing year-over-year improvement, with a worldwide score of 81%. In the global technology sector, the company ranked in the top 25%

and the top 10% worldwide across all industries.

To support transformative changes, du has implemented strategies such as an innovative headquarters design and a streamlined organizational structure. These initiatives contribute to a progressive, people-centric culture that fosters high performance. Employee engagement is prioritized through comprehensive feedback mechanisms, revamped spot awards, and frequent recognition.

du's commitment to creating a people-centric culture is reflected in its headquarters design in Dubai Hills, which promotes collaboration and efficiency. By investing in employee engagement and fostering a positive work culture, du has positioned itself as a leader in the region. Its innovative strategies and initiatives demonstrate the organization's dedication to creating an exceptional work environment for both employees and customers.

How does du incorporate sustainability into its operations, and what measures does the company take to minimize its environmental impact?

As a digital leader, du is well-positioned to help the UAE achieve its sustainability vision through various technologies and services. In 2023—the year marked as the 'Year of Sustainability' for the UAE—we played a very strong role in enhancing our sustainability journey and supporting the UAE in its ambitions. We have actively contributed to setting net-zero targets and undertaking actions for sustainability awareness and social development.

Continuing our focus on sustainability, du is committed to building upon the 'Year of Sustainability' initiatives. Our commitment extends to our headquarters in Dubai Hills, where we have implemented sustainable practices and invested in a future-proof workspace. We are actively working towards minimizing our environmental impact, reducing our carbon footprint, and supporting the United Nations' Sustainable Development Goals

(SDGs). As we strive to create a better future for all through our actions at du, more exciting initiatives supporting sustainability and CSR are on the horizon.

In order to increase the use of eco-friendly alternatives and renewable energy sources across our network, we have implemented various initiatives. One notable example is the deployment of hybrid generators, which has resulted in a 41% increase in the number of sites using this sustainable solution since 2021. By consuming significantly less diesel, these generators have contributed to a 50% reduction in greenhouse gas emissions compared to previous models.

We have also expanded our utilization of solar energy, with 78 sites now exclusively powered by solar panels—a 30% increase since 2021. Our goal is to further enhance our commitment to renewable energy by installing solar panels at an additional 100 sites. As we transition to 5G and face increased network traffic, our focus on energy efficiency remains unwavering. Through the implementation of 1,100 free cooling systems in mobile sites and the optimization of our data center infrastructure, we are driving even greater energy savings.

Our sustainability efforts extend beyond reducing our carbon footprint to engaging stakeholders and fostering a culture of environmental responsibility. Our Solar on Tower (SOT) solution, for example, exemplifies our innovative approach to sustainability. By installing solar panels on monopole towers, we maximize limited space at mobile sites while generating renewable energy. With 60 sites already equipped with the SOT solution and plans to expand to 270 sites by the end of 2024, we are making significant strides in energy conservation and carbon emissions reduction.

In collaboration with the Environment Agency Abu Dhabi (EAD), we have launched the naha environmental engagement platform to promote sustainability beyond our operations. This digital platform empowers individuals to embrace environmental



stewardship, adopt green practices, and participate in environmental initiatives, contributing to a more sustainable future.

Our overarching goal is to achieve operational net-zero by 2030, and our sustainability initiatives are instrumental in realizing this ambition. Through our investment in renewable energy, reduction of our carbon footprint, and our engagement of stakeholders at every level, we are driving positive change and demonstrating our dedication to sustainability and environmental conservation.

What are du's key targets for 2024? How can the company transform challenges into opportunities to deliver the optimal network experience?

In line with our commitment to customer experience, network expansion, and continuous innovation, du is dedicated to meeting the evolving market demands and needs of our valued customers. We understand

that in today's digital era, providing seamless and reliable connectivity is essential. Therefore, we adhere to the UAE Digital Government Strategy 2025, which focuses on delivering a world-class digital infrastructure.

Our objective is to provide integrated, easy, and fast digital services that are specifically designed based on the needs of our customers. By investing in cutting-edge technologies, we aim to continuously innovate our products and services, ensuring they align with the changing dynamics of the market and enable our customers to stay connected and empowered.

Operational efficiency is a top priority for us as we strive to optimize our processes and resources. By embracing structural efficiencies, we remain agile and cost-effective, enabling us to adapt quickly to the challenges of a constantly evolving digital landscape. As we expand into new business ventures, we aim to diversify our offerings and explore new opportunities for growth. **TR**



Innovative strategies and initiatives demonstrate the organization's dedication to creating an exceptional work environment for both employees and customers





Talal Said Al Mamari, CEO of Omantel

Empowering Connectivity: Omantel's Evolution in the Digital Era

Omantel holds the distinction of being the first telecommunications company in Oman and serves as the primary provider of internet services in the country. During MWC 2024, Telecom Review had the privilege of interviewing CEO of Omantel, Talal Said Al Mamari. In this exclusive interview, Al Mamari discussed Omantel's collaborative approach to addressing the digital needs of its target market, delving into the opportunities and challenges faced by the company. Additionally, he highlighted Omantel's unwavering commitment to its customers and the broader community.

How does Omantel's strategic and collaborative approach successfully address the

digital needs of its target markets? Can you highlight notable examples from 2023?

Influenced by the transforming telecom industry, Omantel is driven by two key pillars. The first involves building and investing in a shift-gear

ecosystem within Omantel and our subsidiaries, with the objective of achieving sustainable growth. As part of our digital transformation journey, Omantel has been incorporating new technologies across its extensive range of

product portfolios, with substantial investments in artificial intelligence (AI), machine learning (ML), cloud services and IoT. Additionally, we have partnered with Equinix to target markets and segments outside of Oman.

The second pillar stems from a strong motivation to expedite digitalization, utilizing state-of-the-art technologies. In line with this, we have forged a strategic partnership with AWS to create a 'Consumer' and 'Enterprise' marketplace and enhance e-commerce in Oman. Additionally, we recently launched our national cloud in collaboration with Huawei. Both initiatives are particularly relevant for specific segments within the B2B space.

On the international scene, Omantel's key strength lies in its significant investments in over 20 global subsea cable systems, which extend its reach to more than 120 cities worldwide. The recent establishment of a new joint venture with Zain, named Zain Omantel International (ZOI), marks a strategic move. ZOI now oversees all international wholesale needs for Zain and Omantel operations across eight countries, catering to over 55 million customers. This partnership is poised to revolutionize the telecommunications wholesale industry by offering a wide portfolio of services and solutions designed to accommodate the growing demands of today's digital world.

As the industry evolves further in 2024, what are the crucial factors influencing the delivery of optimal communication experiences? How does Omantel align with these commitments?

Our operations are centered around providing valuable experience, driving our continuous journey of improvement and transformation. In the consumer segment, our focus extends beyond investing in network quality to encompass the enhancement of the entire customer journey. This involves diligent refinement of our internal processes, adopting a customer-centric approach and prioritizing care initiatives.

In the B2B realm, we have established dedicated teams to cater to diverse market segments. Given the dynamic nature of this domain, we are actively leveraging AI to enhance customer satisfaction and experience, particularly in the personalized service sector. Omantel actively collaborates with vertical industries and partners to drive the digital transformation of the industry. This commitment is evident in our successful collaboration with Hutchison Ports Sohar and Huawei, resulting in the launch of the first 5G smart port in the Sultanate of Oman.

We are committed to investing in technology and nurturing talent development to maintain leadership in a dynamic industry. We take pride in our proactive approach to anticipating customer needs and optimizing customer journeys across various segments and industries.

How will Omantel navigate opportunities and challenges posed by disruptive technologies to ensure that it remains resilient, efficient and secure?

We view the challenges posed by disruptive technologies as tailwinds propelling us toward promising opportunities. To seize these opportunities, we acknowledge the importance culture plays in our adaptability. Culture encourages us to change within our industry and the dynamic landscape of technology.

Given the disruptive nature of technologies such as AI, it's imperative that we embrace both the opportunities and challenges it presents. At Omantel, we are proactively fostering a culture of 'openness to change.' This entails collective efforts within teams to embrace change—and to facilitate this cultural transformation, we have implemented various change management programs throughout the organization. Additionally, to prepare our workforce for these changes, we have initiated programs focused on upskilling our talent pool, essentially equipping them with the necessary tools and knowledge. Moreover, as we welcome Generation Z into our workforce, we are revitalizing

our organization to align with the expectations and preferences of the newest generation of consumers, thus fostering an environment that embraces innovation and forward-thinking creativity.

An important aspect is to ensure our proximity to emerging and disruptive technologies and recognize that data security is crucial to the success of addressing challenges. Therefore, we have established strategic partnerships with leading global companies. This ensures that we stay ahead of the game, prioritizing the best for our customers and the security of our networks.



We are committed to investing in technology and nurturing talent development to maintain leadership in a dynamic industry



Our continuous partnership with Google, a global tech giant, empowers us to competently achieve our goals. Together, we have embarked on groundbreaking initiatives, including implementing artificial intelligence/machine learning (AI/ML) within prediction models, network optimization, and the API monetization project (which aims to serve enterprise businesses).

Security has always been a core element at Omantel, from spearheading digital innovations to elevating customer experiences. Pioneering the adoption of ISO 27701 privacy principles in Oman, we've heavily invested in expanding our cyber footprint, nurturing cyber talent, and simplifying processes to tackle any cybersecurity challenge. Our 24/7 manned 'Cyber-Defense' center continuously monitors ongoing threats. Our ongoing collaboration with Google also focuses on cloud security and leveraging AI and ML technologies to enhance our security capabilities.

Over the last decade, Omantel has collaborated extensively with international telecom security bodies like GSMA, ETSI, and FASG. Our expertise has played a key role in shaping global discussions and initiatives around crucial areas like signaling security, interconnectivity, and 5G security. Active participation in the GSMA Network Equipment Security Assurance Scheme (NESAS) and contribution to the development of the 5G Cyber Knowledge Base (CKB) and 5G Security Manual showcase our commitment to future-proofing mobile networks.

Being recognized as an ambassador by GSMA/FASG is a testament to our commitment. Hosting FASG meetings in 2019 and 2024 demonstrates our leadership in fostering the collaboration and awareness of critical security matters.

Following the FASG meeting in Oman recently, Omantel and the GSMA's FASG are in the process of establishing the 'Middle East Regional Fraud and Security Group.' This

initiative addresses a notable gap in our regional landscape, aiming to enhance mobile network security through education and intelligence sharing. The Middle East FASG will provide a dynamic platform for industry leaders to collaborate, assess threats, share intelligence, and promote best practices, supported by the GSMA's global experts.

What direction is Omantel taking in 2024, in accordance with the company's vision for 2030?

Our vision extends beyond traditional telco roles. Omantel is evolving into a technology company, engaging in global diversification ventures. In 2024, Omantel will align its focus with the company's vision for 2030. A key area of emphasis during this year will be laying the foundation for AI and building the AI ecosystem. As AI spearheads tech trends, we firmly believe that it will necessitate changes not only in how we conduct business but also within our overall business model.

This journey begins with establishing a strong foundation, starting with talent development within Omantel. We prioritize the upskilling of our existing talent pool and acquire new talent with the expertise necessary to leverage emerging technologies effectively. By investing in our workforce and fostering a culture of innovation, we aim to position Omantel as a leader in the AI landscape and drive sustainable growth in line with our long-term vision.

Additionally, another groundbreaking move is our venture into the space industry through a historic partnership with Etlaq. Holding a 25% stake in a rocket launch project, we aim to harness space-enabled technologies for innovative solutions, like using satellite data for customized offerings. Collaborations in areas like oil spill detection showcase our commitment to technology for societal and environmental good.

In essence, our 'Shift Gear' strategy not only aligns us with customer needs but positions Omantel as

a dynamic player in the evolving tech landscape, ready to shape a sustainable future.

Omantel, the pioneering telecommunications company in Oman, continues to lead in providing internet services and addressing digital needs. With a strategic focus on building ecosystems, fostering partnerships, and embracing disruptive technologies like AI, Omantel remains resilient and efficient. Looking ahead to 2024 and beyond, Omantel is dedicated to laying the foundation for AI and aligning its efforts with the company's vision for 2030, ensuring continued innovation and growth in the telecommunications landscape. **IT**



Omantel is evolving into a technology company, engaging in global diversification ventures





Ahmed Aldoseri, CEO, BNET

The Global Infrastructure Journey of BNET and Its Secrets in Shaping the Future

Following BNET's remarkable achievement in infrastructure deployment, Ahmed Aldoseri, CEO of BNET, shared insights about the company's journey, its proactive initiatives, and the future of Bahrain's telecommunication sector in 2024, among other topics, in an exclusive interview with Telecom Review.

Can you provide an overview of BNET's significant milestones, achievements, and journey in the year 2023?

2023 was a significant year for the company. It was the year in which we achieved the government mandate

by covering 95.4% of inhabited residences in Bahrain and achieving 100% coverage in businesses. We were able to provide citizens in Bahrain with a much better experience at the same cost. It was also a year in which we fully engaged with the local community, ensuring that we contributed to the growth of young engineers, whether in civil work

or telecommunications. This year marked a significant push forward that enabled us to collaborate with the government in planning for the next three years.

BNET's efforts to improve Bahrain's telecommunications infrastructure and make it more affordable have positioned Bahrain as the country

with the most robust fiber foundation and the lowest fiber broadband tariff among the GCC countries in the Middle East. Can you tell us more about these efforts?

Last year, I asked the company a question: Why do we provide an asymmetric connection speed? This practice was adopted a long time ago due to technological restrictions. In the current age, where we have a content creation generation, they care just as much about the upload speed as they do about the download speed.

We quickly shifted our thinking and significantly increased the upload speeds in Bahrain, sometimes exceeding 200%, and at a minimum, ensuring each broadband package granted 50% of the download speed as the upload speed. From technological, transmission, and deployment perspectives, we ensured that our costs were minimized to maximize efficiency. This meant that people could enjoy much higher speeds while paying the same amounts. This achievement is very dear to my heart.

How have the proactive initiatives undertaken by BNET in the past year, resulting in a 100% increase in Bahrain's entry FBB speed and a 4-percentage-point rise in FBB penetration, played a role in achieving the lowest Fiber broadband prices in the GCC and ensuring universal access to internet services?

There are several factors that contributed to that. Among them is trusting that the people you have are capable of much more, but you need to enable them and provide them with the trust so they can achieve their tasks. For us, ensuring that we have close control over our fixed costs meant that we could introduce much higher speeds at the same rate. In some cases, it slightly impacted our topline, but these areas we were able to absorb the impact by providing a superior experience to consumers and increased penetration. This meant there was a higher uptake of fiber broadband packages and greater distribution in terms of penetration around the country. By putting these factors together and working with our technology partners, we were able to

push the speed up significantly, and we have plans to go even beyond that.

How did BNET, a newcomer to the industry, manage to succeed in NBN operations, positioning Bahrain as a leader in Next Generation Network (NGN) development? What effects has this had on the country's competitiveness and global acknowledgment?

It starts with the belief that when entrusted with such an exclusive role in the country, we are not just a telecommunications operator; We are an engine for the competitive growth of the country.

Bahrain, as a hub for ICT, relies directly on the accessibility of broadband and the quality of such a network. We immediately reached out to other countries, looking for significant work that had been done in the past. Running a pure-play infrastructure operator is unique. We signed MOUs with different countries to exchange experiences on how things are done elsewhere. We compare ourselves against our own past and our counterparts to build our practices. The belief in the role of BNET in pushing Bahrain forward is evident in the company's staff, who carry the conviction that we are truly providing and enabling prosperity for others in Bahrain.

What is your outlook on the future of Bahrain's telecommunications sector in 2024, specifically concerning fixed broadband networks?

Based on the current penetration rise, we only see things going up. The impact and pressure on all broadband connections requires an increase in bandwidth concentration. With households having an average size of around 5.5 people and a significant number of devices online, there is increasing pressure on broadband availability. The focus is shifting towards ensuring equal access throughout residences, ensuring a consistent experience regardless of the location in the residence.

As a pioneer of NGN, BNET is providing a different reference experience for the world communications industry. What are BNET's plans for technological

innovation and business innovation in the future? How will BNET accelerate the development of the digital economy?

In 2023, we formulated a plan for the next few years called 'Prosperity 2026,' aiming to empower the country, serve customers, and play a role in the local economy. Bahrain's attractiveness to hyperscalers and the expected growth in content creation are key drivers. Being a pure-play infrastructure provider, we are entering areas adjacent to infrastructure, which might be uneconomical for other operators. This strategy aims to provide better value not only to the operators but for the customers' and our community.

BNET has produced remarkable achievements in a very short time. As a newly established company, does BNET have a long-term plan for digitalization and intelligence of its operations?

We absolutely do. We are currently looking at the integration of AI in our operations for the optimization of operations and efficient service delivery. Investment in the development of our people, from engineers to chief levels, is a primary focus to create an empowered, encouraged, and supported environment, which significantly increases the potential and output of everyone involved in the operation.

Despite all the challenges, you have achieved a global award for the 'Best Fiber Infrastructure Deployment.' What is the next milestone or accomplishment you are aiming for in 2024?

We're honored to be recognized as a global leader in fiber deployment. Now, our focus is on leveraging technology to enhance the customer experience. We achieved a major milestone in 2023 with the successful launch of the 'Network Modernization Project,' significantly boosting minimum speeds in Bahrain from 20 Mbps to 100 Mbps. While our next target is a minimum of 1 Gbps, and the new national telecom plan ambitiously aims for a minimum of 10 Gbps for businesses. Achieving this while maintaining shareholder value is our next challenge, and we're ready to tackle it. **IB**



Khalifa Al Shamsi, CEO, e& life

e& life: Enriching Digital Lifestyle Offerings Through Innovation

In an exclusive interview with Telecom Review during MWC24, Khalifa Al Shamsi, CEO, e& life discussed the company's role in providing the best digital lifestyle services within global and regional markets.

How does e& life contribute to the MENA region's position as a driving force in the global tech landscape?

At e& life, we are deeply committed to enhancing the MENA region's standing

in the global technology landscape. Our approach is multifaceted, combining innovation with strategic expansion to integrate digital services into our customers' everyday lives. Our recent endeavors, such as the acquisition of the Careem Everything App, have been monumental in expanding our digital footprint, adding

millions of active users across the UAE and other Middle East markets.

This move not only boosts our platform with high-frequency services that drive customer engagement but also accelerates our vision of becoming a regional super app, offering an integrated array of digital

services. In the realm of entertainment, our division evision has solidified its position as the largest content aggregator in the MENAP region through strategic acquisitions like STARZPLAY.

This has enabled us to offer a diverse range of content through both SVOD and AVOD models, catering to a wide audience. In the financial technology sector, e& money has seen a remarkable fourfold increase in transaction volume, reaching 880,000 registered users in 2023 and becoming one of the fastest-growing financial applications in the region. These achievements are a testament to our commitment to enriching the digital lives of our consumers and underpinning the MENA region's role as a tech powerhouse.

Within the entertainment, fintech and lifestyle domains, what is the importance of the next generation of talents in shaping the future success story of e& life?

The next-generation talents are the cornerstone of e& life's ambitious journey, especially in the domains of entertainment, fintech, and lifestyle. These young, innovative minds are not just the workforce of the future; they are the architects of tomorrow's digital landscape.

In the entertainment sector, our division evision has made significant strides, particularly with the acquisition of STARZPLAY, reinforcing its position as the largest content aggregator in the MENAP region. This strategic move, coupled with the launch of STARZ ON as an AVOD platform, underscores our commitment to providing diverse, quality content. The success of these ventures largely hinges on the creative and technological expertise of our talented individuals who bring fresh perspectives to content curation and digital distribution.

In the fintech realm, e& money, our flagship financial app, has witnessed exponential growth, becoming the largest fintech app in the UAE in terms of user base. This success story is a testament to the innovative spirit and

technological prowess of our team. They have driven e& money to achieve a fourfold increase in transaction volume, catering to a wide range of financial needs of the UAE residents. The app's rapid expansion to 900K registered users in 2023 exemplifies how next-generation talent can leverage technology to create inclusive and accessible financial solutions. Our vision is to provide finance services to every UAE resident, whether banked, underbanked, or unbanked, and this vision is being realised by our talented team who continually innovate to enhance our fintech offerings.

Moreover, our strategic investment in Wio, a digital banking platform for SMEs and consumers dominating the UAE digital banking landscape, complements e& money's offerings, expanding our reach and capabilities in the fintech sector. This collaboration is another instance where the ingenuity and expertise of our young professionals are pivotal. They play a crucial role in merging traditional banking with modern fintech solutions, creating a seamless financial ecosystem for our users.

In summary, the next-generation talents at e& life are not just contributing to our current successes but are also shaping the future of digital entertainment, fintech, and lifestyle services. Their fresh ideas, combined with a deep understanding of technological advancements and consumer preferences, are essential in keeping e& life at the forefront of the digital revolution in the MENAP region and beyond.

Does e& life have any plans to expand to other sectors? How will technologies be harnessed to continue delivering seamless, robust, and best-in-class services?

Looking ahead, e& life plays a crucial role within the e& group by empowering our customers with cutting-edge technologies and services. We have set an ambitious goal to increase our revenue six-fold over the next five years.

This will be achieved by enhancing and growing our existing services in

the consumer digital landscape, both organically and inorganically, with a focus on our MENAP footprint. In addition, the acquisition of a majority stake in the Careem Super App has opened new avenues for revenue generation. This strategic expansion allows us to evaluate our position in these domains and identify areas where we can compete effectively.

Our continuous innovation in our offerings and our commitment to introducing more features in the fintech space, such as lending, cards, and investments, are part of our strategy to lead this sector. The synergy created by leveraging e&'s strengths and existing digital ecosystem footprint and capabilities, combined with those of our partners like Careem or Wio, positions us well for future growth and success.

In 2024, how will e& life move forward to bring more power, freedom and joy to people both locally and internationally?

In 2024, e& life is poised to amplify the value of our existing services, further enhancing our customers' digital experiences. We started our fintech services last year, focusing on global and local payment services, and we plan to augment these services by introducing credit and lending solutions. In entertainment, we expanded our offerings from subscription video-on-demand (SVOD) to include free ad-supported video-on-demand (AVOD) solutions.

With Careem, we aim to expand into more cities, offering a comprehensive range of services through the 'everything app.' This expansion is aligned with our vision of bringing more power, freedom, and joy to people both locally and internationally. Our strategy for 2024 revolves around offering a diverse range of services on a single platform, eliminating the need for multiple applications and thus simplifying our customers' digital lives. This integrated approach, combined with our focus on innovation and customer experience, will drive our growth and reinforce our position as a leader in the digital lifestyle domain. **TR**



Börje Ekholm, President and CEO, Ericsson

Empowering Innovation: Börje Ekholm and Ericsson's Path to Technological Leadership

At LEAP 2024, Telecom Review had the privilege of interviewing Börje Ekholm, President and CEO of Ericsson, whereby the company's advancement and the significance of upholding technological leadership was discussed.

How does Ericsson ensure its position as a leader in innovation and technology within the

rapidly evolving global telecom industry, while also maintaining the competitiveness of its products and services worldwide?

For us, the core of our company and our competitiveness lies in technological leadership. Thus, nearly

20% of our sales are allocated to research and development (R&D) to ensure we offer the most competitive solutions. This investment is not only geared towards enhancing quality, cost-effectiveness, and sustainability but also towards developing energy-

efficient products, which are crucial. Our competitiveness hinges on our commitment to R&D and our ability to invest in it

How do you envision Ericsson advancing under your leadership in terms of both corporate growth and innovation driven by customer needs?

I believe our objective is to pursue a strategy aimed at maintaining leadership in our mobile networks. We achieve this by investing in programmable high-performance networks and venturing into the enterprise field. There are two main avenues we're exploring for this. Firstly, we aim to expand the market for cellular communication, focusing on enterprise networks, dedicated networks, and campuses. Secondly, we're pioneering a unique initiative known as the global network platform. This platform enables us to expose the network's capabilities through a C++ platform or a global network platform to developers worldwide. These developers can then create applications that leverage unique network features such as latency, location, security, speed, and on-demand services.

What are the key focus areas for Ericsson's business development in the upcoming period?

We will persist in investing in our networks to ensure that they lead in what we term as the 'open world.' This entails doubling down on open architecture because we firmly believe it will result in networks that are programmable and easily accessible. We intend to integrate this approach with our global network platform, enabling us to expose the network's capabilities to developers. This will pave the way for the development of new types of applications that have yet to be seen.

With the widespread adoption of 5G technology around the world, what are Ericsson's perspectives on the potential emergence of 6G technology?

Of course, it's inevitable, but it's truly a concept for 2030. Currently, there's excessive emphasis on the realities of

6G when we're still at an early stage in the 5G rollout. The architecture of 5G is cloud-based, very akin to what we anticipate for 6G. Therefore, customers who are at the forefront of deploying 5G now will find themselves in a favorable position for 6G, should it emerge within the next five to seven years.

What role does the Network API play in accelerating innovation on the network as a global platform?


We firmly believe that network APIs are crucial. The network itself possesses numerous unique features such as low latency, high speed, and location awareness. By exposing these capabilities to developers, they can integrate them into applications. Consider, for instance, enhanced video streaming performance or dedicated networks tailored for security or indoor positioning, facilitating seamless transactions like payments. These are the types of functionalities we're introducing to the market as network APIs. There's a significant collaborative effort within the global operator community focused on advancing APIs and open gateways, and we're actively participating in this initiative.

Following Ericsson's participation in LEAP 2024, what specific strategies or initiatives does the group plan to implement to strengthen its foothold and leverage opportunities in the Middle Eastern market?

First and foremost, this event holds significant importance for us. It marks our third appearance at LEAP, and we're genuinely excited about it. What makes this occasion particularly noteworthy is that this region stands at the forefront of 5G adoption, acting as an early adopter. We're beginning to witness a second wave of adoption, which underscores the region's importance to us. Not only is it a sizable market, but it's also a technology-leading market. This drives our commitment to delivering the best solutions possible to the market, which is why we're so enthusiastic about being here. Specifically, we're excited about the Saudi Arabia 2030 vision, which plays a pivotal role in driving the ecosystem

forward, and we're eager to contribute to it.

How does Ericsson contribute to Saudi Arabia's digital transformation journey, and how does it align with the goals of Vision 2030?

I believe that the pivotal aspect of any initiative aimed at digitizing a country and its economy is connectivity. Often overlooked, it's actually a fundamental piece of the puzzle. This is precisely where we play our most significant role, collaborating closely with leading Saudi telecom operators to establish a robust network infrastructure. This infrastructure will prove indispensable in shaping the future landscape. 



Our objective is to pursue a strategy aimed at maintaining leadership in our mobile networks





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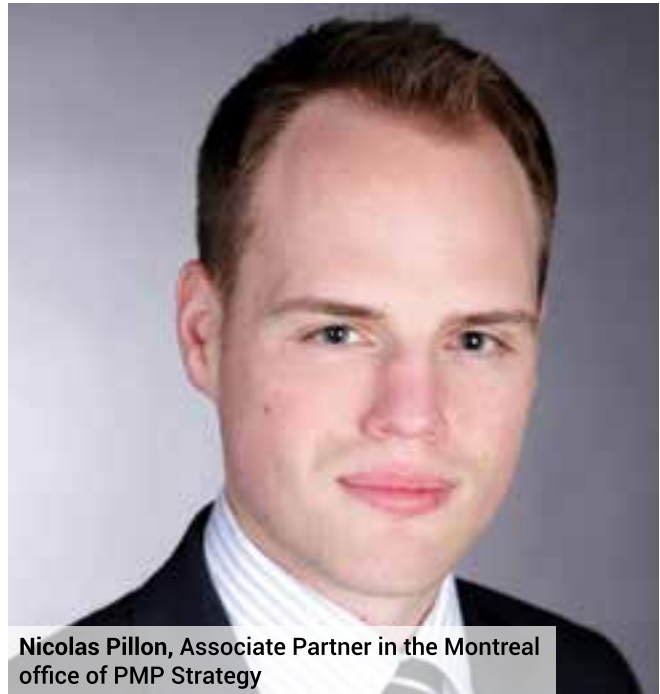
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Ken Campbell, Managing Partner in the London office of PMP Strategy



Nicolas Pillon, Associate Partner in the Montreal office of PMP Strategy

Open Access Fibre: The When, Where and How

Historically, most telecom operators have a hard time 'sharing their toys.' While tower sharing has existed for decades and RAN sharing has seen some success, the idea of open access networks on fibre has only really taken shape in the last few years.

France adopted it early, with a regulatory policy that provided pseudo-monopolies in rural areas. The UK, with BT's Openreach in place, has provided a platform for open access since the UK government's Digital Communications Review in 2017, forcing the creation of a separate entity. In the UK others have followed, including the Mubadala-backed, alt-net CityFibre and nexfibre (Liberty Global, Telefonica, Infravia JV). In the landscape of UK alternative network providers (altnets), the presence of an open access element is a common thread among many of the

98 players. The intention is to challenge Openreach's dominance in the market.

The US had been reluctant to pick up the idea as North American broadband markets are characterized by a multitude of vertically-integrated operators. However, various local open access networks (Intrepid, Ubiquity, SiFi, Utopia, Meridiam, Tillman, and Underline) have developed in recent years, and in May of 2023, AT&T and BlackRock came together to announce a joint venture. AT&T's idea was to build a 1.5 million wholesale open access fibre network in the United States which could leverage the financial strength of BlackRock and the

operational/brand strength of AT&T. The JV, called Gigapower, is now taking shape with AT&T as the anchor tenant.

Bob Lagrone, SVP of AT&T Corporate Strategy, summed it up. "We will be the first selling into this, but it's being built as an open access network. We believe that's a better way to drive the utilization of that network up and to reach segments that AT&T might not be able to reach."

While this announcement was big news in the US, PMP expects to see significant progress in open access development in the coming years given its key advantages.

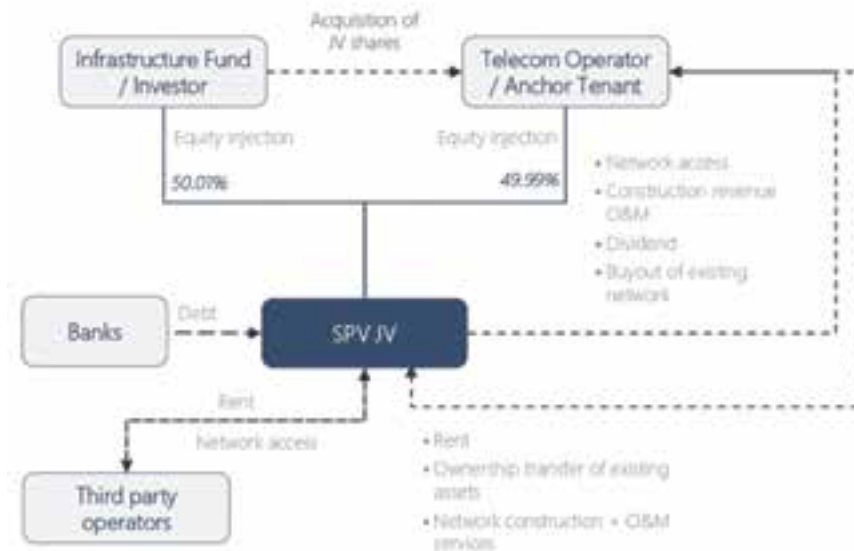
Why Move to Open Access Networks?

- **To Drive Penetration:** With multiple ISP brands offering services over one network, penetration is boosted. Competitive intensity among ISPs creates an important dynamic.
- **To Address Financing Needs:** The need to access new sources of financing (project financing/infra-fund equity investment) beyond traditional corporate financing to support the high cost of building these fibre networks.
- **To Discourage Infrastructure Based Competition:** There is a clear need amongst any company deploying fibre to prevent overbuild risk and defend market share.
- **To Support a Converged Offer:** There is increasing demand for open access models from MNOs that are eager to capitalize on the convergence thesis. The fixed/mobile convergence strategy enriches MNO's value proposition by boosting customer retention through churn reduction. This is the case for both T-Mobile in the US and Vodafone in the UK, where they lack their own fibre infrastructure but need a fibre proposition to defend their mobile business through a bundled proposition.
- **To Improve the Overall Economics:** Open access reinforces overall operator positioning, especially with regards to potential market consolidation. For a fibre infrastructure player, the open access model can be more profitable (and trade at a higher multiple) than the vertically integrated model in the long run.

Although current open access development is still very localized in the U.S., it will become increasingly important to secure first-mover advantage as the main open access player in regional markets.

Three Main Open-Access Models Exist: Independent Wholesale Platforms, Hybrid Retail/Wholesale Providers and the JV/FibreCo Model

The JV/FibreCo model has widely developed in Europe where tough competition among operators and investment funds' willingness to finance infrastructure has led operators to open



their network (either pushed by the regulator or for economic reasons) and to carve out their networks. Operators needed to finance new infrastructure builds and were facing constraints in funding capacity. European investors were also looking to invest in a new digital asset class and benefited from the low-interest market (at the time). In France in 2018, the Altice FTTH carve-out was one of the first major fiber carve-outs that paved the way for many such developments.

Given the increase in interest rates, debt financing is becoming more challenging, and it is likely that many US and international players will seek to develop JV structures to access equity financing from Infrastructure Funds (IF) to finance the roll-out of their fiber networks.

The Standard Characteristics of the Fiber JVs Are the Following:

- Creation of an SPV by an incumbent or a large player (the Telecom Operator/anchor tenant) and the sale of a roughly equal stake of the SPV to an investor to allow deconsolidation
- Call option allows reconsolidation after building period, securing long-term network control
- The operator is an anchor tenant of the JV, buying access to the JV's network through rental fees or IRUs, usually pledging not to use any other NextGen Network in the area covered by the JV

- The JV-SPV is responsible for network construction, network management and commercialization of the network
- Operations are usually sub-contracted to the operator through ex-ante exclusive sub-contracts, covering network construction, network maintenance, and managed services (IT, payroll, compliance, management, real-estate, etc.)
- Lenders provide additional debt financing to the SPV (Project Financing Model with high gearing ratio and lower interest debt than corporate financing)

In summary, assuming the right conditions, an open access model can de-risk the business and create more business opportunities than an integrated operator.

Standard JV Structure

The 'age of sharing' is upon us. As with an airport or a shopping mall, a shared tower or any shared infrastructure, the right mode of investment can provide superior returns and unlock access to lower costs of capital. Assuming the right ISP agreements (or anchor tenancies) are in place, commercial risk is mitigated, and a sustainable business model is created. **TR**

By Ken Campbell, Managing Partner in the London office of PMP Strategy and Nicolas Pillon, Associate Partner in the Montreal office of PMP Strategy



Sue White, Head of Strategy and Marketing, Netcracker Technology

Empowering Telecom Providers: Netcracker's Initiatives for Digital Evolution

Aligned with its strategic goal of highlighting service providers worldwide, Telecom Review had the pleasure of meeting Sue White, Head of Strategy and Marketing at Netcracker Technology, during MWC Barcelona 2024. In this exclusive interview, White sheds light on Netcracker's role in the transition of telecom providers to digital providers, the significance of Generative AI, and the company's digital transformation initiatives, which aim to foster business growth.

Netcracker is one of the world leaders in the telecom industry. How are you helping telecom providers navigate the transition to becoming digital providers?

Netcracker's primary focus is to

ensure that service providers achieve successful digital transformations, enabling both the business and the network to be ready for various growth strategies. However, these transformations pose significant challenges. We're discussing the integration of different networks, possibly stemming from acquisitions and consolidation, introducing new

product catalogs and numerous billing systems, along with managing a number of disparate inventory systems.

All of these components need to converge and be streamlined to effectively gather customer information across any channel. The reality is that the entire IT infrastructure must undergo modernization. Our primary

focus at Netcracker, within the realm of digital transformation, is to assist customers at every stage of this process. Currently, we are witnessing initial progress, such as accelerated business operations and faster service delivery, marking the early stages of transformation.

Generative AI has taken the limelight recently. How important is this technology in telecom and what role does it play in Netcracker's strategy?

Generative AI is an incredibly powerful technology, particularly in the telecom industry where its potential for revolutionizing operations is profound. In telecom, one of the most beneficial applications lies in customer queries, enabling faster problem resolution and significant cost reduction. Moreover, within the core operations of the business, there are myriad potential uses, such as simplifying product catalogs and providing real-time network information to resolve issues promptly. Additionally, it facilitates rapid design creation, eliminating the need for prolonged consultations with design teams.

However, the adoption of Generative AI in telecom presents challenges. Netcracker focuses on addressing these challenges through primary considerations. Firstly, security is paramount, especially concerning the confidentiality of sensitive telecom data when utilizing Generative AI models, particularly those in the public domain— this aspect has been successfully addressed. Secondly, ensuring consistent quality and response from Generative AI models is essential for their effectiveness. Lastly, bridging the gap in knowledge, as Generative AI lacks inherent understanding of telecom operations, is crucial.

Netcracker plays an important role in developing use cases for these models by leveraging its expertise in telecom and accessing relevant data. Through the implementation of GenAI solutions, Netcracker aids service providers in overcoming telecom-specific challenges, effectively bridging the gap between model usage, end-users, and sensitive telecom data.



What are the primary initiatives Netcracker is focused on to help its customers drive business growth with their digital transformations?

Netcracker is assisting its customers in many ways with various strategic initiatives. One of the primary focuses is on aiding service providers in expanding their presence in the B2B space— a significant growth area. To achieve this, we provide sophisticated management systems that enable telcos to collaborate with numerous partners, both telecom and non-telecom. This collaboration involves maintaining their own connectivity services and partnering to bundle different services together, thereby offering unique experiences to their customers.

Moreover, we are heavily invested in ensuring a user-friendly digital frontend for all customer types. This frontend facilitates access to services and allows customers to make changes and modifications as needed. The emphasis on the digital frontend is a significant focus area for us, alongside efforts to automate processes to improve service delivery, speed and agility.

Additionally, we recognize the evolving needs of some customers who are transitioning from telcos to techcos and expanding into adjacent markets.

Furthermore, we support service providers in exposing the capabilities they have within their network. For instance, when network slicing is publicly deployed, we ensure that it is

easily accessible to developers through a plug-and-play mechanism. This approach enables service providers to expose and monetize these new services effectively. **TR**



Netcracker's primary focus is to ensure that service providers achieve successful digital transformations, enabling both the business and the network to be ready for various growth strategies





David Erlich,
Consulting Director, Sofrecom

Sofrecom's Insight: ICT's Carbon Footprint and Data Center Sustainability Efforts

David Erlich, Consulting Director at Sofrecom, granted Telecom Review an exclusive interview and discussed the increasing awareness and efforts to estimate and mitigate the carbon footprint of Information and Communication Technologies (ICT), with a specific focus on data centers. He highlighted the methodologies used to assess carbon footprints, the significant energy consumption by data centers, driven primarily by server growth and cryptocurrency mining, and the shift towards greener energy sources by major ICT players.

During the last few years, a lot of initiatives have been taken to estimate the carbon footprint of Information and

Communication Technologies (ICT). Beginning with academics and green think tanks, it is now endorsed by the International Telecommunication Union or International Energy Agency. All methodologies follow a similar path.

On one hand, devices (smartphones, modem/boxes, and sometimes connected TVs, IoT sensors, etc...) are identified, while on the other hand, the infrastructure which includes telecom networks and data centers is considered. The number and

nature of devices is well known, as it is reported by manufacturers and distributors. The energy spent by telecom operators is also included in their corporate reporting. However, data center impact remains an area for investigation because it is not consolidated by the industry.

In 2018, the think tank “The Shift Project” approximated that data centers accounted for 19% of the final energy consumption in the digital sector, a proportion projected to remain relatively stable in 2022. By consolidating various estimates, it can be suggested that data centers consumed nearly 450 TWh in 2021, with enterprises utilizing 260 TWh, the main GAFAMs consuming 70 TWh, and cryptocurrency mining (predominantly bitcoin) accounting for 120 TWh.

Data centers are predominantly utilized by businesses, with the Cisco Cloud Index estimating in 2016 that B2B accounted for 75% of computing instances. The primary consumption driver is the annual installation of servers in data centers; 80% of a data center’s electricity is used to power and cool these servers.

Initially, “The Shift Project” forecasted a surge in data center consumption (since revised), yet this did not materialize for several reasons. The primary driver was not data growth (+600% between 2015 and 2022, propelled by streaming), but server growth (+30% annual shipment between 2015 and 2022). The transition to cloud services generated optimization by replacing poorly optimized dedicated servers with more efficient shared infrastructures, leading to an increased use of large data centers operated by hyperscalers such as Amazon Web Services, Microsoft Azure, and Google Cloud Platform.

On the downside, the period between 2015 and 2021 witnessed a significant increase in the use of computing capacity for cryptocurrency mining, starting from less than 5% of data center consumption in 2015 to nearly 25% in 2022.

From a carbon footprint standpoint, the energy used by data centers appears greener. The majority of currency mining has shifted out of China, which has a carbon-intensive electricity supply, to new mining hotspots like the US. Hyperscalers are initiating greener electricity projects; Amazon, Microsoft, Meta, and Google are the four largest corporate purchasers of Power Purchase Agreements (PPA) for renewable energy. The move to Hyperscalers has protected the digital world from an emission explosion.

Examining potential influencing factors for the 2024-2030 period, enterprises seem to remain the primary driver of end demand, with digitalization now self-sustaining. Generative AI may constitute a significant weight, particularly if companies endeavor to develop their models. Data training is an expensive process, costing around 10 GWh for a model like GPT4.

In the domestic sphere, AI is transitioning to the terminal level (with dedicated chips). As the public’s digital time is already well-utilized by social networks and streaming, it is challenging to identify significant growth drivers beyond the global catch-up of usage in certain emerging countries. More energy-intensive practices such as cloud gaming and the metaverse have yet to capture a mass market.

The endpoint of the migration to hyperscale infrastructures remains uncertain. It is not granted that the productivity gains seen in 2015-2020 will be replicated in 2020-2025. The evolution of energy-intensive cryptocurrency mining is still a significant question, with Bitcoin’s recent value resurgence, nearly tripling in one year as of March 2024, not being the most encouraging signal.

Other IT emission categories include consumer terminals and telecom operators’ networks. The number of TVs, PCs, and smartphones sold has been stagnant for several years and is not expected to surge. Telecom

operators’ networks have seen low growth in power consumption despite the high volume of data transported. They will keep tight control of their energy spending, which is a significant share of their OPEX, in the context of electricity price volatility.

These considerations suggest that the share of data centers in the digital energy mix is likely to increase over the next few years. From an emission perspective, all ICT actors will strive to buy greener electricity, but probably not offsetting energy growth. In other words, ICT emissions might keep growing. **IB**



These considerations suggest that the share of data centers in the digital energy mix is likely to increase over the next few years



Ooredoo Oman Cooperates with South Batinah for Digital Transformation



At the Office of the Governor of South Batinah, His Excellency Eng. Masoud bin Saeed Al Hashemi, Governor of South Batinah, and Eng. Bassam Yousef Al Ibrahim, CEO of Ooredoo Oman, signed an agreement outlining the completion of telecommunications services and the strengthening of interconnection lines and internet services.

As part of the collaboration, Ooredoo Oman will be providing the latest communication and networking devices

technologies and raising the efficiency of internet lines to enable the governorate to manage digital transformation projects and initiatives and enhance community partnership.

Commenting on the agreement, Eng. Bassam Yousef Al Ibrahim, CEO of Ooredoo Oman, said, "The cooperation between Ooredoo and the South Batinah Governor Office aims to implement Oman Vision 2040. Our plan as a company lies in how we innovate ideas and technologies to help the governorate keep pace with digital transformation and empowerment. And there are upcoming plans that will be presented continuously throughout the contract period, as we have previously contracted with several governorates, including Dhofar and Muscat—and this governorate [South Batinah] is the third with which we

signed an agreement that serves digital transformation."

The CEO stressed that Ooredoo Oman's annual objective is to offer technical solutions aimed at aiding governorates in their digital transformation efforts.

Dr. Hatem bin Salem Al-Dohani, Assistant Director General for Administrative and Financial Affairs and Head of the Digital Transformation Team at the Office of the Governor of South Batinah, commented, "The agreement to complete telecommunications services is one of the important projects that support digital transformation. The South Batinah Governorate seeks to provide services and simplify procedures to achieve the goals of Oman Vision 2040, and find digital solutions and facilitate access to them."

UAE and Saudi Arabia Forge Ahead in Cybersecurity



According to the UAE Cybersecurity Council, in 2023, the United Arab Emirates actively repelled more than 50,000 cyberattacks daily. In the first three quarters of the year, the country successfully prevented over 71 million attempted attacks in total.

The insights revealed in a recent report by analysts Frost & Sullivan (F&S) underscore the remarkable expansion of the cybersecurity domain in the region, coupled with the persistent escalation of threats.

Projections indicate that the cybersecurity sector in the GCC is poised to triple its worth by 2030, potentially reaching a staggering USD 13.4 billion. Against this backdrop, nations such as the UAE and Saudi Arabia are strategically diversifying their economies

and embracing digital solutions and innovations.

GCC Countries Enhance Cybersecurity Measures

The UAE and Saudi Arabia have witnessed a significant surge in technology adoption within key sectors such as finance, healthcare, and manufacturing, amplifying the imperative for robust cybersecurity measures and regulatory structures.

Amidst heightened reliance on technology, challenges persist regarding awareness, a shortage of skilled professionals, and a lack of clarity among businesses regarding proactive cyberattack mitigation strategies.

In light of these pervasive industry challenges and the ongoing global technological evolution, Middle Eastern nations are proactively undertaking concrete measures to fortify their cybersecurity resilience.

These initiatives encompass the establishment of dedicated cyber departments and innovation hubs,

the dissemination of awareness through educational campaigns and training initiatives, and the fostering of entrepreneurship via cybersecurity conferences. In this way, the next generation is equipped with the necessary skills, bridging the existing skills gap.

In fact, the ITU Global Cybersecurity Index 2020 highlighted that Saudi Arabia has ranked second, and the UAE fifth, among 194 participating countries, indicating that both countries have taken extensive measures in terms of regulatory approaches. This positioned them to be preferred hubs for academia, commerce, research, and innovation.

Notably, the UAE government has established the inaugural national Cyber Pulse Innovation Center, which focuses on enhancing professional skills at the Abu Dhabi Polytechnic university. Furthermore, Saudi Arabia, the UAE, and Bahrain have each instituted key entities—namely, the National Cybersecurity Authority, the National Electronic Security Authority, and the National Cybersecurity Center, respectively—to oversee and coordinate ongoing industry endeavors.

Omantel's Cloud Solutions to Digitalize O&G Operator CCED



Omantel, the leading provider of integrated telecommunication and ICT services in Oman, and CC Energy Development (CCED), a prominent oil and gas operator in Oman have entered into a multi-year contract to collaborate on a comprehensive Enterprise Resource Planning (ERP) project, which aims to transform the operational landscape of Oman's energy industry.

Under this arrangement, Omantel will provide cutting-edge cloud-based solutions across CCED's financial, supply chain, and human capital

management domains. The project aims to drive unprecedented levels of efficiency, innovation, business transformation, and competitiveness within Oman's oil and gas sector.

Talal Said Al Mamari, CEO of Omantel, said, "We are thrilled to embark on this transformative journey alongside CCED. This partnership underscores our commitment to driving digital innovation and enabling operational excellence in Oman's energy sector. By harnessing the power of cloud technology, we aim to propel CCED towards greater efficiency, resilience, and success."

Walter Simpson, Managing Director of CCED, said, "As a leading player in Oman's oil and gas industry, we recognize the importance of embracing technological advancements to stay ahead in a rapidly evolving landscape. This

collaboration with Omantel will optimize performance and create a leaner operation while improving efficiency and productivity."

Through the implementation of Oracle's cloud solutions, CCED anticipates significant enhancements in operational agility, cost optimization, and resource allocation. CCED ensures compliance with the Ministry of Energy and Mineral's (MEM) data residency regulations, adhering to the country's sovereignty requirements.

The Omantel-CCED partnership stands as a testament to the transformative potential of collaboration between the telecommunications and energy sectors. By leveraging synergies and expertise, both organizations are positioned to chart new territories, redefine industry standards, and contribute significantly to Oman's socio-economic development.

GCC Techcos Can Expect Double-Digit Growth: Report



The maturity of telecom markets in the GCC region with mobile penetration rates of 130%-210% is limiting rated GCC telcos' revenue growth to about 1%-3% annually, hindering organic growth prospects for telcos, according to S&P Global Ratings. Higher growth rates, broader business diversification, and lower capital intensity fuel the tech appetite of rated telecommunications companies (telcos) in the (GCC) region, the analysis noted.

Nonetheless, the agency foresees a double-digit increase in revenues for tech companies (techcos) as they explore novel avenues to expand their operations and diversify revenue streams. This trend underscores the evolution of UAE telecom operators—Etisalat (e&), and du—as prominent players in the tech sector.

Pioneering Digitalization and Economic Development

The report highlighted that the digitalization and economic development agendas of GCC governments will bolster digital businesses and enhance the consolidated revenues of GCC telcos. S&P noted that non-telecom operations currently account for approximately 15%-16% of combined revenues for rated GCC telcos. Notably, advanced telcos like stc and Etisalat (e&) tend to generate higher revenues from digital businesses.

S&P anticipates that core telecom services will continue to contribute to profits in the short term, but it predicts that digital businesses will experience much faster growth. According to S&P's latest forecast, investment-grade global software and services companies are projected to grow by 8%-10% between 2024 and 2025. In comparison, investment-grade global telcos are expected to grow by 1.5%-3.0% during the same period.

The GCC governments' strong digitalization push will impact GCC telcos' growth rates in the digital economy, with increases in e-commerce, fintech, streaming, and gaming.

S&P estimates that rated GCC telcos' non-telecom operations could contribute 18%-25% to total combined revenues over the next three years. S&P's sensitivity analysis assumes low single-digit growth for telecom revenues and an organic growth of 10%-20% per year in non-telecom revenues.

M&As could compound on the organic growth, resulting in much faster revenue accretion from tech related services.

Techco Projections

S&P noted that the recent announcement by the evolving global tech company, e&, to generate 40% of its revenues through tech-related businesses by 2030 is attainable through a blend of organic growth and external expansion.

AI Integration: UAE Embraces Advanced Business Operations



A recent report offered a detailed analysis of AI adoption trends among enterprises, shedding light on the profound impact of AI on business operations.

Based on findings from a survey of more than 8,500 IT professionals globally, including participants from the UAE, the IBM Global AI Adoption Index 2023 highlighted the rapid adoption and integration of AI across various industry sectors.

Findings revealed that 65% of IT professionals in the UAE have witnessed a significant acceleration in AI implementation over the past two years. This surge has fundamentally reshaped operational paradigms, fueling gains in efficiency, innovation, and competitive prowess within the UAE market.

Positioning the UAE at the forefront of technological advancement, the nation has emerged as a leader in AI adoption, with 42% of companies actively incorporating AI into their operational frameworks. This statistic underscores the proactive stance of UAE businesses towards AI integration, setting a precedent for the region.

The report emphasized that strategic investments in AI highlight a

significant emphasis on research and development, as well as workforce development initiatives, positioning them as primary investment priorities. This strategic emphasis is pivotal for sustaining AI growth and fostering innovation, ensuring the workforce remains adept at navigating the evolving landscape of AI technologies.

Moreover, the study highlighted that 34% of UAE companies have established comprehensive AI strategies, with an additional 30% in the process of formulating their own. Key drivers propelling AI adoption in the UAE include advancements in AI technology, its growing incorporation into conventional business operations, and the necessity to enhance cost-efficiency and automate essential processes.

UAE Emerges as Leading Performer on Knowledge Infrastructure



The Mohammed bin Rashid Al Maktoum Knowledge Foundation (MBRF) previewed the rankings of Arab countries in the Global Knowledge Index (GKI) 2023. The UAE stands out as a leading performer, particularly in terms of its knowledge infrastructure.

Revealed by the United Nations Development Programme (UNDP) in collaboration with the MBRF, these rankings highlighted the UAE as a leading performer among Arab states in the GKI 2023.

Covering a total of 133 countries, including 12 Arab states, the GKI evaluates 155 variables sourced from over 40 international databases. The GKI assesses the performance of six pivotal knowledge sectors, including pre-university education, technical education and vocational

training, higher education, information and communication technology (ICT), research, development and innovation, and the economy.

Arab Countries' Areas of Strength

The GKI 2023 shed light on the strengths and areas requiring improvement in Arab countries, aiming to narrow the existing divide.

The UAE: Excels in various areas, such as active mobile broadband subscriptions, educational attainment, entrepreneurial activity, and ICT skills, highlighting its exceptional performance in internet connectivity, education, human resources, communications, and information technology.

Qatar: Ranking second among Arab countries in the GKI, Qatar's strengths are concentrated on research and development, human resources, education, and training.

Saudi Arabia: Exhibited strong performance across various domains, including a high percentage of individuals with standard ICT skills, the development

of industry clusters, an increase in innovative companies, firms with new-to-market products and services, and households with internet access.

Kuwait: Showcases strengths in various indicators, including industry and service value added as a percentage of GDP, fixed broadband internet traffic per subscription, pupil-to-trained-teacher ratio in pre-primary and primary education, and the vulnerable employment ratio.

Egypt: Excels in higher education, production, and research, with exceptional female-to-male teacher ratios in tertiary education, in market concentration and within firms introducing new products and services. Moreover, Egypt has a favorable cluster development status and the citations per document are noteworthy.

Morocco: Shows strengths in industrial design applications per 100 billion GDP, the percentage of researchers in higher education, and government expenditure on secondary and primary education (% GDP). These indicators promise growth in the industrial, research, and educational sectors.

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Breaking Glass Ceilings, Building Bridges: Celebrating Women's Leadership in ICT

In 2024, the International Girls in ICT Day, supported by the ITU, will be celebrated on April 25. For this year's theme, the discourse will focus on 'Leadership,' underscoring the critical need for strong female role models in science, technology, engineering, and mathematics (STEM) careers.

In order for girls and young women to excel in STEM fields, it's crucial for them to encounter female leaders who can serve as sources of inspiration and help remove obstacles that impede their advancement. Telecom Review gathered the perspectives of notable women executives globally about encouraging empowerment and

leadership development for a more equitable future in STEM.

Leadership Gender Gap in STEM

The gender gap in the STEM field persists, with women comprising only one third of the STEM workforce globally. This impacts innovation and progress within these fields. According to the Global Gender Gap Report (2023), women comprise only 29.2%

of the STEM workforce in 146 nations evaluated, compared to nearly 50% of non-STEM occupations.

While there has been significant progress, a lot of work still needs to be completed holistically to address the significant gender gap, particularly in STEM leadership. STEM fields have historically been perceived as male-dominated, and stereotypes about gender abilities discourage women from pursuing careers in these areas. This leads to unconscious biases and discriminatory practices in recruitment, promotion, and evaluation processes.

Zooming in on a regional perspective, women in the MENA region are actively pursuing STEM degrees. A study by UNESCO indicates that 57% of STEM graduates in Arab countries are women and 61% of university STEM students in the UAE are female.

Prior to the International Girls in ICT Day, the UN's International Women's Day celebration has placed the 'Invest in women: Accelerate progress' theme in the spotlight. With this in mind, ITU Chief, Doreen Bogdan-Martin—the first woman to serve this position in the organization's nearly 160-year history—highlighted the "huge" gender bias found in the popular AI algorithms of today.

She said that the major problem was that "women are less connected (and) women are less represented in this sector."

"When it comes to the data (the algorithms) we need to have more women at the table." In particular, she added, "we need to get more women in AI now."

In a study published by UNESCO, it was revealed that algorithms used by OpenAI and Meta showed "unequivocal evidence of prejudice against women."

A Call for Action

Overall, female executives from NEC, Ericsson, du, Nokia, PMP Strategy, and Huawei agree that the following steps can be taken to bridge the gap, break the stereotype, advocate inclusive opportunities, and ensure inclusivity:

1. Early Exposure: Starting from home, parents can help combat the issue by ensuring that girls and boys have equal opportunities to engage in all types of play and learning. Introducing girls to STEM subjects from a young age, dismissing stereotypes, and highlighting successful females in STEM as role models will give a lasting impression to the youth.

2. Education: Increasing the number of girls in the STEM field is crucial to address the significant gender gap in STEM leadership. This includes motivating and promoting STEM education among young girls through education and hands-on activities, like building robots, coding simple games, or participating in science fairs, and conducting internships. Schools can become a change agent and ignite interest in STEM from a very young age by introducing diverse role models and internships.

3. Supportive Networks: Encouraging peer support, family connections, mentorship, sponsorship activities, and professional networks is very essential. A supportive network for women during the early stages of their careers in STEM can help them navigate their careers, access advancement opportunities, and grow their professional networks with other experienced leaders.

4. Inclusive Work Environments: This further encourages girls to pursue STEM leadership, as they see that support will be provided throughout their career journey. This includes implementing policies that promote gender equality and actively address bias and discrimination. Flexible working hours, parental leave policies, and childcare support make it easier for women to maintain careers and leadership positions.

5. Hosting Student Communities: Tech companies may look into creating and hosting student communities now that the digital native generation is involved.

Mayuko Tatewaki, Corporate Senior Vice President, Marketing and Alliance, NEC Corporation, concurs that, "Collective efforts from governments, education systems, and the industry are essential to bridge this gap

and create a more equitable STEM landscape."

In the same context, Majda Lahlou Kassi, Vice President, Head of Customer Unit West Africa and Morocco at Ericsson Middle East & Africa, cited that narrowing the gender gap includes initiatives such as their partnership with Technovation, which focuses on skills empowerment, and their 'Connect to Learn' program, which strives to support the education of women and girls, reaching over 400,000 students across 36 countries.

"At Ericsson, we have made steady progress over the past few years, particularly in increasing the number of women in senior positions," Kassi shared. "At Ericsson, we foster a culture of equality and empower women to participate and thrive in STEM."

Specifying several measures, Fatema Al Afeefi, Head of Employee Experience & HR Digitalization, du, said, "Companies can actively work towards reducing gender bias by encouraging open communication, diversity training, and implementing policies that support work-life balance can also contribute to gender parity and foster a culture of respect and equality among employees."

"Young minds are curious minds, and early intervention can help break down stereotypes," commented Mobin Ashraf, Head of Market Operations MEA, Nokia. She further pointed out that, "At Nokia, we take pride in the achievements and contributions of women who have excelled in STEM roles. Their dedication and brilliance inspires us to reaffirm our commitment to fostering an inclusive environment, where women feel empowered to pursue and thrive in STEM careers."

Annually, every October, Nokia recognizes an exceptional Nokia female talent in the field of STEM. This is in commemoration of the achievements of Ada Lovelace, the world's first computer programmer. In pursuit of narrowing the gender disparity in technology, StrongHer serves as Nokia's global network for gender inclusion and diversity, boasting over 3,000 members and 40 active chapters worldwide.

"In environments where women are under-represented, self-confidence and self-esteem are even more important," underscored Chrystelle Briantais, Founding Partner, Telecoms, Media & Technology (TMT), PMP Strategy. "Role models and confidence-building are crucial, and establishing mentorship programs and family-friendly environments can enhance gender diversity, reshaping industry dynamics."

In 2023, PMP Strategy achieved a laudable score of 99/100 on the French government's equity index—a testament to the company's commitment to diversity and inclusion. Today, PMP Strategy has appointed four female partners (two in the Infrastructure and Technology sectors and two in the Financial Services sector). The company has also established an internal Diversity Council, which promotes these principles across global offices.

In harmony, Afke Schaart Taghzout, SVP & Chief Global Impact, Huawei, believes that "closing the gender gap in STEM fields requires a multifaceted approach from all sectors of society, to break down barriers, challenge stereotypes, and create pathways for women to thrive and succeed."

Most Impactful Experience

In a world where diversity and inclusion are becoming increasingly recognized as essential pillars of progress, women have navigated the often challenging landscape of the ICT sector. Throughout this journey, they have embraced the responsibilities of leadership and witnessed the transformative power of inclusion and representation.

"There is nothing more impactful than witnessing a customer achieve innovation with the technology and services we provide," Tatewaki exclaimed. "Experiencing customer interaction firsthand has kept me going even through tough times." Having joined NEC Corporation in 1991, Tatewaki has amassed over 30 years of dedicated service to the company. Throughout her tenure, she has held diverse sales roles and assumed leadership positions in overseas business strategy.



“

This role empowers me to approach challenges with my unique perspective, and to strive for diversity of all kinds throughout the organization

”

CHRYSTELLE BRIANTAIS
Founding Partner, Telecoms,
Media & Technology (TMT), PMP Strategy

“

I am glad to have had the opportunity to work towards creating an inclusive and equitable work environment

”

FATEMA AL AFEEFI
Head of Employee Experience
& HR Digitalization, du

“Throughout my 25-year tenure at Ericsson, I’ve been privileged to witness, firsthand, the profound impact of cultivating diversity within our organization,” Kassi added. She previously served on the Diversity & Inclusion board in the Mediterranean region and contributed to meaningful change initiatives. “As we chart our course forward, our commitment to increasing the representation of women to 30% by 2030 reflects our unwavering dedication to fostering a culture of inclusivity and belonging,” she asserted.

“The most impactful milestone I can share is breaking through the glass

ceiling and proving that gender should never be a barrier to success, inspiring other women to strive for leadership roles and driving positive change in the industry,” Al Afeefi declared. She is glad to lead and have the opportunity to work towards “creating an inclusive and equitable work environment at du,” where Emirati women make up 50% of the overall UAE national workforce.

Ashraf characterized the choice to pursue an ICT career as “not an easy sail,” yet viewed it as a significant milestone in her professional journey. “Despite facing obstacles along the way, my passion for technology and

determination to succeed have propelled me forward.” Even when her family was skeptical about her acceptance of an overseas job, her father was her biggest supporter, “His words still echoes with me—that opportunity may not knock on your door twice and you should grab it when it’s there.” Therefore, Ashraf encourages young girls to “take a leap of faith and get out of the comfort zone.” She further added that young girls should “challenge themselves to be at their best by breaking the barriers and the glass ceilings.”

Briantais proudly shared that one of her greatest milestones, so far, is being the



“

I take pride in leading the way with innovative methods to enact change and striving to create a positive influence

”

AFKE SCHAART TAGHZOUT
SVP & Chief Global Impact, Huawei

“

There is nothing more impactful than witnessing a customer achieve innovation with the technology and services we provide

”

MAYUKO TATEWAKI
Corporate Senior Vice President, Marketing and Alliance, NEC Corporation

sole female Founding Partner of PMP Strategy alongside five men. “This role empowers me to approach challenges with my unique perspective, and to strive for diversity of all kinds throughout the organization, so that we are better positioned to effect positive impact for our clients and society.”

From a sustainability perspective, Schaart is fascinated by how “technology can enhance our understanding of nature and support conservation efforts. She emphasized that “ICT plays a crucial role in monitoring and analyzing various habitats and biodiversity.” Huawei and

its partners are collaborating closely to enhance the efficiency of nature conservation in over 300 protected areas globally through the integration of technology. “This concerted approach aids in safeguarding various species, ranging from the iconic pandas in China to the majestic salmon in Scotland, to protected bird species in Italy,” Schaart mentioned.

Proud Statements of Women ICT Leaders

Ultimately, this article serves as both a celebration of achievements and a call to action for greater gender equality and representation within the ICT sector. By

sharing their stories and perspectives, we hope to inspire and empower other women to embrace their potential, challenge the status quo, and make meaningful contributions to a more inclusive and equitable future.

“As one of the female leaders in ICT, I take pride in breaking barriers, inspiring others, and connecting people like me with one another to encourage them to take the next step towards growth in this highly volatile and exciting technology field,” concluded Tatewaki.

Similarly, Kassi is encouraged by the fact that she can leverage her experience



Despite facing obstacles along the way, my passion for technology and determination to succeed have propelled me forward



MOBIN ASHRAF
Head of Market Operations MEA,
Nokia



As leaders, we have a responsibility to lead by example and foster a culture of equality and empowerment in our organizations



MAJDA LAHLOU KASSI
Vice President, Head of Customer Unit West Africa
and Morocco, Ericsson Middle East & Africa

at Ericsson to “champion diversity and inclusion in the tech industry, recognizing that as leaders, we have a responsibility to lead by example and foster a culture of equality and empowerment in our organizations.”

Al Afeefi finds great fulfillment in her “ability to overcome stereotypes and pave the way for a more diverse and inclusive industry, where women can thrive, excel, and contribute their unique perspectives and talents to shape the future of technology.”

Ashraf expressed that her leadership journey is “fueled by creating a more

inclusive ICT space through conscious hiring decisions and leading by example, resulting in a diverse team with 35% female representation.”

Briantais is proud of the fact that she can leverage her non-technical background to “provide a different perspective on issues, showcasing the versatile applications of technology and supporting the next generation of female Partners at PMP Strategy.”

Last but not least, Schaart takes pride in being a woman in ICT by “leading the way with innovative

methods to enact change and striving to create a positive influence on individuals, businesses, and the global community.” Seeing other women break down barriers and achieve groundbreaking successes in their respective fields is “incredibly inspiring” for her.

As an industry, we can move forward in a journey of empowerment, resilience, and transformation; a journey guided by the unwavering belief that diversity is not only a strength but also a catalyst for positive change within the ICT sector and beyond. **TR**



How International Expansion Drives Growth for GCC Telcos

International expansion has emerged as a fundamental strategy for telecommunication companies within the GCC region, representing a pivotal approach to fostering growth and diversification. Telecom operators in the GCC have actively sought opportunities beyond their domestic borders, aiming to scale up their operations and unlock new avenues for revenue generation and subscriber expansion.

Driven by the dynamic nature of the telecommunications industry and the need for sustained growth, GCC telcos have recognized the importance of venturing into international markets. This strategic move enables them to tap into

diverse demographics, capitalize on emerging technologies, and navigate the evolving landscape of global telecommunications.

The pursuit of international expansion is rooted in the desire for telcos to not only extend their geographical reach but also capitalize on the increasing demand for telecommunication

services on a global scale. By strategically positioning themselves in new markets, these telcos aim to leverage their expertise, infrastructure, and technological capabilities to stay ahead of industry trends and meet the evolving needs of consumers and businesses alike.

Investing in Emerging Markets

In historical retrospect, telecommunication operators within the GCC embarked upon substantial forays into emerging markets, characterized by the acquisition of telecom licenses and assets across diverse regions, including South Asia, Southeast Asia, Sub-Saharan Africa, and various segments of the Middle East and North Africa (MENA).

A paradigmatic illustration of this strategic trajectory is evident in the 2000s, wherein entities such as e& (formerly Etisalat) expanded into India, Nigeria, and Pakistan; Ooredoo (formerly Qtel) penetrated the Indonesian market (subsequently extending to Myanmar in 2013); and Zain secured a foothold in multiple African nations through the acquisition of Celtel. Furthermore, in 2008, stc executed a notable financial transaction, disbursing USD 2.6 billion for a 35% equity stake in Oger Telecom, which, in turn, possessed a 55% ownership interest in Turk Telekom.

These strategic endeavors have provided telecom companies with a substantial geographical footprint and a substantial subscriber base, particularly leveraging the demographic dividend emanating from the sizable youth cohorts in these regions. Nevertheless, the impact on overall revenues and profitability has proven to be somewhat nuanced, primarily attributable to the intense competition and the low average revenue per user (ARPU) dynamics inherent in these markets.

This financial challenge is compounded by a spectrum of macroeconomic impediments, including foreign exchange losses, elevated inflation rates, and the

intricate political and regulatory landscape characterizing emerging markets. Consequently, domestic operations persistently emerge as the primary revenue contributors, thereby underscoring a discernible disjunction between subscriber distribution and revenue generation. As the market evolves, the strategic pursuit of international expansion by GCC telecom operators intensifies.

Diversifying Financial Footprints

Through the acquisition of assets in novel geographical realms and the provision of products and services therein, telcos are anticipated to observe a projected increment of 3% in their annual revenue during the period of 2023-2024, as indicated by Moody's Investors Service.

The potential positive impact on credit from investments in foreign markets over an extended period is contingent upon finding a delicate equilibrium between the maturity and growth prospects of the new geographies, highlighted by Moody's in their report.

Analysts underscored that outcomes of prior investments in African and Asian enterprises have exhibited a varied spectrum of results attributed to the influence of currency fluctuations, macroeconomic volatility, and the occasionally unpredictable legal and regulatory landscapes prevailing in certain regions. Consequently, GCC operators are presently engaged in an effort to strike a harmonious balance. Specifically, they seek to navigate between more stable operational environments and the potential for growth within the telecommunications markets, recognizing the imperative of balancing risk and reward in their strategic endeavors.

The ongoing transformation within the telecommunications industry, spurred by innovative technologies, compels companies to adeptly integrate these advancements to optimize operations. This strategic adaptation not only facilitates the expansion of consumer bases

but also introduces new revenue streams— a crucial maneuver in the face of escalating competition.

Strategic Telco Investments

The motivation behind strategic telco investments is rooted in the aspiration to emerge as influential global entities in the Technology, Media, and Telecommunications (TMT) sector, with a focus on achieving substantial scale and fostering innovation.

Citing prominent instances, e& and stc have been at the forefront, consistently finalizing noteworthy deals and making significant announcements in recent years.

In May 2022, e& acquired a 9.8% stake in Vodafone Group for USD 4.4 billion, and three months after, the techco put forward an offer to increase its stake in Vodafone Group to 20% and acquired 50% plus one share in PPF Telecom Group's assets in Bulgaria, Hungary, Serbia and Slovakia for EUR 2.15 billion.

Between December 2022 to April 2023, e& progressively increased its stake in Vodafone Group to 14.6%. Through its partnership with Vodafone, e& has highlighted the opportunity to create mutually beneficial strategic and commercial partnerships across R&D, technological applications and procurement.

On the other hand, in September 2023, stc reportedly spent EUR 2.1 billion to increase its stake in Telefónica to 9.9%. This investment will enable the Saudi-based telco to become a member of the Telefónica Partners Program, allowing it to participate in knowledge sharing and explore potential business opportunities.

Additionally, in August 2023, TAWAL, the tower infrastructure unit of stc, completed its acquisition of tower infrastructure worth USD 1.3 billion from United Group in its first foray into Europe's telecoms market. The acquisition supports the towerco's strategy to expand its international footprint in markets with significant growth potential.

Analysts predict Europe to be the primary region for expansion by GCC telecom operators as it complements the GCC companies' existing footprint and provides diversification into more developed jurisdictions.

Meanwhile, Ooredoo announced the sale of its Myanmar business and merged its Indonesian operations with CK Hutchison to create the country's second-biggest operator (Indosat Ooredoo Hutchison aka IOH).

Locally, Omantel is actively building their ICT capabilities, with a focus on corporate and government customers and the wholesale business, particularly on organic growth and new start-up ventures.

In July 2023, Ooredoo Qatar, Zain Kuwait, and TASC Towers Holding initiated exclusive negotiations to establish an independent tower company, encompassing potentially 30,000 towers across Qatar, Kuwait, Algeria, Tunisia, Iraq, and Jordan. If this partnership succeeds, it aims to form the largest independent tower company in the Middle East and North Africa region.

By acquiring assets in new regions and offering products and services there, telcos are expected to increase their annual revenue by an average of 3% in 2023-2024, reported Moody's Investors Service.


Future Outlook

The evolving ICT landscape demands carriers to efficiently manage network assets as utilities, ensuring the recovery of capital and establishing a margin. Monetizing assets through sales or carve-outs becomes paramount in adjusting strategic priorities. However, beyond these essentials, the imperative for collaboration within and across industries intensifies. Embracing innovative interactions with suppliers, customers, and competitors is crucial for capitalizing on strategic growth opportunities. From a long-term perspective, acting as ecosystem enablers positions companies to unlock substantial potential in this dynamic environment. **TR**

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du Officially Licensed to Offer Fintech Services



du, commercially rebranded from Emirates Integrated Telecommunications Company (EITC), has received licenses from the Central Bank of the UAE to offer new digital financial services that align with the evolving needs and preferences of customers in the digital era.

Fahad Al Hassawi, CEO of du, said: "The awarding of these licenses underscores the UAE's commitment to creating an environment that nurtures fintech innovation collaboration. We believe that EITC's entry into [the] digital financial services space will further enhance the financial landscape of the UAE through customer-centric solutions that will contribute to its growth and development."

The licenses granted by the Central Bank of the UAE enable du to introduce innovative financial solutions that will contribute to the development of an advanced, modern, future-ready financial ecosystem across the UAE.

This milestone positions du at the forefront of the evolving fintech landscape in the region and supports the UAE's commitment to fostering innovation, competition, and financial inclusion by promoting a cashless society.

du aims to empower individuals and businesses with convenient, secure, and efficient solutions that simplify their financial transactions and meet their diverse needs. du's foray into digital financial services aligns with the UAE's ongoing initiatives to promote financial technology and ensure the country remains at the forefront of global fintech innovation.

Year Two: Vodafone Oman Celebrates Tremendous Growth



Vodafone Oman has celebrated its second year of operations in the Sultanate with remarkable achievements, securing nearly 10% of the market share.

Building upon its successful inaugural year, the telecommunications leader prioritized the expansion of its cutting-edge 5G Next Level network. Doubling its infrastructure to 1,500 sites, it significantly enhanced 5G population coverage by 120%. This strategic focus, coupled with a 42% surge in its customer base, yielded an impressive 174% revenue growth.

Along with its market share gains, Vodafone Oman witnessed a notable uptick in its prepaid segment, closing at approximately 11% in 2023. Moreover, the company reported a milestone of 4 million app downloads, while augmenting its sales channels to over 4,000 and expanding its

international roaming footprint by 66%.

The commitment to delivering superior value was further underscored by Vodafone Oman's consecutive leadership in Net Promoter Score rankings for the second year running. Vodafone Oman is also demonstrating notable success in integrating AI and ML, showing effective automation in numerous aspects of its network monitoring and cybersecurity protocols.

During the company's annual performance update, Bader Al Zidi, Vodafone Oman CEO, said, "We are extremely proud of the tremendous growth achieved in our journey as the Sultanate's first fully digital green-field telecom operator. Our vision remains unchanged: to digitalize the Omani way of life in a way that empowers individuals and communities to reach their full potential, all the while safeguarding the heritage, culture and the very essence of the Omani character."

Throughout 2023, Vodafone Oman's journey was marked by remarkable tales of innovation, creativity, and advancement. Notably, the company emerged as a pioneer globally by introducing postpaid packages that

enable seamless digital onboarding, facilitated by eSIM activation in under two minutes through the My Vodafone App. Furthermore, Vodafone Oman distinguished itself as the sole telecommunications provider in the Sultanate to offer 5G services at Muscat International Airport, showcasing its commitment to cutting-edge technology and customer satisfaction.

Al Zidi went on to add, "Steadfast on delivering our promise for Oman, we continued to evolve as a leading tech-telco, confidently achieving our objectives, overcoming challenges, and receiving wholehearted support from our partners, communities and customers. Our achievements were recognized locally, regionally and globally as we received over 17 awards and accolades. Most notable were our recent recognitions with Opensignal, where we dominated the Mobile Network Experience Report, claiming 11 of the 14 categories."

Socio-Economic Agenda

As Vodafone embarks on its third year of operations in Oman, the company is committed to enhancing its core services while extending the reach of its 5G Next Level network to encompass over 90% of the population.

Zain KSA and Nokia to Develop 5G Cloud RAN Solutions



Zain Saudi Arabia and Nokia have agreed to jointly develop 5G infrastructure based on Cloud RAN technology to leverage the potential of future technologies and contribute to the development of innovative services that enhance the user experience.

Underscored in the MoU signed during LEAP 2024, the two companies will expand the application of 5G-based Cloud RAN technology across diverse sectors, encompassing both individual and business services. This initiative targets a significant enhancement in the efficiency of communication networks and services, ultimately delivering innovative digital solutions throughout the kingdom.

Commenting on this cooperation, Zain Saudi Arabia's Chief Operating Officer, Engineer Abdulrahman Hamad Al Mufadda, said, "The process of

development and innovation at Zain Saudi Arabia is a sustainable process. We always seek to discover advanced technologies and attract them to the Kingdom to develop solutions and services for the digital future generation, employing them and providing the best digital experience to our customers in line with the comprehensive digital transformation goals of Saudi Vision 2030. From this standpoint, our cooperation with Nokia is a practical translation of our commitment to leading innovation in the national communications and digital services sector, and employing Cloud RAN technologies to enhance network performance, enriching the digital experiences of our subscribers."

Developing 5G infrastructure based on Cloud RAN technology offers numerous advantages. Firstly, it enables more flexible and efficient network management, allowing operators to dynamically allocate resources according to demand, leading to improved network performance and reduced latency.

Additionally, Cloud RAN facilitates centralized processing, enabling the

deployment of advanced network features such as network slicing and edge computing, which are essential for supporting emerging applications like autonomous vehicles and augmented reality.

Moreover, Cloud RAN architecture enables cost savings by utilizing commercial off-the-shelf hardware and virtualized network functions, reducing the need for dedicated hardware at each cell site.

Engineer Mikko Lavanti, Senior Vice President of Mobile Networks in the Middle East and Africa, Nokia, noted that "partnering with a leading digital services company such as Zain Saudi Arabia provides us with an important opportunity to discover the hidden capabilities of Cloud RAN technologies. Nokia's experience in fixed and wireless communications at the global level and Zain Saudi Arabia's leadership in the Kingdom's market puts us in a distinguished position to lead the transformation in the telecommunications sector. Together, we aim to discover new opportunities."

Ooredoo Oman Appoints New C-Level Executives



Ooredoo Oman recently announced the appointment of new C-level executives to key positions within the organization. The telco named its new Chief Commercial Officer (CCO) and new Chief People Officer (CPO).

CCO Quique Vivas

In a move to maximize organizational growth and market presence in Oman, Ooredoo welcomes Quique Vivas as its newly appointed Chief Commercial Officer (CCO). As one of the latest members of the telco's C-suite, the new CCO will oversee all commercial operations and aim to ensure that Ooredoo's commercial

strategy and objectives stay aligned with its business strategy.

With a career that has revolved around spearheading the commercial direction of companies such as Vodafone, United Group and BCG, Vivas brings a diverse wealth of expertise to his new role at Ooredoo. He is a strategic thinker with robust leadership skills and a proven ability to drive positive change in an organization.

Vivas has previously overseen teams across various functional areas, including marketing, digital, sales, product development and customer relationship management at organizations in different countries, from Spain, Germany and the UK to Greece and the Czech Republic.

CPO Khawla Al Amri

Khawla Al Amri is a forward-thinking CPO that will oversee Ooredoo's human capital,

the backbone of the telco's long-term sustainable success. Al Amri will play a strategic role in successfully managing Ooredoo's highly engaged team and their skills while onboarding, developing, and retaining talent that drives Ooredoo's innovation and its customer-centric approach.

With over 20 years of experience in human resources (HR), strong analytical and business acumen, robust people skills, and an exceptional eye for talent, Al Amri brings a wealth of knowledge and expertise to Ooredoo. In 2023, the World Women Leadership Congress honoured her for her skills in the area of HR management.

Prior to joining Ooredoo, she held leadership positions at renowned companies, including be'ah, Oman Environmental Services Holding Company, Omantel, and Oman Drydock.

The New Zain Kuwait CEO: Nawaf Hisham Al-Gharabally



Zain Group has announced the appointment of Kuwaiti national, Nawaf Hisham Al-Gharabally, to the position of CEO of Zain Kuwait, effective immediately. With an impressive 25-year track record of success within Zain and the telecom industry across the Middle East and Africa, Al-Gharabally held roles as Zain Group and Zain Kuwait Chief Technology Officer prior to his latest appointment.

Al-Gharabally joined the Zain family in 1998, and over the years has become a key member of the organization's executive management team. He possesses extensive experience across a number of disciplines covering mobile technologies, digital transformation, strategy, and management.

Commenting on his appointment, Al-Gharabally said, "I am honored to assume the leadership of Zain Kuwait, a company which has played an instrumental,

national role in the telecom, economic and social landscape, pioneering numerous innovations regionally. I'm thankful of the Zain Group Board of Directors and leadership for their trust and confidence, and look forward to continue working with the them and the many talented people we have in Kuwait and across the Group, particularly at this point in time when digital transformation is accelerating and changing the way we live and work."

Career Highlights

Notably, Zain Kuwait emerged as the first company to successfully launch 5G services in the Gulf region, under Al-Gharabally's leadership in 2019.

He also led the development and modernization of Zain Kuwait's networks in recent years, playing a key role in Zain's 5G expansion in Saudi Arabia, Bahrain, and Jordan; and 4G expansions in Iraq, Sudan, and South Sudan. He also held key technology-related senior roles during Zain's presence across 15 countries in Africa between 2005 and 2011.

A statement from Zain said, "Promoting an existing Zain leader with such an impressive track record fulfills

the company's Group-wide HR policy of capitalizing on and promoting talent from within. The appointment of Nawaf Al-Gharabally reflects the continuous investment in and development of 'Zainers,' and [instills] confidence in the capabilities of existing talents as leaders. The company is confident that his deep understanding of the Zain brand, solid operational and digital innovation expertise, and a strong history of working within the telecommunications sector across the region will prove invaluable in driving Zain Kuwait to new heights."

Company Overview

Zain Kuwait remains the market leader with an active customer base of approximately 2.7 million. The company recently entered a marketing partnership with Red Bull, aiming to appeal to the younger market, while Zain Kuwait's nationwide 5G network has continued to grow with the largest market share of 5G subscribers in the country. The operator continues to expand its offering in the B2B corporate segment, while also innovating digital entertainment and digital services for consumers and businesses alike.

Omantel Group sees 9.7% Revenue Boost and 13.1% Net Profit Growth



Omantel Group has demonstrated significant financial growth in 2023, with revenues surging by 9.7% compared to the previous year. Impressively, the Group's net profit saw a notable increase of 13.1% during the same period.

In the recent disclosure of its 2023 financial results, Oman Telecommunications Company Group

(MSX: OTEL) showcased its robust performance. Total revenue reached an impressive R.O 2,942.7 million, a substantial increase from R.O 2,682.8 million in 2022.

The surge in net profit is equally noteworthy, rising from R.O 278.9 million in 2022 to R.O 315.5 million in 2023. Particularly notable is the net profit attributable to shareholders of the company, which, after excluding non-controlling interest, amounted to R.O 74.8 million in 2023, compared to R.O 91.3 million in the preceding year.

In terms of Omantel's domestic operations, revenues grew by a commendable 7.3% to reach R.O 606.5 million, buoyed by increases

in wholesale transit voice revenue and device revenue. Retail revenue also experienced significant growth, particularly in mobile postpaid and fixed broadband revenues.

However, while the overall picture reflects robust growth, the net profit of domestic operations for 2023 declined to R.O 63.3 million from R.O 85.7 million in the previous period. This decrease is largely attributed to the absence of capital gain from the sale of towers, which was factored into the 2022 net profit. Nevertheless, excluding this gain, the net profit for 2023 reflects a notable 9.7% increase compared to the previous year, driven by stable EBITDA and reduced financial costs.



Optimizing Agriculture: AI Solutions for Efficient Greenhouse Operations

Agriculture is widely recognized as one of the primary industries influencing the GDP of a country and driving economic transformations worldwide. Consequently, it has become increasingly challenging to disentangle this crucial sector from the rapid advancements in technology. Focusing on greenhouses, the incorporation of robotics and artificial intelligence (AI) signifies a significant advancement that continues to evolve. These innovations play a pivotal role in various aspects, including harvesting and cultivation, acting as a bridge between traditional greenhouse agricultural practices and advanced techniques. Taking this into consideration, how will farmers harness the vast amount of data collected from greenhouses to their advantage?

Cloud Computing Latency Challenges

Cloud computing involves utilizing the internet to access computer services, including data storage and program execution. This concept has been in existence for a while, with companies offering online services since 1999. In the present scenario, approximately 90% of the world's data is stored in the cloud. This widespread adoption brings both advantages and disadvantages.

On a positive note, cloud storage provides substantial computing power without the need for heavy investments in hardware. This is particularly beneficial for businesses, as it allows them to scale their operations without significant upfront costs. However, there are challenges, such as regulatory concerns in certain countries. Different nations may have specific rules and regulations regarding the storage and processing of data in the cloud.

Additionally, there could be latency issues associated with cloud computing. Latency refers to delays in the transmission of data, and these delays can be problematic for various applications. For example, if there's a delay in receiving and processing the data, it can impact the performance of real-time applications or services.

In the initial phases of incorporating robotics into greenhouse operations, there was not a strong emphasis on network-based data transfers. However, as the industry progressed and started implementing specific sequences of events for plant activities in real-time, the issue of latency became crucial. Latency plays a significant role in ensuring that the system provides accurate information and executes actions promptly. To address this, it's important to tackle latency challenges during the early stages of implementing such technologies.

Enhancing the System Performance of Greenhouses Through AI

Edge computing refers to the process of bringing data closer to computing resources. By processing the data at the edge of the network, this operation

reduces the workload for the cloud, leading to lower latency and improved overall system performance.

By deploying AI algorithms at the edge of the network, data collected from sensors within the greenhouse can be analyzed in real-time, enabling immediate insights and decision-making. This approach minimizes the reliance on cloud-based processing, reducing latency and ensuring timely responses to changing environmental conditions. Ultimately, by harnessing the power of edge computing and AI, greenhouse operators can optimize resource utilization, improve crop yields, and enhance overall operational efficiency.

Fog computing is a model intended to complement edge computing by expanding its capabilities. This new model aims to provide a layer of computing infrastructure between the cloud and edge services, known as the 'fog layer,' supporting a wider range of applications and data services. By distributing computing tasks across the fog layer and edge devices, greenhouse operators can optimize resource utilization, improve responsiveness, and enhance overall operational efficiency. However, implementing this combined system also requires the establishment of new standards to achieve its objectives.

Enhancing the system performance of greenhouses results in a variety of advantageous benefits that can be seen in multiple areas. Primarily, it serves as a method to enhance the efficiency of smart agriculture practices. This encompasses tasks such as identifying insects, closely monitoring plant health, efficiently managing water resources, ensuring optimal crop quality, forecasting weather conditions, and accessing real-time data from sensors and equipment. Furthermore, a significant emphasis is placed on minimizing the risk of data breaches due to the escalating threats in this regard. This focus is crucial for safeguarding the integrity and security of the information collected through these systems.

Standardized AI Implementation Strategies for Efficient Greenhouse Operations

Enhancing greenhouse functioning

through standardized practices, bolstered by AI solutions, offers a potent avenue for optimizing agricultural productivity and sustainability. First, by establishing rigorous data monitoring and analysis standards, greenhouses can harness the power of AI algorithms to process vast amounts of environmental data in real-time. This enables proactive adjustments to factors like temperature, humidity, and soil moisture, maximizing plant growth potential. Interoperability standards ensure seamless integration of diverse sensors and AI systems, fostering a cohesive and efficient technological ecosystem within the greenhouse.

Secondly, automation standards streamline operational processes by defining protocols for AI-driven robotic systems responsible for tasks such as planting, watering, and harvesting. These systems learn and adapt based on environmental conditions and historical data, enhancing efficiency while adhering to safety standards to safeguard workers. Furthermore, energy management standards facilitate the adoption of energy-efficient technologies like LED lighting and renewable energy sources, with AI algorithms optimizing energy usage to minimize waste and costs.

Lastly, crop management standards underpin precision agriculture within the greenhouse environment. By incorporating AI-driven image recognition and machine learning (ML), early detection of crop health issues and pests becomes possible, facilitating timely interventions and reducing crop losses. These standards also promote integrated pest management practices, harmonizing AI solutions with biological controls to minimize pesticide use and environmental impact. Coupled with remote monitoring and control standards that enable oversight from anywhere, these measures collectively empower greenhouse operators to enhance productivity, sustainability, and resilience in agricultural production.

The Power of 5G

Implemented across numerous countries, 5G is one of the fastest network technologies designed to transmit large data volumes quickly, and with minimal delay. However, when numerous sensors with diverse data types use the

network, even a 5G network can become overloaded. Therefore, it's crucial to process part of the data 'on the edge' whenever possible. This can be done by applying the technique of 'slicing,' where it's possible to segment the network into 'slices,' each handling a different part of the data stream. This allows for distinctions in speed, latency, and priority among the various 'slices.'

In greenhouses, 5G provides a solution for transmitting the growing volume of data from sensors and robots. Wi-Fi is often ineffective due to greenhouse materials like steel, glass, water, and dense crops such as tomatoes. Thus, developers frequently turn to solutions such as beacons or radio links. However, challenges emerge when horticultural entrepreneurs utilize systems from different suppliers. This necessitates the installation of different systems, incurring high costs and maintenance.

In conclusion, the integration of AI and technology in greenhouse farming presents a transformative journey towards a hands-free cultivation environment. Developers are empowered to make strategic decisions regarding data processing and storage locations, considering practicality, risk, and cost. For real-time actions crucial to robots, processing within the robot itself, while efficient, may incur higher costs and weight, necessitating larger batteries. The advent of 5G connectivity offers a game-changing solution, enabling rapid data transmission to a remote server for processing, resulting in lighter and more cost-effective systems.

Moreover, the wireless capabilities of sensors and actuators contribute to the efficiency of greenhouse operations. Temperature sensors (available in wireless form), exemplify this trend, where occasional data gaps pose minimal issues. However, challenges persist in certain areas— such as the wireless control of critical elements, such as taps in a tomato greenhouse. While technically feasible, concerns about reliable connectivity in expansive greenhouses prompt considerations of potential risks, underscoring the importance of stable and fast connections in advancing hands-free greenhouse technologies. **ITB**



The Reliability of Self-Driving Cars

In the era of technological advancement, the advent of self-driving cars represents a paradigm shift in the automotive landscape. The promise of autonomous vehicles, navigating our roads with precision and efficiency, has captivated imaginations and fueled discussions about the future of transportation.

As we venture into this transformative age, one fundamental question takes center stage: how reliable are self-driving cars?

This inquiry delves into a multifaceted exploration encompassing the intricate interplay between cutting-edge artificial intelligence, sensor technologies, and the ever-evolving dynamics of the urban environment.

This exploration acts as a portal into dissecting the intricate layers

enveloping the reliability of self-driving cars. A thorough examination of safety protocols, technological robustness, and the real-world implications of these autonomous marvels was conducted. Delving into the inner workings of machine learning (ML) algorithms and contemplating the ethical considerations of ceding control to artificial intelligence, these are the promises and challenges that mold the trajectory of self-driving cars.

Safety Protocols: Ensuring Trust in Autonomous Systems

The reliability of self-driving cars begins with a meticulous examination of safety protocols. Advanced collision

avoidance systems, emergency braking mechanisms, and cutting-edge sensor technologies collectively form the defensive arsenal of these autonomous vehicles. Understanding how these safety measures operate under diverse driving conditions is crucial to building public trust and confidence in the technology.

Technological Robustness: The Backbone of Autonomous Precision

Diving into the intricate world of self-driving cars reveals a technological symphony where sensors, cameras, lidar, radar, and sophisticated artificial intelligence algorithms harmonize to form the backbone of autonomous

precision. This comprehensive exploration seeks to uncover the nuanced workings of each component, shedding light on the pivotal role they collectively play in enhancing precision and bolstering the decision-making capabilities inherent in self-driving cars.

The evaluation of technological robustness becomes a journey into the reliability of these systems under various scenarios, spanning the complexities of urban environments to the challenges posed by adverse weather conditions. In dissecting this symphony, we not only understand how these components adapt and perform individually but also gain insights into their collective synergy, providing a holistic perspective on the technological prowess propelling self-driving cars into the future of transportation.

Real-World Implications: Transforming Transportation Ecosystems

Examining real-world implications involves assessing how the integration of self-driving cars influences traffic flow, accident rates, and the broader transportation ecosystem. By delving into practical consequences, we aim to comprehend the transformative impact of these vehicles on existing infrastructures and how they may reshape the dynamics of daily commuting.

Machine Learning Algorithms: The Cognitive Engines Driving Autonomy

The heart of self-driving cars lies in machine learning algorithms— the cognitive engines that enable vehicles to learn, adapt, and make decisions in dynamic driving scenarios. Understanding the intricacies of these algorithms unveils the potential and limitations of autonomous systems, shedding light on their reliability in navigating complex and unpredictable environments.

Ethical Considerations: Navigating Moral Crossroads

The integration of self-driving cars introduces profound ethical dilemmas, ranging from decision-

making in emergency situations to defining accountability for accidents. This section delves into the moral crossroads where technology meets humanity, exploring the challenges of striking the right balance between human intervention and full autonomy.

Regulatory Framework: Paving the Way for Safe Autonomy

Navigating the regulatory landscape is paramount for the widespread acceptance and deployment of self-driving cars. Companies can assess the legal frameworks governing the development, testing, and deployment of autonomous vehicles by analyzing both current regulations and evolving standards at national and international levels. The aim is to ensure that these frameworks provide solid legal foundations that prioritize safety, security, and ethical standards throughout the lifecycle of autonomous vehicle technology.

Public Perception: Bridging the Gap Between Fear and Acceptance

Understanding how the public perceives and interacts with self-driving cars is essential for their successful integration. Investigating concerns, fears, and societal acceptance provides valuable insights into the factors shaping public attitudes and the steps needed to bridge the gap between apprehension and trust.

Industry Developments: Unveiling Breakthroughs and Challenges

Staying abreast of industry developments is crucial for comprehending the trajectory of self-driving car reliability. This section highlights the latest advancements, strategic partnerships, and innovative breakthroughs within the self-driving car industry, offering a snapshot of the challenges and opportunities that shape its evolution.

Comparisons with Traditional Vehicles: Balancing Innovation and Tradition

Evaluating the reliability of self-driving cars necessitates a comparative analysis with traditional vehicles. Factors such as maintenance,

durability, and adaptability to diverse driving conditions come under scrutiny to assess whether autonomy brings about improvements or challenges in comparison to traditional transportation models.

Charting the Course of Autonomous Evolution

Anticipating future trends involves exploring potential advancements, increased adoption rates, and evolving societal attitudes toward self-driving car technology. By charting the course of autonomous evolution, we gain insights into the transformative potential of these vehicles and the evolving landscape of transportation.

In conclusion, the reliability of self-driving cars is a multifaceted exploration that transcends technological intricacies. Through this exploration, we can navigate the evolving landscape of transportation, where self-driving cars emerge as both a challenge and an opportunity, shaping the way we move and perceive mobility. **TR**



Examining real-world implications involves assessing how the integration of self-driving cars influences traffic flow, accident rates, and the broader transportation ecosystem





The Importance of Spectrum: Trends to Watch in 2024

At the core of ICT, the spectrum beats with the rhythm of progress in 2024, urging us to sync with its frequencies for a front-row seat to the transformative journey of innovation.

By definition, spectrum refers to the range of electromagnetic frequencies used for transmitting data wirelessly. It encompasses radio waves, microwaves, and other forms of electromagnetic radiation. In technology, spectrum is the foundation for wireless communication, enabling various services like mobile networks, Wi-Fi, satellite communication, and broadcasting.

From smartphones to smart home devices, spectrum enables seamless connectivity, powering the Internet of Things (IoT) and supporting the interconnectivity of modern gadgets. As an innovation driver, the availability and efficient utilization of spectrum fuels technological innovations, including the deployment of high-speed networks like 5G.

Bearing all this in mind, spectrum is a valuable economic asset, with its efficient use contributing to

economic growth and technological advancements.

Staying informed about spectrum trends in 2024 is crucial for various stakeholders, including businesses, regulators, and consumers.

Current Spectrum Landscape

Mobile operators rely on radio spectrum frequency to provide quality and affordable services to consumers. A transparent, long-term radio-frequency plan is essential

for encouraging investment and innovation in mobile services in 2024.

The ITU-R plays a crucial role in managing global spectrum matters through regulations and resolutions. The recent ITU WRC-23 outcomes have provided a roadmap for planning in low and mid-band spectrums, shaping the future of mobile communication.

Frequencies in the mid-band spectrum are vital for 5G deployment due to their coverage, speed, and capacity. However, with increasing data consumption, the availability of mid-band spectrum is shrinking globally, posing a challenge for 5G adoption.

Newly Allocated Spectrum Bands:

WRC-23 has allocated new spectrum bands, including the 470–694 MHz, 3.3–3.8 GHz in EMEA, and the globally significant 6.425–7.125 GHz band. The 6GHz spectrum, in particular, is expected to simplify 5G progression and support the development of 5G-Advanced.

Operators' Pursuit of 6GHz Spectrum:

Operators worldwide, including major players like TIM Brasil and Huawei, are actively seeking access to the 6GHz spectrum for 5G. Interoperability tests have demonstrated high speeds, setting the stage for a harmonized transition to 5G-Advanced.

Regional Considerations: Despite Europe's steady 5G rollout, operators need to embrace the newly released 6GHz spectrum and mmWave spectrum (24GHz–300GHz) to maintain global competitiveness and offer higher speeds. Smart city operations in Europe leverage harmonized frequency bands, including 700 MHz, 3.5 GHz, and 26 GHz, where commercial 5G has been available across all 27 EU countries since January 2022. In June 2023, the Uganda Communications Commission (UCC) allocated crucial spectrum bands to mobile operators, MTN and Airtel, facilitating mid-band deployment for 5G.

US National Spectrum Strategy:

Various telecom players, including

Verizon, Qualcomm, and SpaceX, provided feedback on the US administration's spectrum strategy. Divergent perspectives were highlighted, ranging from unlicensed and shared-spectrum scenarios to interest in specific frequency ranges like 12GHz.

Wi-Fi Access in 6 GHz Band: Several countries, including Argentina, Brazil, Canada, Saudi Arabia, South Korea, and the US, authorized Wi-Fi access to the entire 6 GHz band to meet the increasing demands for wireless connectivity.

Advancements in HAPS Spectrum:

SoftBank takes the lead in discussions within the ITU-R and APT regarding spectrum allocation for High Altitude Platform Station (HAPS) technology. The decisions made at the WRC-23 to introduce new mobile spectrum bands provide increased flexibility for mobile broadband communication services utilizing HAPS technology.

Evolving Regulatory Landscape

According to the ITU, companies and industry associations can submit proposals for the IMT-2030 Radio Interface Technology (RIT) to the ITU-R in early 2027. The submissions will undergo evaluation against minimum requirements set by the ITU-R Working Party 5D, aiming to establish 6G tech standards by 2030.

6G is anticipated to enable immersive interactive video, intelligent industrial applications (such as telemedicine and energy grid management), enhanced ubiquitous connectivity (especially in remote areas), expanded IoT, AI-powered applications, and multi-dimensional sensing for improved navigation. Additionally, it is being developed to address environmental, social, and economic sustainability goals aligned with the Paris Agreement.

Network Sunsets: In 2024, the shutdown of networks (2G and 3G) becomes a matter of 'when,' not 'if.' GSMA Intelligence reports that 143 networks globally are scheduled to go offline between 2023 and 2030, with 50% planned by the end of 2024. A

well-planned network sunset roadmap is crucial to ensure a smooth transition and address market demand for new mobile services.

Unified Licensing Framework:

Regulators are increasingly adopting a service-neutral or unified licensing framework. This allows operators to use technology-neutral spectrum licenses for various mobile-based services, including Fixed Wireless Access (FWA). Such frameworks aim to remove restrictions, reduce costs, and eliminate red tape, facilitating the introduction of new mobile services in response to market demand.

Expanding Mid-Band Spectrum: WRC-23 identified the 6 GHz band (6.425–7.125 GHz) as additional mid-band spectrum to meet the rising demand for mobile data globally. Countries in EMEA, the Americas, and the Asia Pacific, representing over 60% of the world's population, have harmonized this band for expanding mobile capacity, particularly for 5G-Advanced and future technologies.



Mobile operators rely on
radio spectrum frequency
to provide quality and
affordable services to
consumer



Low-Band Spectrum for Digital Equality. WRC-23 took a significant step towards digital equality by defining the mobile use of more low-band spectrum (470-694 MHz) in EMEA. In 2024, the role of low bands in expanding internet connectivity in rural communities will become evident, addressing the urban-rural connectivity gap and promoting digital equality in the EMEA region.

Bridging the Digital Divide: Canada's 2024 spectrum licensing framework follows a "use it or lose it" approach, requiring telecom companies to use allocated spectrum promptly or risk losing it. This framework prioritizes easy local access to 5G spectrum for internet service providers, innovative industries, and rural, remote, and indigenous communities, contributing to enhanced connectivity in rural areas.

Shaping Spectrum Strategies

Over the past three decades, auctions have emerged as the primary mechanism for mobile spectrum assignment. Designed to ensure transparency and efficiency, they have become instrumental in supporting competitive, high-quality mobile services. However, alternative approaches, such as administrative awards, gained traction during the COVID-19 pandemic to swiftly allocate spectrum to meet the surge in data usage.

In 2024, there is a growing recognition that spectrum auctions are not solely revenue-maximizing tools but also key drivers of a nation's digital growth. Positive shifts in this perspective have been observed in countries like India, Panama, Bangladesh, Colombia, and Ecuador.

Divergent Approaches in Latin America

America: Brazil showcased commitment with one of the largest multi-band auctions in December 2021, allocating 91% of spectrum costs to investments. Conversely, Mexico is freezing spectrum prices, resisting regulator proposals for flexible payment structures.

Asia's Spectrum Initiatives: Indonesia plans to auction 700MHz and 26GHz

spectrum, aiming to elevate 5G speeds closer to developed countries while Pakistan aims for a 5G launch by August 2024, reflecting a regional push for advanced mobile services.

Spectrum Standardization and Technology Neutrality

Standardization and technology neutrality play pivotal roles in expanding affordable 5G services. The harmonization of mid-band spectrum, like 3.5 GHz, facilitates this expansion. Addressing the digital divide also requires government action to harmonize low bands, such as 600 MHz.

Without a doubt, establishing a clear roadmap for increasing spectrum capacity is imperative. Specific recommendations include setting deadlines for introducing post-2030 mobile services, conducting cost-benefit analyses for spectrum bands like 6 GHz, and adopting policies that ensure flexibility and neutrality in assignment.

Environmental Considerations in Spectrum Policies

Regulators are exploring the integration of climate change assessments into spectrum policy frameworks. Recognizing the non-monetary impacts, such as carbon emissions, aligns spectrum policies with broader national and international climate action goals. We expect to see more eco-friendly decision-making in terms of spectrum in 2024.

With the progress on 6 GHz, studies suggest that allowing license-exempt access to the entire 6 GHz band can significantly reduce energy consumption, aligning with environmental policy goals. In this way, spectrum policies can be a tool for achieving emission reduction targets while promoting efficient and affordable networks.

Smart City Influence and Call to Action for Industry Stakeholders

In 2024, a call to action is directed at regulators and policymakers to promptly implement WRC-23 decisions in national allocations. This supports spectrum harmonization, mitigates

interference issues, and encourages long-term investments from mobile operators.

Moreover, the evolution of spectrum regulation is anticipated to be heavily influenced by the smart city era, with real-life experiences shaping future directions. Localized spectrum bands and operations tailored to specific smart city needs may lead to divergences between countries. The concept of smart cities emphasizes the need to support unique network coverage and functionality requirements. **TR**



Over the past three decades, auctions have emerged as the primary mechanism for mobile spectrum assignment



e& enterprise Rebrands UAE Trade Connect as 'haifin'



UAE Trade Connect (UTC), an e& enterprise company and the first commercialized blockchain platform in the UAE, unveiled its new brand identity, 'haifin,' as part of its commitment to extend its innovative solutions beyond the UAE, aiming to establish a significant presence in the APAC, MENA, and GCC regions.

Resolving Current Market Challenges

The new brand name, 'haifin,' reflects the platform's evolution and carries an ambitious roadmap to expand globally with its fraud-detection solution, whilst also pioneering further use cases to resolve current market challenges. The rebranding is symbolic of its vision as a leading fintech: to connect and protect financial institutions for a more resilient ecosystem.

Salvador Anglada, CEO of e& enterprise, said, "This strategic rebranding reflects e& enterprise's dedication to nurturing scalable cloud-based solutions that drive substantial market impact by supporting and advancing the global and regional fintech space, paving the way for more inclusive, efficient, and secure financial services.

Zul Javaid, CEO of haifin, said, "This rebranding reflects haifin's mission to serve as the connective tissue in the financial industry. Incorporating AI, FIs and fintech into its very name, haifin is set to replicate its UAE success in other countries within our region and beyond. The new branding reflects our aspirations to expand our cloud-native and blockchain-based Intellectual Property (IP) to design tailored solutions to support financial institutions in new territories."

Ensuring Trust, Transparency and Privacy

haifin's solution can manage various types of trade-related documents, which are inspected, validated, and tested for authenticity in real time. Its proprietary

technology ensures trust, transparency, and privacy between multiple organizations with a stack of leading-edge technologies deployed locally on e& enterprise's E1Cloud platform. The robust system validates trade finance transactions, identifies duplication, and combats potential fraud in real time. These capabilities empower banks to make informed lending decisions, increase lending confidence and safeguard funds.

The haifin network has grown from seven banks in 2021 to 15 lending institutions comprising 13 major UAE banks and two fintechs— DP World Financial Services and Beehive. Banking members include Abu Dhabi Commercial Bank (ADCB), Abu Dhabi Islamic Bank (ADIB), Al Masraf, Commercial Bank International, Commercial Bank of Dubai, Dubai Islamic Bank, Emirates NBD PJSC, First Abu Dhabi Bank (FAB), Invest Bank, Mashreq Corporate & Investment Banking Group, National Bank of Fujairah, RAKBANK, and United Arab Bank, with several more in advanced discussions to join the consortium.

AWS to Launch Infrastructure Region in KSA



Amazon Web Services (AWS) announced that it will launch an AWS infrastructure Region in the Kingdom of Saudi Arabia in 2026. The new AWS Region will give developers, startups, entrepreneurs, enterprises as well as healthcare, education, gaming, and nonprofit organizations, greater choice for running their applications and serving end users from data centers located in the Kingdom of Saudi Arabia, with options for customers to keep their content in-country. As part of its long-term commitment, AWS is planning to invest more than USD 5.3 billion (approx. SAR 19.88 billion) in the Kingdom of Saudi Arabia.

"Today's announcement supports the Kingdom of Saudi Arabia's digital

transformation with the highest levels of security and resilience available on AWS cloud infrastructure, helping serve fast-growing demand for cloud services across the Middle East," said Prasad Kalyanaraman, Vice President of Infrastructure Services at AWS.

"The partnership with AWS and their announcement of an AWS Region, backed by a USD 5.3 billion investment, ignites a new era of technological excellence and innovation for the Kingdom," said His Excellency Engineer, Abdullah bin Amer Al-Swaha, Kingdom of Saudi Arabia Minister of Communications and Information Technology.

The new AWS Region will consist of three availability zones at launch, adding to the existing 105 availability zones across 33 geographic regions globally. With this announcement, AWS has plans to launch 18 more availability zones and six more AWS Regions in

Malaysia, Mexico, New Zealand, the Kingdom of Saudi Arabia, Thailand, and the AWS European Sovereign Cloud.

AWS offers the broadest and deepest portfolio of services, including analytics, artificial intelligence (AI), compute, database, Internet of Things (IoT), machine learning (ML), mobile services, storage, and other cloud technologies.

Supporting Cloud Adoption in Saudi Arabia

To support the growth in cloud adoption across the Kingdom of Saudi Arabia, AWS will continue to scale its training programs and help accelerate the Kingdom of Saudi Arabia's Vision 2030 goal of empowering women to increase participation in the workforce. To help support this goal, AWS is launching a new upskilling program— AWS Saudi Arabia Women's Skills Initiative— in partnership with Skillsoft Global Knowledge.

Nokia's People & Planet 2023 Report Emphasizes Digital's Role in Sustainability



Nokia released its 2023 sustainability report outlining its performance relating to the company's sustainability strategy. The strategy consists of five focus areas: Environment, Industrial Digitalization, Security and Privacy, Bridging the Digital Divide, and Responsible Business. Nokia's sustainability strategy focuses on maximizing impact in areas relevant to the company and its stakeholders, guiding technology and business decisions.

Subho Mukherjee, VP, Global Head of Sustainability at Nokia, said, "We believe that digitalization, powered by enhanced connectivity, will play

an increasingly significant role in helping industries and economies decarbonize while enabling a more inclusive society."

Nokia's efforts to expand technology access, enhance network security, reduce industry emissions, and minimize environmental impact are outlined in the People & Planet report 2023. This includes improving product energy efficiency, promoting circular practices, mitigating technology misuse risks, and establishing a sustainable supply chain.

Mukherjee further added that, "This progress, including learnings from challenges, provides a solid foundation as Nokia continues to develop ESG into a competitive advantage with its customers and stakeholders."

In early 2024, Nokia committed to net-zero greenhouse gas emissions

across its value chain (scopes 1, 2 and 3) by 2040. Nokia also committed to accelerate its existing interim 2030 target to reduce GHG emissions across its own operations (scopes 1 and 2), reaching an 83% reduction by 2030 from a 2019 baseline. To ensure the targets are aligned with climate science, Nokia submitted its net-zero letter of commitment to the Science Based Targets initiative (SBTi) in February 2024.

Nokia's People & Planet sustainability report is published annually. The scope of the 2023 sustainability report covers Nokia Group. The report is prepared in accordance with the GRI Standards. As part of its reporting, Nokia also recognizes other sustainability-reporting frameworks, such as SASB Standards and the UN Global Compact. The selected key sustainability indicators have been assured by Nokia's independent auditor, Deloitte.

Es'hailSat, beIN Strengthen Multi-Year, Multi-Transponder Partnership



Es'hailSat, the Qatar Satellite Company, has declared the extension and expansion of their collaboration with beIN MEDIA GROUP (beIN), the premier global sports and entertainment broadcaster. This partnership entails providing satellite capacity, uplink services, connectivity, and round-the-clock operational support via the Es'hail-2 satellite stationed at the 26° East hotspot,

covering the Middle East and North Africa (MENA) region. These upgraded services are based on Es'hailSat's growing product and service portfolio that continues to strengthen the multi-channel, multi-year, multi-transponder partnership between beIN and Es'hailSat.

The renewal of the partnership was signed during a signing ceremony held at beIN's headquarters in Doha by Ali Ahmed Al-Kuwari, President and CEO, Es'hailSat; and Mohammad Abdulaziz Al-Subaie, Chief Executive Officer, beIN MENA, in the presence of senior executives from both sides.

"Es'hailSat is delighted to renew and build upon our long-standing partnership with beIN and expand upon the various services already provided to beIN as a prestigious anchor broadcaster at our satellite

hotspot," said Ali Ahmed Al-Kuwari, President and CEO, Es'hailSat. "We believe that the growing needs of beIN, on the back of world class events in Qatar and across the Middle East, are best served by the expanding list of products and services that Es'hailSat continues to provide as a satellite operator and service provider."

Mohammad Abdulaziz Al-Subaie, Chief Executive Officer, beIN MENA, said, "We are pleased to reaffirm our long-standing partnership with Es'hailSat, who have been providing vital satellite services to beIN MEDIA GROUP since it was incorporated in 2014. And it's through this strategic alliance that beIN is able to deliver a seamless viewing experience of the world's premium sports and entertainment to millions across the MENA region.

Ericsson, Umniah Leverage AI for Network Enhancement in Jordan



Ericsson has partnered with Umniah to leverage the capabilities of Ericsson's Cognitive Software portfolio, revolutionizing network performance in Jordan.

Ericsson will deploy its state-of-the-art, Artificial Intelligence (AI) and Machine Learning (ML)-driven Performance Diagnostics and Virtual Drive Testing offerings to address critical aspects of Umniah's network in a significant cluster, including Amman and its surrounding areas.

The full deployment comes after a successful Proof of Concept (PoC) using Umniah's existing network infrastructure which focused on Call Termination Analysis and

Advanced RAN Analytics and aimed to investigate how the partners could boost network efficiency and ensure an exceptional user experience for Umniah's customers. The PoC involved a thorough root cause analysis of network challenges by Umniah and Ericsson, using new tools which provided deep insights into network dynamics, leading to the identification and mitigation of radio interference issues and infrastructure challenges.

Alaa Ibrahim, Chief Technical Officer at Umniah, said, "Our commitment at Umniah is to enhance the way we build and operate our network across the Kingdom to provide un-matched customer experience. This strategic alliance with Ericsson is a testament to our dedication to providing our customers with the most reliable and cutting-edge service experience possible. Incorporating Ericsson's AI capabilities into our network has been a game-changer for us, helping us to intelligently build our network and elevate quality of service to our valued customers."

Kevin Murphy, Vice President and Head of Ericsson Levant Countries and Country Manager of Ericsson Jordan, said, "The power of AI and ML in transforming network operations is undeniable. With Ericsson's Cognitive Software portfolio, we are not just solving today's challenges but pre-emptively optimizing for the future, making it easier for Umniah to deliver superior network quality consistently. Over the years we look forward to a new era in network performance enhancement, showcasing the revolutionizing power of AI and ML in telecommunications."

Umniah's integration of Ericsson's Cognitive Software capabilities into its daily optimization operations signifies a sustained commitment to leveraging AI for network enhancement that aims to provide superior network performance for Umniah's customers and also positions Ericsson's AI capabilities as a key component in optimizing investment strategies for network development.

Rosenberger HDCS®: Tailored Solutions for Fast-Growing Industries' Cabling Needs



In today's fast-growing vertical industries like transportation, healthcare, and intelligent manufacturing, the demand for customized upgrades and higher bandwidth in cabling infrastructure and network management software is ever-present. Rosenberger addresses these needs with a diverse range of solutions designed to support the development of private enterprise networks and passive fiber-optic broadband networks, ensuring high

performance and reliability, especially in last-mile connectivity.

Rosenberger HDCS® (High Density Cabling System) stands out as an advanced solution for the enterprise cabling industry, offering both copper and optical fiber products with high bandwidth, superior quality, and exceptional practicality. The HDCS® lineup includes a comprehensive selection of copper products ranging from Cat.3 to Cat.7, as well as various optical fiber products suitable for different applications, including single mode, multimode, and 10 Gigabit laser-optimized cables.

With a focus on versatility and seamless integration, Rosenberger HDCS® caters

to diverse application scenarios, from traditional campus backbone cabling to the increasingly prevalent fiber-to-the-desktop (FTTD) setups. Its high-density connectivity system ensures reliable connectivity from desktop to data center, supporting critical applications up to 10Gb and beyond.

Rosenberger leads the industry with over 30 years of cabling experience. Its HDCS® products offer a diverse range of cabling solutions, providing customers with flexible options to achieve comprehensive solutions for building and data center cabling. These products showcase a comprehensive feature set that traditional cabling cannot match.



Telcos' Role in Intelligent Transportation Systems

Public transportation is a critical component for driving the modern economy machinery. Millions of people depend on these systems to commute to and from their workplaces every day. In 2023, the daily footfalls in the Dubai metro were pegged at 684,000. The number of commuters will increase as the population swells globally. Hence, a smooth and efficient operation of these systems must be maintained at all costs.

Governments across the globe invest heavily in public transportation infrastructure and buying vehicles, however, the revenue generation from these services is often low as a result of subsidized fares for the general public. Hence, cost reduction, minimizing downtime and optimizing efficiency are the constant pursuits for its operators. From roads and marine to aviation, the transport industry is pivotal for promoting the

business and tourism of a country. Thus, technical snags such as signal loss, network disconnection and communication lag can greatly impact modern transportation systems.

Also from a sustainability standpoint, in the absence of these services, the public would be compelled to use their own means of transportation, which would essentially translate to an increase in carbon emissions. The global transportation sector produces more than seven billion metric tons of carbon dioxide (GtCO) a year. In 2022,

cars and vans were the biggest source of transportation emissions, accounting for approximately 48% of global transportation emissions, according to a Statista report.

Harnessing Intelligent Transportation

Telecommunications and intelligent transportation systems (ITS) provide an ideal solution to the following challenges: high energy consumption, cumbersome operations, passenger safety and high operational costs of running public transportation. Telecommunication networks

facilitate connectivity to vehicles, infrastructure and individuals, enabling real-time data sharing and decision-making. The integration of advanced communication technologies and ITS can bring transformative innovation to transit systems in terms of arrival and departure timings, schedule updates and route planning. Such progress can encourage public transport use, leading to reduced private vehicle use.

Furthermore, the advancement in mobile networks such as the transition from 4GLTE to 5G and 5G Advanced and 6G, is opening up the possibility of ubiquitous connectivity even on the move. In the UAE, operators such as du and e& are already testing gigabit speed in their commercial networks in collaboration with telecom vendors, including Huawei, Nokia and Ericsson among others.

By the early 2030s, experts estimate that data rates of up to 5 gigabits per second (gbps) will be the standard requirement for trains to provide passengers with high-speed and uninterrupted internet and telephone connections. To meet this requirement, new telecommunications masts need to be built close to the tracks along with different combinations of radio units and antennas for mobile and railway radio.

To that end, Ericsson is collaborating with its partners to test a 10-kilometer rail track for high-speed internet on trains. The Gigabit Innovation Track (GINT)— a 6.4-million-euro research project— is testing mobile communications with gigabit data rates along train tracks in a northern state in Germany, as well as innovative infrastructure for the further digitalization of rail operations within the Future Rail Mobile Communication System (FRMCS).

Opportunities Galore

Technological advancements are rapidly transforming transportation systems. Keeping pace with the developments, Dubai's Road and Transport Authority (RTA) has collaborated with AWS to support the RTA's transition to cloud computing and knowledge in areas such as application programming, artificial intelligence, data solutions, augmented

reality (AR), virtual reality (VR), and the Internet of Things (IoT).

Even the increasing adoption of electric vehicles must not be overlooked when addressing connectivity demands. The UAE's Ministry of Energy and Infrastructure (MOEI) plans to construct fast charging stations (30 Fast chargers and 150 AC chargers) across the country. The EV charging network will be expanded across federal roads and destinations. Additionally, the latest intelligent vehicle technologies such as autonomous driving and in-car technology will increase the demand for connectivity to enable entertainment, navigation and safety features.

In the UAE, the latest addition to the transport sector is the Etihad Rail. The UAE National Rail Network will play a significant role in providing a modern and sustainable network for transporting freight and passengers, bolstering the leading regional position of the UAE. Once completed, the number of transported passengers is expected to reach more than 36.5 million annually by 2030. To ensure uninterrupted communication to these passengers on the move, telcos need to collaborate with the regulatory authorities to establish an efficient railway radiocommunication system to facilitate the use of upgraded communication devices on the trains (as well as mobile devices) to ensure the quality of telecom services to people onboard and other communication services on railway tracks is upheld.

Furthermore, the UAE's maritime sector is increasingly gaining global prominence. In 2022, the sector added AED 129 billion to UAE's GDP— an 18% jump from 2021. To support the sector, fully managed maritime service ICT solutions are critical for meeting the connectivity demands of the vessels at sea along with the crew members. Satellite communication has become the go-to solution for maritime connectivity. Telcos can leverage SATCOM technology alongside traditional radio networks to enable digitization in the maritime sector. The implementation of smart sensors, IoT devices, data analytics, and artificial intelligence will empower stakeholders to make informed decisions and

streamline maritime operations. Other connectivity services such as managed security, managed internet, Wi-Fi, TV, IoT and other applications for the crew will see increased demand in the future.

In the aviation space, in-flight connectivity, aerial public transport and the use of drones in industrial settings are rapidly making advancements and widening the scope of increased connectivity. The telecommunication sector stands to profit greatly from the connectivity demands emanating from the transportation sector. From real-time traffic monitoring, smart parking management, and connected vehicle technologies to efficient public transportation systems in land, air and sea, leveraging telecommunications in intelligent transportation systems is essential for efficient and sustainable transport networks. Telcos and their industry partners must work towards the integration of seamless and secure connectivity to pave the way for a smarter and more connected world. **TR**



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Ericsson Federal Technologies Group to Accelerate Digitalization in the US

The Ericsson Federal Technologies Group (EFTG), a new entity dedicated to delivering 5G-driven digital transformation across multiple agencies in the US federal government, has been established.

The US Government (USG)'s digital transformation intends to accelerate innovation by focusing on the speedy adoption of commercial technologies. As the market leader in 5G, Ericsson recognizes the importance of a continued commitment to customers, investments in new technologies to continuously improve services, and the responsibility to national security.

Yossi Cohen, President and Head of Ericsson North America, said, "Connecting individuals, businesses, and national security depends on secure, reliable, and resilient 5G infrastructure. We are excited to build on existing projects with the US government including the DoD where Ericsson provides the foundation for multiple 5G prototype deployments and expand into

additional government agencies with our innovation and leadership."

EFTG will be led by Christopher Ling who has extensive experience in growing federal and commercial businesses in advanced technology and cybersecurity. "Ericsson has been connecting the U.S. for more than 120 years, and I could not be more thrilled to join a company so steeped in resilience, connectivity, and security. As the DoD looks to connect under one secure, unified communication system, I believe 5G is the solution to keep America secure and competitive," Ling commented.

Ericsson meets USG requirements for 5G networks, including support for Open RAN-ready technologies and equipment Made in the USA from its Texas-based USA 5G Smart Factory. In addition, EFTG will have a dedicated team who can leverage Ericsson's leading technology portfolio and investment, providing capabilities to develop solutions for the USG's most complex communications challenges, such as connectivity and interoperability between multi-domain operations.

Namibia Launches ICT Improvements

Namibia is charting a new trajectory in its Information and Communication Technology (ICT) sector, with significant investments aimed at advancing digital connectivity and fortifying cybersecurity measures.

At the forefront of this initiative is the Ministry of Information and Communication Technology, which recently unveiled a series of programs during the 23rd ICT Stakeholders' Engagement held in Windhoek. Emma Theofelus, the Minister of Information and Communication Technology, outlined the ministry's commitment to expanding digital access by rolling out 30 Radio Access Network towers over three years, at a cost of N\$110 million. These towers aim to extend network coverage to previously unserved and underserved areas,

ensuring equitable access to reliable digital services for all Namibians.

In addition to bolstering connectivity, the Ministry has allocated N\$20 million towards establishing the Namibia Cybersecurity Incidence Response Team (Nam-CSIRT) under the purview of the Communications Regulatory Authority of Namibia (CRAN). This initiative represents a crucial step in enhancing the nation's cybersecurity infrastructure, equipping Namibia to effectively respond to and manage cyber threats.

Furthermore, an additional N\$15 million has been earmarked for the implementation of a 5G strategy, underscoring Namibia's commitment to embracing next-generation mobile networks for faster and more reliable internet service.

Nigeria Calls for Regional Protection of Undersea Cables

Nigeria has urged the West African region to adopt a unified and collaborative strategy to safeguard shared telecommunications infrastructure and enhance connectivity to ensure uninterrupted service. Reuben Muoka, spokesperson for the Nigerian Communications Commission (NCC), emphasized this after recent disruptions caused by undersea cable cuts.

NCC vice-chairman Aminu Maida highlighted the necessity for the subregion to establish mechanisms for protecting undersea infrastructure. He referenced a Cloudflare report that highlighted ongoing outages in multiple West African countries resulting from these cable cuts.

Maida stressed that securing telecom infrastructure is vital for attracting foreign investment and boosting investor confidence in the subregion. He stressed the importance of resilient networks for economic growth and global competitiveness.

Proposing the establishment of a joint monitoring framework, Maida suggested measures for risk mitigation and emergency response procedures for submarine cables. He outlined the main objectives, including enhancing infrastructure resilience, diversifying connectivity, and conducting capacity assessments.

Furthermore, there is a plan to designate telecommunications infrastructure as critical national assets in member countries, ensuring their protection and reliability.

ePLDT's VITRO Inc. Launches Philippines' Largest Hyperscale Data Center

ePLDT, through its subsidiary, VITRO Inc., is working to enhance the Philippines' position as a growing data center hub in the Asia Pacific by opening the country's largest and first true hyperscale data center facility. Located on a 5-hectare property in Santa Rosa, Laguna, the 50 MW capacity VITRO Sta Rosa (VSR) is set to launch in July. To ensure power availability and redundancy for clients starting to use the facility in June, VSR's dedicated Meralco switching station will be energized by April 2024.

To create a true carrier-neutral facility, VITRO Inc. has partnered with major telcos and internet service providers like Radius, Eastern Communications, InfiniVAN, and PLDT. This partnership aims to strengthen the telco ecosystem within the facility before its launch, with more partnerships expected to be announced soon.

President and CEO, Victor Emmanuel S. Genuino, stated that the recent advancements in data center services align with PLDT Group's vision of establishing digital infrastructure to support the nation's digital transformation. VSR is a massive 50-megawatt hyperscale facility designed to be Rated 3-Certified and Rated 4-Ready. It features three fiber routes for network diversity, resilience, and carrier-neutrality, and will implement sustainability practices based on LEED standards.

Established in 2000 as the data center arm of ePLDT, VITRO is a pioneer in hyperscale-grade data centers in the Philippines, with 10 world-class facilities. VITRO Inc. is the leading data center service provider in the country, hosting a digital ecosystem of telcos, content delivery networks, enterprises, hyperscalers, and the public sector.

Malaysia is Reportedly Dominating Southeast Asia in 5G Network Performance

With a median 5G download speed of 451.79 megabytes per second (Mbps), higher than the download speeds of Singapore, Thailand, and the Philippines, Malaysia maintains its lead in Southeast Asia for 5G network performance.

As per Ookla, a prominent global provider of connectivity intelligence, the 5G median download speed in Singapore is 329.73 Mbps, while in Thailand it is 129.40 Mbps and in the Philippines it is 125.14 Mbps.

According to the report, with a 97.3 percent consistency score for the fourth quarter of 2023 (Q4 2023), Malaysia's 5G network achieved the highest consistency score worldwide.

"The result indicates that 97.3 percent of Speedtest Intelligence samples on Malaysia's 5G networks exceeded the consistency threshold, which is currently set at a minimum download speed of

25 Mbps and a minimum upload speed of 3 Mbps," the report indicated in its Q4 2023 Speedtest Intelligence summary. Furthermore, Malaysia's 5G availability increased from 21.0% in Q1 2023 to 27.0% in Q4 2023.

In 2021, Malaysia opted to implement 5G through a Single Wholesale Network (SWN) model, leading to the establishment of Malaysia's Digital Nasional Bhd (DNB) as a key component of this strategy.

"Since its launch more than two years ago, Malaysia's 5G network has consistently performed well, making it one of the best-performing 5G networks worldwide," the report continued.

The report also noted that the mobile speeds in every state in Malaysia have increased by at least 1.45 times across all technologies combined.

Odido Selects Netcracker Digital BSS for Major Telco Transformation Project

Netcracker Technology has announced that Odido, formerly known as T-Mobile Netherlands, will consolidate a number of critical processes across multiple brands and legacy environments onto Netcracker Digital BSS—a component of the flagship Netcracker Digital Platform—as part of a large-scale digital transformation project to become the telco of the future.

Odido, which recently underwent a major rebranding that combined several brands (Ben, Simpel, and Tele2) and introduced a new name, intends to streamline its operational workflows. The operator has already implemented Netcracker Digital BSS for Configure, Price, Quote (CPQ) and Order Management. This will be expanded to Product Management (Product Catalog and Product Lifecycle Management) as part of the transformation project, resulting in a number of business benefits such as faster time-to-market for new services,

a more robust, scalable, and unified platform, and an overall reduction in operational expenses (OpEx) as a result of consolidation.

Building the Telco of the Future

By consolidating the BSS platform, Odido can streamline its operations, eliminating redundant systems and simplifying processes. This reduction in complexity leads to greater efficiency and cost savings for the company, as it no longer needs to maintain and integrate multiple legacy systems.

With Netcracker's expertise, Odido can modernize its technology stack, ensuring that its infrastructure is up-to-date and capable of supporting emerging technologies. This modernization not only enhances performance and scalability but also future-proofs Odido's systems, allowing for easier integration of new features and services.

Popular Video App Faces Comprehensive National Security Review in Canada

Minister of Innovation, Science and Industry of Canada, François-Philippe Champagne, has announced that Canada is currently undertaking a comprehensive national security assessment concerning the proposed expansion of the widely-used video app, TikTok, owned by a Chinese entity.

The review, conducted under the framework of the Investment Canada Act, was discreetly initiated in September 2023.

Addressing reporters via teleconference from Italy, Minister Champagne emphasized the importance of completing the review process thoroughly. He pledged transparency, assuring Canadians that any decisions regarding this matter would be communicated promptly.

Minister Champagne referenced a prior announcement in March 2023 highlighting increased scrutiny on

foreign investments within Canada's interactive digital media sector.

Under Government's Observation

Investments found to be engaged in activities such as disseminating disinformation or manipulating information detrimental to Canada's national security may be subject to precautionary measures or potential ban.

It's worth noting that Canada's assessment of TikTok is independent of a similar legislative proposal in the United States aimed at compelling Chinese ownership to divest or face a ban within US borders. Prime Minister, Justin Trudeau, commented on the ongoing deliberations in the US, emphasizing Canada's vigilance in observing the developments.

Moreover, the Canadian government took proactive measures earlier, prohibiting the use of TikTok on federal government mobile devices in February 2023.

Europe's Fight for Technological Domination

Decades ago, European Union (EU) governments embarked on an ambitious journey, aiming to catapult the European economy to the forefront of global competitiveness and dynamism. Recognizing the pivotal role of technology in this pursuit, they integrated it as a cornerstone of the EU's strategy for economic growth and development.

Fast forward to today, the European Innovation Council (EIC) stands as a testament to this enduring commitment, injecting EUR 675 million into promising start-ups this year alone, bolstering Europe's technology sovereignty policy.

Despite a slightly reduced budget compared to previous years, driven by the waning availability of EU recovery funds, the determination to cultivate the next generation of European tech

leaders remains resolute, particularly amid escalating geopolitical tensions.

At its core, the EIC's mission is to bridge the gap that European companies often encounter in transitioning from academic research to viable commercial ventures, as well as addressing the subsequent funding challenges required for scaling up. While Europe boasts abundant talent and innovative ideas, its investors tend to exhibit a cautious appetite for risk, hindering the full realization of its technological potential.

This concerted push for technological advancement is deeply rooted in both political and economic imperatives. Strengthening Europe's technology base holds the promise of reducing reliance on imports from global tech giants like China and the US, thereby enhancing security and autonomy.

Telefônica Brasil's 5.5G Trial Records All-Time High Speed

Telefônica Brasil has initiated the testing phase of utilizing the 5.5G signal on its antenna. This next generation of mobile internet signifies a progressive advancement beyond 5G and is poised for future commercial deployment.

During the testing phase, Telefônica recorded peak download speeds of up to 6.7 Gbps, with an average of 5.5 Gbps, marking the highest speeds yet achieved on a Telefônica antenna.

Preliminary findings from telcos suggest that 5.5G holds the promise of delivering traffic speeds ranging from 10 to 30 times than 5G. According to Ookla's Speedtest survey conducted in the latter half of 2023, the average download speed on 5G in Brazil reached 445.69 Mbps.

In its testing endeavor, Telefônica utilized 600 MHz of bandwidth from the 26 GHz band (mmWave), a frequency exclusive to the company. Telefônica foresees that 5.5G will not only broaden the landscape for new business ventures and revenue streams but will also synergize with artificial intelligence and cloud computing to introduce innovative products and services underpinned by robust network infrastructure.

Moreover, 5.5G stands to bolster initiatives in smart city development, the internet of things, fixed wireless access (FWA), connected vehicles, among other sectors.

In a parallel development, in February 2024, TIM also announced the commencement of its own 5.5G testing, achieving peak speeds of 11.6 Gbps.

— 2024 —

GISEC

GISEC Global provides vendors and companies from around the world with access to lucrative opportunities in cybersecurity, one of the world's booming markets.

Place: Dubai World Trade Center, UAE



23
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APRIL

FutureNet MENA

FutureNet Middle East & North Africa addresses the strategic and commercial elements of the current digital landscape, with focus on the future trajectory of network development. Its key mission is the advancement of the 'Network Automation and AI' agenda, regarded as a foundational element driving the wave of growth in the telecom sector.

Place: Conrad Hotel, Dubai, UAE



14
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CABSAT

The premier gathering for professionals in the content, broadcast, satellite, media, and entertainment industries in the Middle East & Africa, seeks to harness cutting-edge technology and innovation in shaping the next generation of content.

Place: Dubai World Trade Center, UAE



21
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23
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— 2024 —

COMEX

At COMEX 2024, explore innovative business solutions presented by local and international companies, discover trends in the latest technologies revolutionizing the GCC and the world, and connect with global thought leaders, innovators, and policy and decision-makers.

Place: Oman Convention & Exhibition Centre, Muscat, Oman



27
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DTW24 – Ignite

DTW24 - Ignite will explore the dynamic path of the AI Native journey. Learn from the industry players and experts about the fundamentals and best practices of this ever-evolving technology to unleash the power of AI for transformative innovation.

Place: Bella Centre, Copenhagen, Denmark



18
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20

JUNE

Telecom Review Leaders' Summit

The Telecom Review Leaders' Summit is among the largest C-level industry gatherings, bringing together the leaders of the ICT industry and governments from around the world.

Place: Dubai, UAE



10
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11

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