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SVP, Mobile Networks, Nokia MEA

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News
Provided in cooperation with AFP, the global news agency

Published by
tracemedia Ltd.
www.tracemedia.info

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Year 20 | Issue 219

Mikko Lavanti, SVP, Mobile Networks, Nokia MEA

Nokia: Building Future Wireless Networks in MEA

As the Middle East and Africa (MEA) region accelerates its digital transformation, Nokia is playing a pivotal role in shaping the future of connectivity. In advanced markets like the GCC, the company is spearheading 5G deployment and evolution, ensuring operators can maximize network capabilities while preparing for the next phase of innovation.

In an exclusive interview with Telecom Review, Mikko Lavanti, SVP, Mobile Networks, Nokia MEA, elaborated on how Nokia is helping communications service providers (CSPs) and enterprises enhance productivity and increase efficiency through its innovative network solutions.

How is Nokia supporting the digital transformation in the MEA region?
Nokia is supporting the digital transformation in the region through various perspectives:

• **Building Mobile Digital Infrastructure:** Nokia is leading the pack as the preferred partner for mobile operators in the region, deploying 5G networks and ensuring these networks are best-in-class in terms of performance and energy consumption. MEA is a diverse region in terms of technological maturity and adoption, which is why we see a strong demand to build 4G networks and address our customers' 4G capacity, network evolution, and rural connectivity needs.

• **Powering Enterprises and Industry Connectivity:** Nokia is aiding enterprises in the region with their digital transformation journey and encouraging them to embrace Industry 4.0 innovations and connectivity improvement. This will enhance productivity and increase efficiency.
• **Fostering Innovation and Collaboration:** In our pursuit to support our customers, CSPs, and enterprises in the region in reaching their business objectives, we intend to not lose sight of the importance of innovation and collaboration. Over the last year, we have launched innovation labs in the UAE, Saudi Arabia, Nigeria, and Morocco, consequently fostering innovation. We have also collaborated with local partners on region-specific solutions. For two consecutive years, we have hosted the Nokia Partner Ecosystem Summit in the region. In 2024, it was held in Riyadh and drew contributors from all areas of the telecom ecosystem to discuss and propose ways to accelerate the digital transformation in our region.
• **The Nokia Way**: Finally, we take pride in supporting our customers across

We intend to not lose sight of the importance of innovation and collaboration

Nokia is at the forefront of 5G deployments in all advanced markets

the region while focusing on numerous critical aspects:

- **Ethical and Transparent Business Practices:** These practices are at the heart of everything we do. In fact, Nokia was voted 'one of the most ethical companies in the world' for the eighth consecutive year.
- **Developing Local Communities:** We focus on equipping young talent across the region through internships, academic collaborations, and other initiatives.
- **Health and Safety:** We prioritize the safety of our employees and subcontractors, ensuring they return home safely to their families. This commitment is reinforced through awareness initiatives, comprehensive safety training, and the strict implementation of safety procedures across our operations and subcontractor partnerships.

Taking advanced markets, such as the GCC, into consideration, how is Nokia supporting 5G deployment and evolution, and what are the next steps?

As highlighted briefly above, Nokia is at the forefront of 5G deployments in all advanced markets, where we are supporting our customers located in Saudi Arabia, the UAE, South Africa, Nigeria, Kenya, Egypt, and many other regions with their 5G deployments by providing cutting-edge 5G solutions.

For example, in 2024, we introduced our latest-generation Massive MIMO Habrok platform, which improves performance while significantly reducing power consumption. We also introduced our latest software innovations, improving network speeds, user experience, and enabling our customers to introduce new 5G spectrum.

We also ensure that these networks not only offer the best performance through our software features and product capabilities but also through our market-leading network performance optimization (NPO) services and tools. As we continue to drive innovation in advanced markets, we are leading the way in 5G Standalone (5G SA) deployments, introducing reduced capability (RedCap) technology, and evolving towards 5G-Advanced.

Can you elaborate on Nokia's AI integration initiatives for network automation and enhancement?
We are actively driving the telecom-AI ecosystem forward by incorporating AI into our products and services and allowing our customers to reap the true potential of AI. Nokia is a key player and founding member of the AI RAN Alliance, holding two chair positions. Globally, we are collaborating with leading players such as T-Mobile, NVIDIA, and Softbank. Regionally, we have partnered with leading operators such as e&, stc, and Zain KSA. We have signed numerous MoUs with key partners to drive a shared vision and collaboratively embed AI into their networks.

Nokia has introduced AI into many of its solutions, including hardware analytics, design services, digital twins, an AI digital assistant for technical support and, finally, we embedded AI into our market-leading MantaRay platform, which facilitates network optimization and automation.

Last year, at Hajj, we were very proud to announce the successful deployment of our MantaRay Cognitive SON—our AI-powered, self-organizing networks solution—into stc Group's commercial network. This leading platform for network optimization and automation displayed impressive results during the event and significantly improved network quality autonomously, reducing manual intervention and cost while maintaining best-in-class performances.

5G monetization is a critical concern. How is Nokia collaborating with private mobile network operators to drive network monetization forward?
At Nokia, we have increased our focus on private wireless connectivity for enterprises as it not only allows them to enhance their productivity and efficiency but also allows operators to monetize their 5G networks by offering dedicated slices for enterprises or by partnering with them to provide industry-leading solutions.

We continue to maintain our reputation as a major enterprise vendor by raising awareness of key use cases in specific industry verticals such as utilities, the public sector, and oil and gas. We are already working with some of the major utility and oil and gas providers in the GCC and helping them with their digital transformation journeys.

What's next for Nokia in terms of innovation and network evolution?
Looking ahead, we are working closely with our customers and partners to shape the next phase of network evolution, focusing on virtualization and open networks. With our advanced customers, we have been actively exploring the benefits of Cloud-RAN, conducting multiple trials and proof-of-concept projects across the region. Recently, we achieved breakthrough commercial deployments with stc and du, marking significant milestones in the adoption of Cloud RAN. At LEAP this year, we demonstrated the first in-building, shareable Cloud-RAN deployment, highlighting our commitment to pioneering next-generation network solutions.

Furthermore, we are actively exploring new business models such as NaaS (Network-as-a-Service) as we look for ways to catalyze network deployments and foster new revenue streams with our customers and partners.

Finally, we are engaging in early discussions with some of our advanced customers regarding 6G and next-generation connectivity, where AI will play a crucial role in advancing networks to the next level, enhancing performance, energy efficiency, and autonomous capabilities. We have initiated MoU's with leading customers to explore early use cases and create a strong foundation for continued collaboration. TR

We continue to maintain our reputation as a major enterprise vendor by raising awareness of key use cases in specific industry verticals

Saleem Alblooshi Explores How du is Developing the UAE's 5G Advanced and Sustainable Future

The United Arab Emirates (UAE) is at the forefront of innovation and global digital transformation, delivering next-generation digital services to enterprises and consumers. du, one of the country's leading telecom and digital service providers, has demonstrated its commitment to advancing the 5G Advanced innovation and UAE's digital landscape.

Toni Eid, CEO of Trace Media International, and Founder of Telecom Review Group, conducted an exclusive interview with Saleem Alblooshi, du's Chief Technology Officer, who explored du's strategies in adopting 5G-Advanced, the transition to 6G technology, and balancing innovation with sustainability.

Leveraging 5G-A and Launching the du Innovation Center

Alblooshi emphasized that du's infrastructure is among the most advanced in the world, having adopted the latest technologies to enhance mobile, fiber, and fixed infrastructures. The company has harnessed technological capabilities to introduce new use cases and accelerate its fixed infrastructure rollout.

The du CTO underscored that, in 2023, the company introduced some of the best commercial infrastructure and services in a production network. The launch of 5G-Advanced (5G-A) showcased its potential use cases and diverse capabilities at du's recently-launched, innovative 5G-A Villa.

Utilizing its advanced infrastructure, 5G-A In-Building Solutions (IBS) were implemented. "We keep up to date with the latest technologies, enabling the infrastructure and positioning the UAE as one of the fastest networks in the world. We contribute to this by maintaining that position from an infrastructure perspective," Alblooshi accentuated.

The launch of the du Innovation Center further demonstrates du's commitment to driving connectivity by delivering ultra-high-speed capabilities, according to Alblooshi. The company leverages its partnerships with industry players in the ecosystem by showcasing network potential to its customers, enabling productivity, efficiency, and business transformation.

Adopting 5G-A and Transitioning to 6G Technology

Regarding the adoption of 5G-A and the transition to 6G network technology, Alblooshi revealed that du prioritized 5G-A implementation in 2024 to deliver enhanced speeds.

Spectrum availability has accelerated du's infrastructure deployment, and, as a result, the company demonstrated a 4.5 Gbps throughput on its network using 5G-A.

"2025 is the year where we accelerate the rollout of 5G-A, covering more communities and focusing on indoor coverage. Driven by businesses' needs, we are accelerating the investment and deployment of our 5G-A network," he added.

du is an integral part of the 6G ecosystem, contributing to the definition of its standards. Recently, the UAE-based telecom operator collaborated with the Telecommunications and Digital Government Regulatory Authority (TDRA) and industry vendors, publishing a paper on 6G expectations and standardization. The du CTO emphasized the company's commitment to being an early adopter of 6G technology, which is expected to arrive by 2030.

Addressing Exponential Data Growth

When asked if du is ready to cater to the demand for more data, Alblooshi highlighted that du has experienced a 700% increase in mobile data traffic over the last four years.

This exponential growth, driven by 5G infrastructures, delivers ultra-fast speed, positioning the UAE as a global leader in connectivity. This reflects the commitment, engagement, and professionalism of du's workforce in driving advancement alongside other industry players.

With the growing adoption of artificial intelligence (AI), the du CTO forecasted that there will be an increase in mobile data traffic in the coming four years, with one-third set to be generated by AI.

Alblooshi emphasized that du remains committed to scaling its infrastructure and enhancing connectivity to meet the expectations of its customers.

Key Pillars of Strategic Focus for 2025 and Beyond

Driven by leadership in the region, the TDRA's collaboration with operators has resulted in more investments in infrastructure, ultimately positioning the UAE as one of the countries with the fastest-growing infrastructures in the world.

Alblooshi stressed that du is prioritizing modernization to lead in infrastructure development. The company's strategy and vision remain centered on utilizing data to connect the east and west, particularly in terms of international fiber infrastructure deployment.

This rollout will expand du's footprint, building on its existing coverage, which already spans 99% of populated areas. The du CTO also underlined the company's efforts in modernizing the core, packet core, and IP core networks, and optical infrastructure.

Alblooshi outlined du's key pillars of strategic focus in 2025 and beyond, which include technology and infrastructure advancements, network quality and efficiency, improved customer experience, enhanced network deployment and infrastructure operation, sustainability, and security.

He emphasized the significance of securing data and focusing on confidentiality, integrity, and availability to aptly cater to du customers' needs.

Balancing Innovation with Sustainability

Sustainability is a major focal point in the telecommunications industry, with companies converging at the crossroads of innovation and environmental stewardship. Driven by the exponential growth of data traffic, the demand for utility and power will significantly increase greenhouse gas (GHG) emissions.

Alblooshi underscored the value of sustainable initiatives, noting that du is well aligned with the international sustainability agenda.

Commenting on addressing sustainability concerns in the industry, Alblooshi highlighted, "The only way to control this is by driving innovation."

The du CTO reminisced about the keynote he delivered during the recently concluded 18th edition of the Telecom Review Leaders' Summit, where he presented an AI-based use case that can allocate network resources based on customer traffic, particularly on a specific cell. Utilizing AI, resources can be enabled or disabled automatically based on traffic resource allocation.

He highlighted du's efforts in promoting sustainability, pointing out that there are 130 sites across the country equipped with solar panels as part of its 'Solar on Tower' initiative. These solar-powered towers support the energy needs of utility companies. Additionally, he emphasized the various initiatives du is pursuing to achieve its goal of reducing carbon dioxide (CO_2) emissions by 2030. TR

From Insights to Impact: How stc tv is Innovating the Customer Experience Journey

How do you elevate the digital entertainment experience while driving growth? stc tv explores customer-centric strategies as a key to unlocking market leadership.

Leading with Vision and Innovation

stc tv is the digital entertainment platform of stc Group, available in Saudi Arabia, Bahrain, and Kuwait. Working with premium global and regional content providers, stc tv offers a vast library of over 28,000 on-demand movies, TV series, and more than 150 live channels, providing an immersive viewing experience across multiple devices (web browsers, smart phones, set top boxes, smart TVs, Apple TV, Chromecast, and AirPlay).

Taking a customer-centric approach, stc tv utilizes advanced data analytics to enhance personalization

across the platform, delivering exclusive Arabic, Gulf, and Western content tailored to the preferences of individual viewers.

The platforms' flexible subscription options and intuitive interface enables viewers to create personalized watchlists, discover new content, and access their favorite entertainment, all from a single account.

Executive Summary

The company had to undergo a strategic transformation to enhance its customer experience journey by diving into the intricacies of each user's engagement with the platform. stc tv began this transformation by understanding that each user interaction was entirely unique and implemented a rigorous feedback mechanism to capture its customers' digital entertainment needs across all touchpoints. The mechanism provided insights that allowed stc tv to upgrade its content offerings, improve discovery, and boost streaming quality, enabling the platform to create a more personalized and enjoyable viewing experience.

The content strategy's design was built to connect with diverse audiences, bringing a blend of Arabic and Western cinema releases using a Master Aggregator Model. Through this approach, stc tv aims to offer a rich and locally relevant content mix by partnering with over 30 popular content providers and launching premium homegrown channels.

To match its content aggregator model, stc tv introduced new features that are designed to streamline the user journey. These include content reminders, stream quality adjustments, and personalized watchlists. Meanwhile, the platform reinvented the feedback cycle and used data analytics to keep users at the center of its growth roadmap. By blending innovation with close attention to the needs of viewers, stc tv emerged as one of the top streamers in the Middle East and North Africa region.

How Customer Expectations Reshaped the Platform

By looking closely at real-time customer insights, stc tv was able to better find the pain points in their user journey. This made it realize the immediate need to come up with a plan to address these points and create a more seamless streaming experience. It introduced improvements that enhance content personalization with artificial intelligence (AI)-driven recommendations and improved the platform interface.

Building Bridges with Viewers

1. Reinventing the Feedback Cycle

stc tv took a proactive approach using the feedback of its customers to improve its viewership metrics. This helped it transform its user experience approach and create a flexible system that responds to the evolving needs of viewers. The result? stc tv became a more responsive platform that attracted viewers and kept them engaged. This transformation began with implementing an in-app survey (in May, 2022). This was followed by an AI feedback tool in September, 2023.

Direct engagement strategies were merged with advanced data analysis technology. This helped stc tv better understand how users interact with the platform. The use of data analytics and user profiling and AI-enabled Voice of the Customer (VoC) systems gave actionable insights sourced from the observation of user interactions. The process also involved using key performance indicators (KPIs) to identify any gaps and find the areas for improvement.

The success of the process was mainly due to the powerful synergies between the teams involved. The customer experience team developed the strategy. The center of excellence (CoE) team integrated feedback from users and data analysis output. The technology team and product team deployed AI systems to make sure the product enhancements continue to be implemented smoothly. In parallel, the content team expanded the stc tv library through strategic partnerships, tailoring the lineup to customer needs. Regular communication and training programs were carried out for these teams to ensure alignment and coordinate the process.

This agile and phased approach allowed stc tv to continue to innovate new solutions to optimize their offerings. At the same time, the advanced digital infrastructure of stc tv enables quick adaptations. This eventually supported the ongoing process of improving the user experience.

2. User-Driven Features

One of the key pain points stc tv found through observing the VoC system outputs is the lack of control some users experience with the platform. To give users more control over their viewing experience, stc tv added special features like the single account solution. This allows customers to use their account (with a single bill) on multiple devices and with several profiles without disrupting the service.

> stc tv recognized the urgent need to adapt to rapidly changing market dynamics and evolve to meet digitally sophisticated customer expectations

Another added function allows users to adjust the stream quality based on their internet connection. stc tv also focused on features that personalize the user experience, such as the content rating (like/dislike), selecting preferred genres, and content availability notifications.

Other extra features include an enhanced 'live TV' catalog that integrates program posters into the traditional Electronic Program Guide (EPG). Options like 'rewind' for linear TV programs (for up to 14 days) and the live TV search feature also simplify the streaming experience. Finally, thematic user interface skinning added another layer of

customization. So, users can now change the way their app appears and benefit from a selection of themes that mark special events and seasons.

3. Content Strategy

stc tv's Master Aggregator Model, brought together content from over 30 leading global and regional networks, offering extensive and diverse entertainment from Disney, Star, Rotana, SBC, discovery+, STARZPLAY, AnimeKey, and more. By focusing on a Saudi-centric content strategy, the platform successfully integrated Arabic content with popular Western TV series and cinema to deeply engage local audiences.

In addition to this curated mix, stc tv introduced a range of homegrown channels (stc tv cinema, stc tv drama, stc tv sports, stc tv family, stc tv kids, and stc tv anime), ensuring a broad appeal

across various interests.

Catering to the region's growing e-sports community, stc tv launched five dedicated e-sports channels during the 2024 Esports World Cup, alongside more than 5,000 pieces of crowd- sourced, short-format gaming content. These additions reinforced stc tv's distinct position in the

competitive over-the-top (OTT) space, offering a blend of local and international entertainment to audiences across the MENA region.

Delivering Measurable Success: How Enhanced Customer Journeys Drive Tangible Outcomes

stc tv's customer-focused strategy led to substantial improvements across key performance areas:

- **Third OTT Provider in Saudi Arabia:** stc tv secured its place among Saudi Arabia's top three OTT platforms in 'engagement,' 'brand power,' and 'saliency' measures.
- **Improved Customer Loyalty:** In-app Net Promoter Score (NPS) has increased by 95% from an average of 22 NPS in 2022/2023 to an average of 43 in 2024 (Jan to Sep, 2024). This indicates the increase in customer loyalty as a result of all the CEX enhancements throughout the year.
- **Customer Satisfaction Excellence:** stc tv ranked a strong customer satisfaction (CSAT) score of 86%.
- **Outstanding App Rating:** stc tv scored the highest Google Play and App Store ratings among global and regional competitors, reaching 4.7/5- and 4.6/5-star ratings, respectively.
- **Boosted Engagement:** The platforms achieved a threefold increase in viewership, accumulating over 210 million hours of content viewed across both app and home platforms.
- **Customer Retention:** The initiative elevated customer retention, significantly reducing churn rates.
- **Decreased Complaint Ratio:** stc tv customer enquiries and complaints dropped by 60% throughout the past few months due to optimized app performance and ease of use.

Customer Perception Improvements

Not only has the impact been witnessed through healthy KPIs, but it has also been reflected through a spike in positive social media engagement by customers and reaching the top three OTTs in the Kingdom of Saudi Arabia based on its level of engagement and brand power, according to the Kantar Brand Health Tracker.

Takeaway

stc tv's journey has clearly demonstrated how placing the customer at the center of its strategy, combined with next-gen technology, can transform market presence, customer satisfaction, and internal processes. The platform's focus on real-time feedback analysis, personalization, and flexible content offerings has led to an impressive 80% year-over-year (YoY) growth in active subscribers and higher CSAT.

By continuously refining its content strategy and implementing user-driven features, stc tv has successfully positioned itself as one of the leaders in the digital entertainment industry. The platform's ability to merge high-quality local and international content with innovative technology and a seamless user interface ensures it stays ahead in a competitive market. TR

The process was based on three pillars: reinventing the feedback cycle, user-driven features, and content strategy. These formed a solid foundation for stc tv's user experience toolkit

The Race to 6G: What's Coming in 2025 and Beyond?

Five years from now, 6G will be the most-awaited tech evolution. However, given this short period of time, is the telecom industry and society in general prepared for the nationwide deployment of the next 'G' wave?

6G is a hot topic of discussion. Telecom giants are working on delivering superfast wireless cellular communications specifications, while evaluating how to make a return on their multi-billion-dollar investments (ROI) in 5G. Interestingly, these returns are projected to yield a global market value of USD 320.1 billion by 2026. Although, actualizing a piece of the 5G ROI pie will depend on the strategy and niche of the entity.

What Do We Know So Far About 6G?

Building on 5G advancements, 6G technology represents the next transformative step in wireless communication. As research began as early as 2018, 6G commercial deployment is anticipated by 2030, following the completion of IMT-2030 specifications. This evolution promises unparalleled data speeds exceeding 100 Gbps, ultra-low latency, and novel capabilities in spectrum sharing and distributed RAN.

Key features of 6G include enabling real-time holographic communication, immersive AR/VR experiences, and massive IoT connectivity. It is also set to significantly enhance machine learning (ML) and AI (artificial intelligence) integration, driving advancements in autonomous systems and smart cities. The overarching vision is to create an intelligent wireless ecosystem supporting the fourth industrial revolution (4IR) by seamlessly connecting humans, machines, and the environment.

In line with this, major developments in 6G were highlighted at WRC-23 in Dubai to support 6G's global rollout. This includes mid-band spectrum allocation and IMT identification of the upper 6 GHz band (6.425-7.125 GHz) for the EMEA region as well as in some countries in the Americas.

While promising, challenges like infrastructure readiness, global standardization, and security concerns must be addressed.

Middle East: An Innovation Hub for 6G

The Middle East is strategically positioning itself as a global leader in the development and deployment of 6G technology. Leveraging robust macroeconomic conditions, a tech-savvy population, and ongoing investments in 5G and 5G-Advanced, the region is setting the stage for a seamless transition to 6G.

The UAE stands at the forefront, with the Telecommunications and Digital Government Regulatory Authority (TDRA) announcing a comprehensive 6G roadmap. The plan emphasizes scientific research, the development of technical standards, and strategic collaborations across industrial, academic, and governmental sectors. The TDRA's 'ICT Regulatory Sandbox' facilitates 6G experiments, paving the way for widespread adoption by 2030. "The ICT Regulatory Sandbox has been instrumental in providing the spectrum resources and regulatory frameworks needed to facilitate 6G trials," said Mohammed Al Ramsi, TDRA Deputy Director General for Telecommunications.

Additionally, the UAE's allocation of the 600 MHz and upper 6 GHz bands, as announced in November, 2024, positions it among the first to offer 6 GHz mobile broadband, a foundational element for 6G.

Other key initiatives include Ericsson and e& UAE's collaboration on 6G use cases and the UAE's 6G Centers of Excellence (CoE), which aim to attract global talent and investments. Working alongside the TDRA, technology vendors, and other operators as part of the 6G Task Force, du is also playing an instrumental role in defining the UAE's vision for 6G.

Saudi Arabia is also making significant strides towards 6G. In continuation of a three-year partnership established in 2021, Ericsson has extended its R&D partnership with Saudi Arabia's King Abdullah University of Science & Technology (KAUST) until 2026 to continue research related to 5G and 6G technologies. Patrick Johansson, President of Ericsson Middle East and Africa, highlighted their collaboration with KAUST and TÜBİTAK, stating, "We are conducting intensive research into 6G networks." Moreover, Saudi Aramco's digital subsidiary is in talks to invest USD 1 billion in US telecom firm, Mavenir, aligning with Vision 2030's focus on technological innovation and economic diversification.

With these initiatives, the Middle East is set to become a hub for 6G innovation, driving the region's commitment to digital transformation further.

The Global Push Toward 6G Integration

Global efforts to develop 6G technology are accelerating, with countries, organizations, and industry leaders working to shape the next era of connectivity. Research and development initiatives aim to define technical requirements, integrate emerging technologies, and lay the foundation for 6G deployment by 2030.

Building on 5G advancements, 6G technology represents the next transformative step in wireless communication

> The Middle East is strategically positioning itself as a global leader in the development and deployment of 6G technology

Europe leads with innovation. Germany has appointed a 6G research coordinator to ensure competitiveness, focusing on eliminating coverage gaps and supporting advanced applications. Telefónica Germany and AWS have collaborated to test quantum technologies in mobile networks by optimizing mobile tower placement, enhancing security with quantum encryption, and exploring insights for 6G development. While the second phase of Europe's largest 6G research project, the Hexa-X-II initiative, led by Nokia, aims to create a novel, end-to-end platform for next-generation networks. Complementing this, the SUSTAIN-6G project integrates sustainability into 6G development.

Sweden, supported by a USD 5.4 million grant, is also advancing satellite-6G integration. Together with the US, Sweden aims to build a collaborative ecosystem for 6G research and development by leveraging new spectrum allocations, harmonizing frequency bands globally, and fostering cooperation based on shared principles like transparency and innovation.

Asia is setting milestones. China achieved a breakthrough in satellite-to-ground laser communications with a data transmission rate of 100 Gbps, positioning itself as a leader in satellite communication relevant to 6G. Researchers from Beijing University of Posts and Telecommunications demonstrated the world's first 6G field test network last year, achieving semantic communication using 4G infrastructure and emphasizing the potential of backward compatibility.

Private sector collaboration is pivotal. Initiatives like the AI-RAN Alliance are uniting global technology leaders, including Ericsson, Microsoft, and Nokia, to drive AI innovations in

radio access networks, which are essential for 6G. Telefónica, Ericsson, and MATSUKO also showcased the potential of holographic communication through IMS Data Channel (IMS DC) technology, emphasizing future applications for 5G and 6G voice services.

Global cooperation remains crucial, with the US, EU, and Sweden fostering shared principles like transparency, security, and sustainability, underscoring the collective vision for 6G's secure and inclusive future.

6G Market Growth Drivers

The 6G market is expected to revolutionize connectivity with ultra-low latency, high data rates, and advanced technologies such as terahertz frequencies, quantum computing, and AI-driven optimization.

As observed globally, its key verticals include immersive holographic communication, sustainable networking, networked sensing, generative AI (GenAI), and the digitalized, programmable physical world. The concept of digital twins will play a central role, offering real-time virtual replicas of physical entities for improved planning and automation in industries like manufacturing and beyond.

Apart from this, the Internet of Senses (IoS) will merge the physical and digital worlds, enabling multisensory interactions such as haptic and olfactory experiences, fostering remote collaboration with digital replicas of humans and devices.

Embedding 6G into a 3D network will also make it possible to integrate cellular and satellite technologies easier, connecting more devices globally. This transformation offers significant opportunities for satellite markets while challenging traditional telecom revenue streams.

The collective efforts of regional research alliances, vertical organizations, and mobile operators were observed during the 3GPP workshop on IMT-2030 use cases, whereby the key goals and decade-long roadmap for 6G innovation were highlighted. These goals comprise economic growth, tech advancement, societal equity, and environmental sustainability, as well as trust and reliability.

What to Expect from 6G in 2025?

As we progress in 2025, the 6G landscape is gradually being molded by important milestones. The 3GPP RAN Workshop in early 2025 will kickstart the study and design of key aspects of 6G technology, with Release 20 launching the first 6G study items and Release 21 focusing on system design requirements and targets. This early focus on standardization is crucial as global interoperability will play a pivotal role in ensuring that 6G can deliver ubiquitous, seamless connectivity across regions and industries.

It is worth noting that 6G will not merely be an extension of previous generations; it will evolve into a diverse network combining unlicensed, shared, and exclusively-licensed networks, providing a foundation for next-gen applications.

Having said that, one of the most critical elements of 6G is its radio interface, which will form the backbone of its connectivity capabilities. Starting in the second half of 2025, development will focus on creating the cellular air interface, incorporating new frequency bands such as cm-wave and sub-terahertz (THz) to support the massive bandwidth requirements of 6G. The 3GPP, having completed work on 5G-Advanced, will now turn its attention to 6G, setting the stage for a future that extends far beyond 2030.

According to Detecon's Konstantinos Pentikousis, frequency bands like cm-wave and sub-terahertz (THz) are promising candidates for 6G and could complement existing 5G offerings in sub-6 GHz and mmWave frequencies. Additionally, the GSMA reports that, in 2025, the 6 GHz development for International Mobile Telecommunications (IMT) will continue to grow, with more nations adopting the 6 GHz band for IMT, particularly in APAC, the Gulf, and Latin America, accelerating regional developments.

Ultimately, 6G promises to be an incremental yet transformative leap, laying the foundation for new industries, smarter cities, and a digitally integrated future. Its long-term vision and substantial investment will ensure that it meets the needs of tomorrow's technological landscape. With countries worldwide adopting new frequency bands and creating clear roadmaps, 6G will be a truly global initiative, bringing faster, more reliable connectivity to every corner of the world. TR

> Research and development initiatives aim to define technical requirements, integrate emerging technologies, and lay the foundation for 6G deployment by 2030

Gilles Vaqué, President and Founding Partner of PMP Strategy

Gilles Vaqué Demystifies Network Innovation, Market Expansion, and Sustainability

In an exclusive interview at the 18th edition of the Telecom Review Leaders' Summit, Gilles Vaqué, President and Founding Partner of PMP Strategy, shared his expert insights on how PMP Strategy is helping telecom companies navigate the complexities of network innovation, market expansion, and sustainability.

Gilles Vaqué discussed the key trends shaping the telecom industry, the critical transformations operators must undertake in the next three-to-five years, and the company's commitment to driving growth and operational excellence for its clients in the ever-evolving digital landscape.

How does PMP Strategy help telecom companies address key challenges like network innovation, market expansion, and sustainability?

PMP Strategy is a strategy consulting firm operating in many countries. This specificity ensures that more than 50% of our business is related to telco and tech, so we are experts in this sector. The ability to help operators get maximum value out of these new businesses is one of the key issues we are working on with several operators and telcos.

This specificity is also critical for sharing all the best practices we see in the different countries, thanks to our offices worldwide. The ability to be 'on-the-ground' to help telco companies as a true partner, enabling them to gain and catch the value of this new market and path of growth, is part of our DNA at PMP Strategy.

With technologies like 5G, AI, and IoT transforming the telecom industry, what advice does PMP Strategy have for telecom companies to remain competitive?

AI, 5G, and IoT are good growth paths for operators. As you know, in some regions, for instance, in Europe, there is no more growth for telcos and the telco sector. In others, such as North America and the GCC region, there is still huge growth potential in terms of connectivity, but the ability to capture all these new markets is key for all the companies.

We see a lot of potential in all things related to 'beyond the core' in both the B2B and B2C markets. On the B2B side, the ability to become a champion in ICT is key. In relation to this, cloud and cybersecurity is key for operators. It's an enormous market with huge, substantial worldwide players, and the ability to gain value is key for them. In the B2C market, the ability to become a payment, banking, and real marketplace player (not only a digital player) is important.

Operators have many, many, fields for growth, and that, I think, is key for them. For PMP Strategy, we have a lot of expertise in each of these sectors thanks to our many SME experts. We also know the capabilities and new business models very well.

To become a champion is not only to add a service or product to the roadmap you already have; it's about defining a strategy to build the capabilities, review the organization, and build the ecosystem. This is not the same business model as a telco model. The ability to implement operationally and reap the results of this growth in terms of P&L, is how we can help all telcos gain value in their P&L.

What key trends will shape the telecom industry in the next three-to-five years?

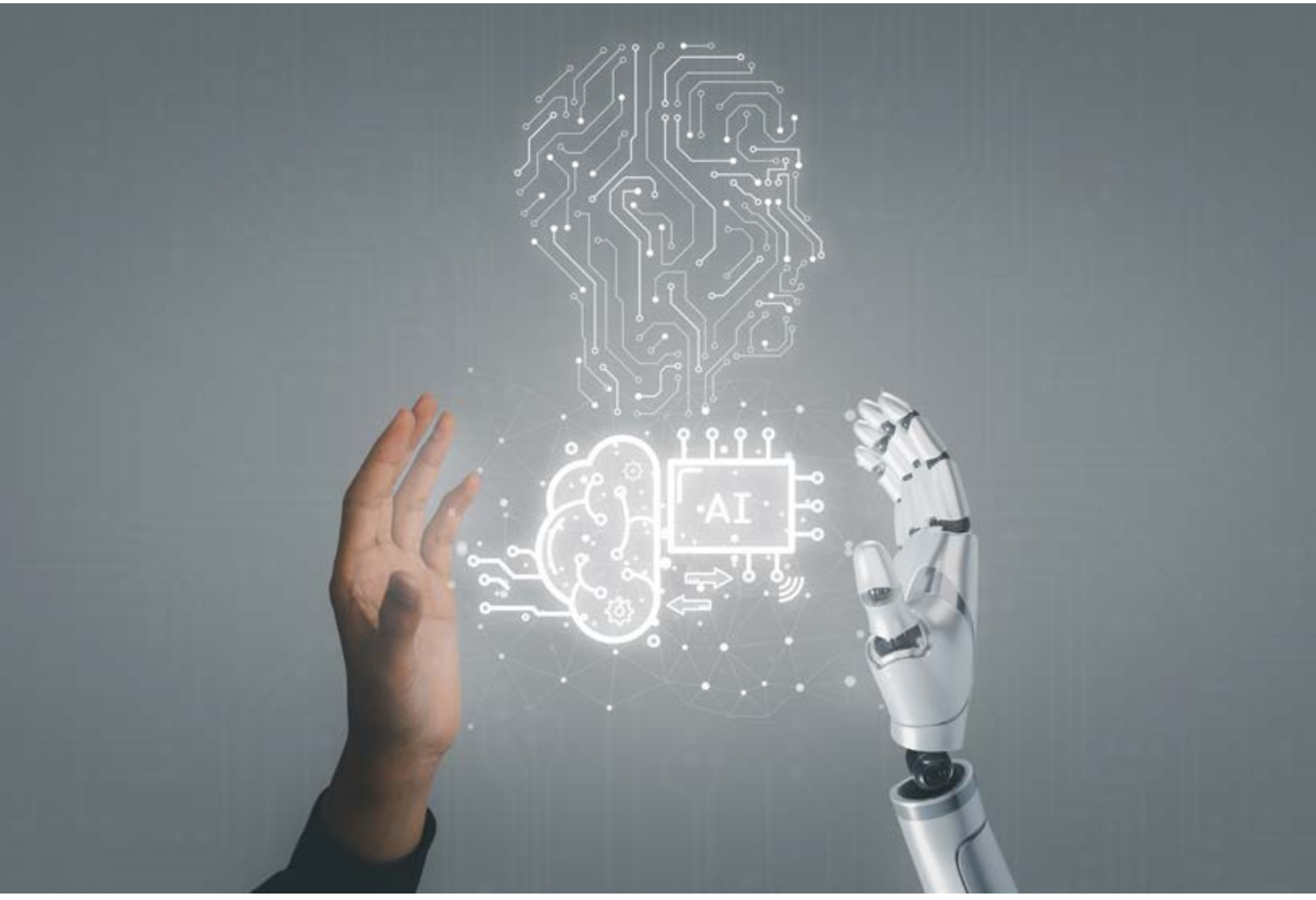
In the next three-to-five years, telco operators and companies will face two main issues and two main stakes. Therefore, they must be able to make two key transformations.

In terms of the core model, they must become lean, efficient, customer-oriented, and have a high sustainability target. They must revisit *all* their models. For instance, on the IT side, they need to transform legacy IT into smart IT that is very lean, reactive, and digital. In terms of customer care, they need to ask, 'How can I improve the NPS and use AI to improve my relationship with my customer?' as it's a key issue. On the network side, identifying how to build an intelligent network and drive and steer this network to get more value from the infrastructure and the network is key. So, there are several transformations the operator can apply to the core model in the coming year.

In parallel, it is crucial to leverage the full potential of ICT across various areas, such as cybersecurity, digital marketplaces, payment systems, and banking. This will enable active participation in multiple verticals, such as healthcare and education. There's a new path for growth, and telcos must adapt their models to create a new joint venture (JV), for instance, a new sub-company, to achieve their full value. They must also be able to manage both models.

I think the key champions in the future will be all the telcos with the ability to transform their core model and, in parallel, become champions in these new markets. TR

To become a champion is not only to add a service or product to the roadmap you already have; it's about defining a strategy to build the capabilities, review the organization, and build the ecosystem



Innovating at the Edge: Partnerships and Strategies Transforming ICT in 2025

Among the ICT innovations set to dominate in 2025 is edge computing. This technology will continue to transform data processing by bringing it closer to the source of the data, improving response times and optimizing network resources.

Interestingly, at the 18th edition of the Telecom Review Leaders' Summit, strategies to maximize cloud investment returns were discussed. This is particularly important as the telecom and technology industries evolve.

Collaboration between hyperscalers, telcos, and service providers has proven essential in overcoming pricing, security, and scalability challenges in the cloud, and trends like sustainability, edge computing, and sovereign cloud services have become critical areas to watch.

Edge and AI: An Innovative Combo

The exponential growth of artificial intelligence (AI) is transforming consumer and B2B uses, as well as the requirements of telecommunications infrastructure.

According to Sofrecom Group CEO, Guillaume Boudin, to further reduce latency, operators can bring AI processing infrastructures closer to users by deploying edge computing solutions. In addition to reducing latency, the deployment of national edge computing infrastructures (on which data for AI processing will take place) can also ensure the sovereignty of sensitive data.

Between 2023 and 2032, the edge intelligence (edge AI) market size is projected to grow at a CAGR of 24.8%, highlighting the rising global adoption of cloud computing. Having said that, while edge computing brings data storage closer to the required location, AI processes the data and incorporates real-time feedback.

This powerful combination facilitates the integration of AI algorithms into IoT devices, enabling real-time information processing without the need for constant cloud connectivity. Indeed, AI can enhance the capabilities of IoT and edge computing solutions, allowing telecom companies to create smart solutions for industries such as transportation, energy, and agriculture, offering new services that go beyond connectivity.

Supporting this context, Susan White, Senior Director, Strategy, Netcracker Technology, believes that AI is crucial to closing automation gaps in telecom because modern networks are becoming increasingly complex, especially with the advent of 5G, network slicing, and edge services.

As security is a critical aspect within cloud-centric systems, integrating AI into a comprehensive security framework could also ensure that all layers of the telecom network, from edge to core, are protected.

Furthermore, the integration of a hybrid cloud with edge computing brings computing resources closer to the point of data generation, reducing latency and enhancing real-time processing capabilities. Telecom operators can process sensitive data locally (edge devices) while leveraging the public cloud for heavy computational tasks and analytics through hybrid cloud models.

As small language models (SLMs) advance, the edge cloud ecosystem is anticipated to be prevalent in various scenarios including car computers, traffic systems, smart sensors within factory premises, remote cameras, and environmental monitoring devices.

Bearing this in mind, implementing an edge machine learning (ML) strategy in tandem with cloud support enables modern organizations to deliver consistent application and operational experiences. This approach facilitates expansion into remote locations facing challenges in maintaining continuous connectivity within the data center. To achieve this, it is crucial to establish consistent deployment models extending seamlessly from the core to the edge.

Value of Partnerships in Edge Computing

Nowadays, there is a mutual dependency between hyperscalers and telecom carriers. "Carriers and hyperscalers are best friends," Pavel Vishnyakov, Senior Solution Architect, Huawei Cloud MECA, emphasized, showcasing the strategic collaboration between the two.

During the panel discussion at the 18th edition of the Telecom Review Leaders' Summit, it was highlighted that cloud adoption has driven growth in telecom, particularly in the B2B space. Moreover, while data centers are necessary, their value is only fully realized when connected to global networks, often through partnerships with telecom operators.

Similarly, Mohamed Hamouda, Regional Director for Business Development and Solutions Sales, NEC GCC, echoed this sentiment, stating, "Hyperscalers need the capabilities; the telcos need the capabilities," emphasizing the importance of closer cooperation in building cloud infrastructures.

In this environment, telecom operators typically provide the physical edge infrastructure (data centers, towers, etc.) and extensive network connectivity, while hyperscalers bring cloud expertise, advanced technologies, and scalable platforms.

While edge computing brings data storage closer to the required location, AI processes the data and incorporates real-time feedback

According to Noman Waheed, CTO for Middle East, Nokia, partnerships facilitate cloud-based network services, driving more efficient network management, quicker deployment, and advancements in edge computing. Nokia collaborates with cloud-native infrastructure providers such as AWS, Google Cloud, and Microsoft Azure to develop flexible and scalable 5G solutions.

Operator partnerships with the hyperscalers, also known as agile technology companies, will be essential in achieving the growth of multi-access edge computing (MEC) node rollouts. Over 1.6 billion mobile users are forecasted to have access to MEC-powered services by 2027.

In 2022, e& UAE and AWS announced a collaboration to build industry-specific solutions that offer low latency and high-performance computer services leveraging 5G private networks and MEC. Since then, e& UAE has expanded its partnership with Oracle to fuel AI advancements and has become the first company outside North America to deploy Microsoft's Azure Operator Nexus and Azure Operator 5G Core solutions, enhancing its 5G capabilities and service offerings.

In 2023, Zenlayer, the world's first hyperconnected cloud, and Mobily, one of Saudi Arabia's largest internet service providers (ISPs), also revealed that their new strategic partnership aims to deliver high performance edge compute and connectivity services to businesses deploying infrastructure in Saudi Arabia and beyond.

Additionally, Maria Stebneva, Head of Sales, Canada, Juniper Networks, noted the increasing role of edge computing, stating that "localized computing at the edge is becoming increasingly critical to reduce latency and enhance user experiences."

Salam suggests that enterprises should carefully plan how they will adopt IoT and edge computing solutions if they want to maximize their return on investment (ROI). Rather than immediately attempting to implement a large-scale IoT and edge computing solution, it is advisable to start with a modest pilot project.

Telecom partnerships with hardware and IoT device manufacturers are also becoming a hit across the industry. In June, 2024, Ooredoo partnered with NVIDIA to deploy AI technology in data centers across five Middle Eastern countries: Qatar, Algeria, Tunisia, Oman, and Kuwait. "NVIDIA's expertise in AI hardware and software, combined with our advanced digital infrastructure, positions us to play a leading role in the AI ecosystem across our markets," said Ahmad Abdulaziz Al-Neama, Group Regional CEO of Ooredoo.

But the real question is: "What makes partnerships in the cloud so valuable?" Without a doubt, by pooling resources and expertise, partners can reduce the financial and operational risks associated with deploying and scaling edge solutions. A great example of this concept is the largest transaction ever achieved in Qatar's tech sector, which underscored the confidence of leading financial institutions in Ooredoo's strategic vision. The QAR 2 billion financing deal has been signed with QNB, Doha Bank, and Masraf Al Rayan. The funds will be strategically utilized among the data center assets from Ooredoo's telecom operations, with a significant focus on expanding capacity and enhancing infrastructure. This will meet the rising demand for AI, cloud services, and hyperconnectivity across the MENA region.

Moreover, by leveraging a partner's established infrastructure, technology, and customer base, the rollout of edge computing solutions will be accelerated. In September, 2024, Ericsson formed a joint venture with twelve telecom operators to sell network application programming interface (API) software to spur innovation in digital services at a global scale. The new venture shareholders will bring funding and important assets, including global telecom operator relationships, knowledge of the developer community and each telecom operator's network APIs, expertise, and marketing.

Edge Computing in 2025

In conclusion, edge computing stands at the forefront of the ICT innovations set to redefine data processing in 2025, enhancing speed and efficiency across networks. As partnerships between hyperscalers, telcos, and service providers continue to evolve, they play a pivotal role in overcoming challenges like pricing, security, and scalability in cloud services.

Looking ahead, these collaborations will drive advancements in edge AI, enabling real-time data processing and fostering new smart solutions across industries. The future promises further integration of edge computing with AI and hybrid cloud models, ensuring optimized performance and enhanced user experiences globally. TR

Edge computing stands at the forefront of the ICT innovations set to redefine data processing in 2025

SDAIA Launches Accreditation Certificate for Saudi Arabia's AI Service Providers

The Saudi Data and AI Authority (SDAIA) has introduced an accreditation certificate for artificial intelligence (AI) service providers within the Kingdom of Saudi Arabia, marking a significant advancement in the country's AI governance. The initiative aims to enhance the maturity and reliability of AI applications across various sectors.

According to a recent AI maturity index, Saudi Arabia is among the top AI-ready nations. Supporting this ranking, SDAIA's accreditation program aims to enhance the quality of AI products and services available to citizens, residents, and visitors in the Kingdom.

This significant move aligns with Saudi Arabia's Vision 2030, spearheaded by HRH Prince Mohammed bin Salman bin Abdulaziz Al Saud, Crown Prince, Prime Minister, and Chairman of the SDAIA's Board of Directors, which aims to establish the country as a global hub for innovative technologies and AI advancements.

Promoting Responsible AI Use

The accreditation process will be facilitated through the 'National Data Governance' platform, where entities can submit their AI products and services for assessment.

The platform also utilizes evaluation tools to measure various maturity levels, with the most dedicated entities earning tags that reflect their progress. These tags incentivize the entities to continue advancing their maturity.

Accredited entities will earn a certificate along with these incentivized tags, categorized according to the level of risk: conscious, adoptive, committed, reliable, and pioneer. These tags, valid for a year, will indicate the maturity of ethical AI practices in the development of products or services.

This initiative demonstrates the SDAIA's commitment to organizing, developing, and managing AI sectors to support its broader objectives in promoting the responsible use of AI in the Kingdom.

This strategy will regulate data and AI development by disseminating information to authorities and establishing policies, standards, and controls.

UAE's Tech Industry Set to Surge by USD 3.8 Billion in 2025

The United Arab Emirates' technological industry is poised for remarkable growth in 2025, with revenue projected to increase by USD 3.8 billion at an annual growth rate of 6.24% from 2025 to 2029, according to Statista.

This unprecedented growth, driven by significant expansion in digital innovation and the adoption of cutting-edge technologies, reflects the UAE's continued progress in advancing its technology sector and increasing reliance on digital services.

Moreover, the report predicts its market size to potentially increase to USD 4.79 billion by the end of the forecast period, further solidifying the UAE's position as a global hub for innovation and an exceptional destination for tech companies.

Supporting Emerging Tech Companies

The study indicates continued growth in key areas such as artificial intelligence (AI), cloud computing, blockchain, and the Internet of Things (IoT).

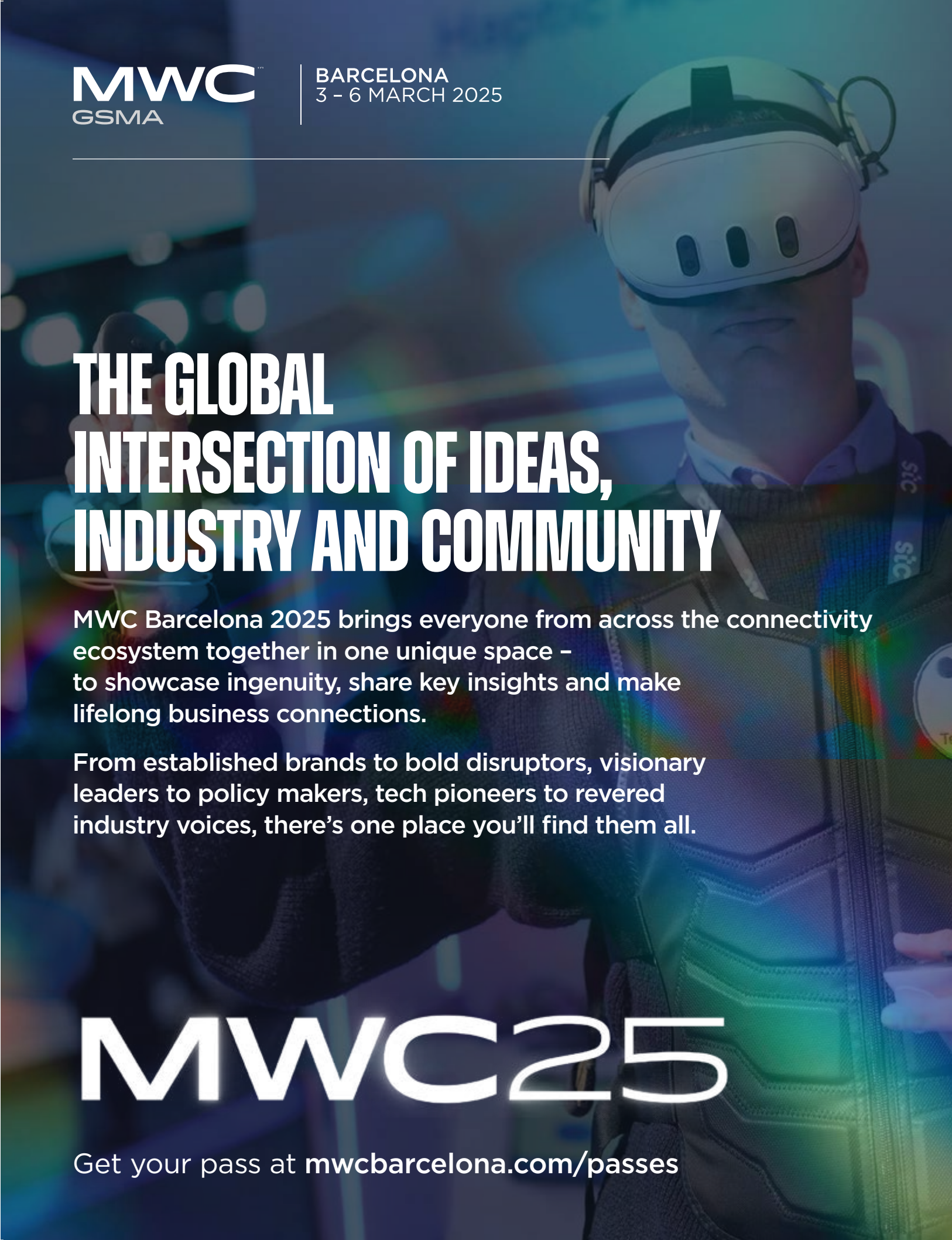
Sustainable investments in digital infrastructure and supportive regulations and policies cemented the UAE's status as an innovation-driven environment.

Harsh Sajnani, Founder and CEO of Kingpin, highlighted the UAE, particularly Abu Dhabi, as an appealing destination for emerging technology companies due to its world-class infrastructure and competitive environment.

Driven by the rapid digital transformation, Sajnani noted the nation's support of companies that adopt advanced technologies, enhancing operational efficiency and global competitiveness.

Capcade's Strategic COO, Alex Zito, emphasized the company's decision to transition its operations to the UAE to expand its business, citing promising opportunities and significant government support.

With Abu Dhabi providing a thriving ecosystem to support startups and investors, Capcade views the city as an ideal environment to convert its regional user base into long-term clients.



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Qatar's Digital Transformation Market to Hit USD 9.19 Billion in 2025

Qatar's digital transformation market is projected to reach USD 9.19 billion (QAR 33.55 billion) by 2025, and USD 19.65 billion (QAR 71.75 billion) by 2030, developing at a compound annual growth rate (CAGR) of 16.43%, according to Mordor Intelligence.

This growth is attributed to a rising urban population; increasing adoption of devices supporting 3G, 4G, and 5G network services; and ongoing smart city initiatives such as Msheireb Downtown Doha and Lusail.

The Qatari government is actively implementing advanced technologies to position the country at the forefront of smart nations worldwide. The global smart city market, which Qatar aims to leverage, is expected to amount to nearly USD 7 trillion (QAR 25.56 billion) by 2030.

Accelerating Digital Transformation through Strategic Partnerships

In a strategic move to digitize and enhance services for citizens and enterprises, the Qatari government is actively promoting partnerships with banks and the broader financial ecosystem.

Major contributors to Qatar's digital transformation journey include Oracle Corporation, International Business Machines Corp. (IBM), and Wipro Doha LLC. These major players continue to innovate and expand their presence in developing regions.

Furthermore, Qatar's Supreme Judiciary Council launched a five-year digital transformation strategy to automate and advance its judicial system. This initiative aligns with Qatar's National Vision 2030, which aims to position Qatar as a global leader in digital innovation and transformation.

Despite these endeavors, the country may face challenges in its digital transformation journey, driven by data transfer concerns outside Qatar and increased vulnerability to data breaches due to growing digital data volumes.

In response, Qatar is leveraging modern technologies such as artificial intelligence (AI) and machine learning (ML) to accelerate its gross domestic product (GDP) and enhance quality of life through improved digital infrastructure.

GCC's Rapid AI Adoption Signals Software Development Innovation

The GCC region has emerged as a global leader in adopting artificial intelligence (AI)-powered solutions for software development, with 71% of developers in the UAE and Saudi Arabia adopting generative AI (GenAI) tools on a weekly basis. This figure surpasses the global average, which currently stands at 55%, according to a newly released report highlighting the transformative potential of generative AI in the region's digital landscape.

As the GCC's digital transformation market is projected to expand at a CAGR of 25.7% through 2030, organizations are increasingly integrating AI-driven practices into their software development lifecycles. This trend is bolstered by substantial regional investments, with IT spending expected to grow by 7.4% to reach USD 230.7 billion by 2025.

Early applications of generative AI extend beyond code generation to encompass critical phases of the software development lifecycle (SDLC), including ideation (59% adoption), design and prototyping (65% adoption), and code generation (61% adoption). Organizations leveraging generative AI across multiple SDLC phases report more pronounced impacts on efficiency and innovation.

Surveyed respondents anticipate significant transformations in the SDLC within the coming decade, with 38% expecting substantial changes within one to three years, and an additional 31% foreseeing these changes within four to ten years. The next stage of generative AI deployment aims to refine measurement methodologies according to AI's impact and expand the adoption of AI agents capable of handling complex, multi-step tasks.

Oman Unveils 'Deep Technologies' Program to Boost Tech Innovation

Oman's Ministry of Transport, Communications, and Information Technology (MTCIT) has unveiled the 'Deep Technologies' program, a groundbreaking initiative to advance the Sultanate's tech sector forward.

The two-and-a-half-year program is designed to transform advanced technological innovations into market-ready solutions.

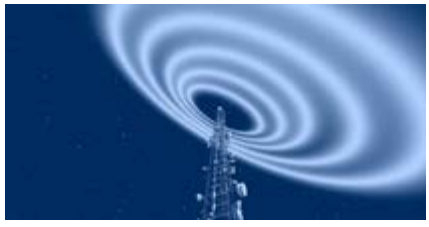
Khulood bint Ali al Muhaidri, Senior Technology Projects Specialist at MTCIT, revealed that the initiative was comprehensively developed following consultations with universities, experts, and innovation specialists, adding that, "We observed that many projects from existing accelerator programs fail to complete the development cycle. This program addresses those gaps by offering continuous, sustainable support over a longer period."

Participants in the Deep Technologies program will benefit from a support system that includes expert guidance on creating clear marketing strategies and securing financial backing, as well as mentorship from industry leaders. Additionally, the initiative will facilitate direct access to potential investors interested in advanced tech.

The program's focus on deep technologies is being driven by technological breakthroughs including artificial intelligence (AI), robotics, biotechnology, and sustainable energy solutions.

Muhaidri emphasized, "The goal is to promote innovation that tackles real-world challenges while driving technological growth in Oman."

6 GHz Spectrum to Transform Regions in 2025



According to the GSMA, in 2025, the scale of 6 GHz development for International Mobile Telecommunications (IMT) will continue to grow as more nations deliver a clear roadmap for mobile usage.

This momentum is set to provide telecom operators with the long-term investment certainty they need to drive innovation in future technologies.

Importance of Mid-Band Spectrum
Mid-bands play a vital role in facilitating connectivity as they ensure city-wide coverage and handle around 80% of indoor mobile traffic in urban areas. They are also essential for enterprise digitalization and industrial connectivity.

The ITU WRC-23 achieved a key milestone by allocating more mid-band spectrum to meet rising mobile data demands. Countries representing 60% of the global population advocated for including the upper 6 GHz band (6.425–7.125 GHz) for licensed mobile use. Following WRC-23 decisions, this will now cover 80% of the world's population.

As per the GSMA's recommendation, mobile networks will require an average of 2 GHz of mid-band spectrum per country by 2030. This will be difficult to achieve without 6 GHz, which is the single largest remaining mid-band block. "Without the 2 GHz, we can't get the full benefits and the full potential of 5G," noted Luciana Camargos, Head of Spectrum at GSMA.

Three-Policy Consideration for Upper 6 GHz Band
The GSMA remarked that regulators are considering three different policy options for the upper 6 GHz band, and currently seeking further evidence to determine which technologies will benefit most from additional 6 GHz spectrum allocation.

Option one, which allocates the upper 6 GHz band for licensed, macro-cell mobile use at standard power levels, offers the highest economic advantage. Mobile networks are more likely to face capacity constraints than Wi-Fi, making additional spectrum in this band crucial for improving network quality and user experience, ultimately benefiting the broader economy.

Through efficient spectrum utilization, unlicensed allocations in the 2.4, 5, and lower 6 GHz bands can sufficiently handle expected Wi-Fi demand. Hence, making further unlicensed assignments is unnecessary.

In contrast, option three (shared use) limits the power levels of mobile base stations to enable sharing, which significantly reduces the additional capacity they can deliver. This results in lower economic benefits compared to a fully licensed macro-cell band. Since most mobile traffic occurs indoors, enforcing a shared environment—where mobile operates outdoors and Wi-Fi operates indoors—lacks a clear justification.

UAE: World's First to Offer 6 GHz Mobile Broadband
In November, 2024, the Telecommunications and Digital Government Regulatory Authority (TDRA) updated the UAE's National Frequency Plan, allocating the 600 MHz and upper 6 GHz bands to mobile services designated for IMT.

Five Years From Now: How the Digital World Will Reshape Reality

In 2030, the digital and physical worlds will seamlessly converge as the way people communicate with each other, communities, nature, and machines will be redefined to form new ways of living, working, and conducting business.

Digital transformation has evolved from a mere 'buzzword' into a core strategic element adopted by Arab nations and global stakeholders, consequently driving progress toward a sustainable future. This shift is rooted in fostering a robust economy, a dynamic society, and a forward-looking nation.

The Digital Evolution

Today's interactions have drastically moved away from traditional methods like letters, dial-up phones, and fax machines. The transition to the metaverse is not just a technological change but a sociological one, reshaping how we communicate and connect. In this new era, the metaverse will be defined by the exchange of emotions and facilitated by technologies like virtual and augmented reality (VR/AR), along with brain-computer interfaces. This evolution will introduce new hardware, platforms, and even sensory experiences.

At the core of the data processing and digital transformation journey is network infrastructure. As advancements in cellular technologies, software development, data centers, semiconductors, computing power, and artificial intelligence (AI) continue to evolve, 2030 will become more digital-centric than before. In fact, according to Huawei's Intelligent World 2030 report, healthcare, food, living spaces, transportation, cities, enterprises, energy, and digital trust will be completely revolutionized.

Hyper-Realistic Tech Experiences

Artificial intelligence, a cornerstone of the digital era, thrives on three critical pillars: data, algorithms, and computing power.

Data serves as the foundational resource, fueling AI systems with vast quantities of information needed for adaptive learning and decision-making. Algorithms act as intellectual engines, transforming raw data into actionable insights through complex mathematical processes. By 2030, general computing power is projected to hit 3.3 zettaFLOPS (ZFLOPS), while AI-specific computing is set to surge to 105 ZFLOPS. This unprecedented growth will drive the annual generation of more than 1 yottabyte of data worldwide. In comparison, if each byte in a yottabyte were a grain of rice, the total grains would fill a large city several times over. The entire internet's data in 2023 was estimated to be around 120 zettabytes, which is only 0.12 yottabytes.

Over the past decade, the amount of information worldwide has grown exponentially, bringing forth issues such as data privacy, management, access, and affordability. This progress will usher in hyper-realistic experiences that redefine our relationships with technology.

From multi-dimensional, collaborative computing to edge-based solutions, the synergy between AI and infrastructure (driven by data and trained algorithms) will create transformative outcomes for individuals and industries alike.

How the Metaverse Will Reshape Connectivity and Business Operations

From a B2B perspective, the metaverse is already helping organizations unearth efficiencies to save large amounts of money and it is anticipated that, in the future, these benefits will only grow. For example, according to McKinsey, a telecommunications technology company was able to slash both its capital and operating expenses by 10%, thanks to optimizations uncovered by a digital twin of its network infrastructure.

Meanwhile, the metaverse may also enable new forms of AI-enabled customer service, remote surgery using advanced robotics, and fast access to patient records and advanced wearable technology.

In retrospect, Nokia highlighted how the metaverse aims to facilitate new operator business opportunities, targeting both enterprises and consumers. Leslie Shannon, Head of Ecosystem and Trend Scouting at Nokia, shared insights into the connectivity landscape of the metaverse, highlighting the role of virtual reality headsets, which cater to two main groups: enterprises and consumers. For businesses, a combination of fiber, fixed wireless access (Wi-Fi), and private 5G-enabled wireless networks support immersive experiences.

Meanwhile, consumers will leverage extended reality (XR) through the next generation of mobile devices. According to Shannon, by 2030, we can expect a shift from smartphones to augmented-reality glasses as the primary device for personal connectivity. Aligning with this, studies estimate that more than 30% of businesses will operate and innovate digitally, and there will be one billion augmented reality (AR) and virtual reality (VR) users within this timeline.

Moreover, the physical world of the future will utilize more digital twins to improve the efficiency of product design, product manufacturing, medical analysis, and engineering construction. Despite its potential, the process of mapping the physical world to its digital twin will have to address numerous challenges, such as multidimensional sensing, 3D modeling, and light field data collection and storage.

To better understand the road to achieving digital business success in 2030, Dell Technologies extended IFTF's forecasts and surveyed 3,800 business leaders from around the world to gauge their predictions and preparedness for the future. Not only are businesses torn by opposing views of the future, they're also beset by barriers as many aren't moving fast enough and going deep enough to overcome these obstacles.

A significant percentage of businesses are being held back by a lack of a clear digital vision and strategy, which manifests in several ways, including an absence of ROI data to prove the value of digital transformation and limited senior leadership support. On a similar scale, businesses also face challenges in skills gaps, low employee buy-in, and a workforce culture resistant to change.

Over half are struggling with outdated technology that can't keep up, along with issues like data overload, privacy concerns, and cybersecurity vulnerabilities. Furthermore, most admit their cybersecurity measures are ineffective and believe their workforce lacks the necessary security awareness.

Conclusion

By 2030, the digital world will not just complement reality but redefine how we perceive, interact with, and shape the world around us. It offers boundless opportunities while posing significant challenges that require collective responsibility and innovation.

We are making strides toward a responsible and sustainable digital world, but the pace and scope of progress must be accelerated to meet 2030 goals. Addressing inequalities, enforcing ethical practices, and reducing the environmental impact of digitalization are essential to ensuring that technological advancements benefit all of humanity while preserving the planet.

A shared commitment to sustainability and responsibility will determine whether we achieve this vision. TR

Value-Added Services Are the Next Big Play in Telco Evolution and Growth

Diversification is important within the telecom industry as it molds a fast, commoditized market; thus, telcos are increasingly expanding their offerings beyond traditional telecom services by focusing on sectors that provide value-added services (VAS) to meet diverse consumer and business demands.

Although connectivity is becoming a commodity and nationwide coverage is often overlooked, network quality—both the experience and the service—will remain a solid differentiator. Expanding markets, monetizing data, and developing strategic partnerships form the core of new revenue streams, which telcos are currently exploring.

Key VAS Areas Telcos Are Investing In

Value-added services (VAS) have shifted from being a complementary offering to a powerful business driver for telecom operators. It is now a key factor to consider in the loyalty and customer retention verticals as it stimulates engaging, personalized experiences—differentiators in a competitive market. More so, VAS generates new revenue streams through subscriptions and other digital services, solidifying its role as a core component of modern telecom strategies.

1. Financial Services (Fintech)

The convergence of fintech and telecommunications is indeed reshaping the financial services landscape, and according to the recent discourse at the Telecom Review Leaders' Summit 2024, in the GCC region alone, a noticeable shift in value has emerged—from business-to-business (B2B) to business-to-consumer (B2C) models—in the UAE and Saudi Arabia.

Taking this into consideration, telcos in the GCC have made impressive strides in deploying mobile payments and digital wallets as part of their services. Telcos are further leveraging their infrastructure to offer fintech innovation, especially in underbanked and underserved regions.

After receiving licenses from the Central Bank of the UAE to offer new digital financial services, du officially launched du Pay in April, 2024. Commenting on this new venture, CEO, Nicholas Levi, said, "What sets us apart is we are leveraging du's strong customer-centric focus, infrastructure, and telco benefits to make our value proposition even stronger."

In May, 2024, 'walletii by Ooredoo,' a new state-of-the-art fintech solution, officially made its debut in Oman. Mirko Giacco, CEO of Ooredoo Fintech, stated, "By offering a seamless and secure digital wallet experience, we aim to empower consumers and businesses alike, driving financial inclusion and innovation across the region."

Additionally, in February, 2023, Mobily's fintech platform was launched. Mobily Pay, built on the Ericsson Wallet Platform, provides secure, simple, functional, and relevant financial management in Saudi Arabia. It has also become a merchant wallet for point-of-sale users and offers e-vouchers to strong brands.
Other telco-driven e-wallet services include Orange Money, FRiENDi Pay, e& money, and stc pay. Zain KSA's Tamam is also the first company to be issued a license for micro-financing in the Kingdom from the Saudi Central Bank (SAMA).

PMP Strategy experts confirmed that by building a comprehensive mobile financial services (MFS) solution, mobile operators can tap into new revenue streams, enhance customer loyalty, and significantly expand their market influence.

"Expanding markets, monetizing data, and developing strategic partnerships form the core of new revenue streams, which telcos are currently exploring"

2. Media and Entertainment
Powered by 5G, 5G-Advanced, fixed wireless access (FWA), fiber, and other advancements, telcos have sought to reinvent themselves with new tech-driven product offerings—including streaming services, cloud gaming, and e-sports—to enable digital lifestyles.

Boasting 10x capabilities, 5G-A's globally unprecedented speed (up to 10 Gbps) will lead to faster data transfer, ushering in a new era of high-quality streaming and seamless cloud services.

Obaid Rahman, Head of International Wholesale, du, told Telecom Review that they have seen "significant growth in services like content streaming and gaming over the past six-to-seven years." This started with the Middle East's first 360 degree virtual reality (VR) video streaming on a 5G network, before culminating in the new du Innovation Center, where continuous upgrades will be incubated to deliver seamless video streaming and lower-latency online gaming experiences, among other use cases.

Zain KSA has expanded its gaming ecosystem with over 1,500 top PC games, powered by Zain Cloud Gaming and advanced cloud computing technology. Through collaborations with OSN, Shahid, and STARZPLAY, 5G users gain complimentary access to premium OTT video services. Additionally, Zain KSA partnered with NVIDIA to launch Saudi Arabia's first 5G cloud gaming platform.

Delivering exceptional, lag-free experience for live online cloud gamers, at GITEX 2024, Ericsson and e& UAE debuted Low Latency, Low Loss, Scalable Throughput (L4S) technology on a 5G commercial network, representing a first in the MEA region.

3. Smart Home and Vehicles
There are around 175 million smart homes worldwide, with the market expected to yield a growth rate of 21.4% by 2025. It can, therefore, be considered that we are at the golden age of smart technology, whereby smart homes are being built with seamless connectivity, interoperability, and automation at the core.

Telecom Review witnessed the marvels of unparalleled smart home experience during an exclusive 5G-A villa tour in 2023. With more flexible, wireless experience, the 5G-A Villa exhibits what will soon become reality for modern homes, including applications such as 8K viewing, 3D displays and designs, naked-eye 3D, and virtual reality (XR) gaming.

Zain KSA continually enhances its solutions to meet the needs of tech-savvy users, with its 5G FWA strategy delivering reliable and high-quality home internet. Building on this strong connectivity, Zain KSA has introduced IoT home devices, along with security and entertainment solutions.

On the other hand, a Juniper Research study found that the number of vehicles with embedded connectivity will reach 200 million globally by 2025 (30 million of which will be 5G-centric); hence, one of the main beneficiaries of this growth will be mobile operators. By acting as an M2M connectivity provider, the incorporation of eSIMs into connected cars will enable operators to leverage their existing network infrastructure to claim USD 3 billion in additional service revenue by 2025.

This will push operators to establish wholesale agreements with automotive OEMs, securing consistent revenue streams from the connected car market.

4. Cloud and Edge Computing
Telcos provide cloud computing and edge processing services, supporting critical, industry-specific, low-latency applications. Moreover, as enterprises demand more data solutions, some telcos are offering storage, backup, and management services.

An example of this is the Ericsson Edge Exposure Server, which leverages network exposure capabilities to support simple and developer-friendly APIs and edge application ecosystems. In collaboration with solutions by stc, the Saudi-based telco validated the Snowball Edge solution powered by AWS to provide MPN and cloud computing services at the edge of stc's 5G network.

Rosenberger is also committed to delivering innovative, high-performance, and environmentally sustainable micro data center solutions. Through Lyra, the telecom vendor is shaping the future of edge computing and driving a more connected, intelligent, and efficient digital ecosystem.

5. Smart Cities and Infrastructure
Telcos also play a key role in providing seamless, secure connectivity for smart city infrastructure. Some telcos are also exploring partnerships in energy management, such as smart grids, to support efficient energy distribution and consumption.

Salam's robust 5G infrastructure is enabling emerging technologies and supporting advancements in smart cities, logistics, and e-commerce, while also driving innovation in manufacturing and industrial automation.

As technology advances rapidly, supporting infrastructure must remain agile, secure, and scalable. InfraX, the ICT arm of Digital DEWA, is leading this transformation with cutting-edge SD-WAN and IoT connectivity solutions, redefining digital networks and laying the groundwork for smart cities, efficient industries, and seamless connectivity in the UAE and beyond.

In 2024, ZTE deployed its Rural EcoSite in Liberia, establishing 128 turnkey, cost-effective, and eco-friendly communication sites in just three months, bringing connectivity to some of the most remote regions.

Former e& enterprise CEO, Salvador Anglada, elaborated on the company's contributions across various domains in an interview with Telecom Review, noting, "Our Safe City solutions, such as the National Fire Alarm system, exemplify the intelligence and connectivity embedded within our platforms. These systems are designed to detect and respond to fire-related incidents swiftly and effectively, enhancing safety on a national scale." Moreover, e& has modernized traditional utilities, such as the smart grid, by implementing advanced technologies to monitor and manage energy consumption in real-time.

Getting Smarter with Data

Smart use of customer data, combined with strong data management capabilities, can form the basis of commercial tools and greatly improve performance in the core telecom business. Data can boost commercial performance, and most of these capabilities can be implemented in next-generation recommendation engines that employ AI algorithms to optimize revenues or profits.

An AWS-sponsored study found that CSPs with a higher degree of data capability are pursuing revenue-generating use cases such as personalization and new product feature generation. 64% of CSPs surveyed agreed that many of the GenAI use cases being considered are new applications.

"In 2025, operators will have to prove long-term ROI and demonstrate the value of their generative AI production deployments prior to implementation. The aim is to create a flywheel effect that helps scale the return on the necessary investments in the platforms, skills, and partnerships, while optimizing costs and keeping output performance, compliance, and quality high," reflected AWS in an exclusive with Telecom Review.

Having said that, AI appears to be on track in maturing well beyond the 'chatbot craze' and is now revolutionizing operations, providing better customer interactions, and creating new product offerings. A McKinsey analysis also indicated that telcos implementing the most advanced responsible AI (RAI) practices could deploy use cases that collectively capture up to USD 250 billion in value worldwide by 2040.

More Opportunities to Come

Moving forward, telecom operators will evolve, becoming powerful, multi-purpose service providers. There are plenty of opportunities for revenue growth beyond the areas where telcos are currently active. The key is to consistently step up and pursue them by adding new products and services over the next decade to cater to the evolving demands of the market. TR

Revolutionizing the Mobility Landscape with C-V2X Technology

The global vehicle-to-everything (V2X) market is poised for remarkable growth, with predictions indicating a surge to USD 89.72 billion by 2032, with a compound annual growth rate (CAGR) of 36.1%, according to market research firm, Astute Analytica.

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Behind this rapid growth is the immense potential of cellular vehicle-to-everything (C-V2X) technology, fueled by the increasing demand for efficient traffic management and enhanced road safety measures.

As technology revolutionizes various industries, the mobility sector will be a critical contributor to the global digital transformation journey, transforming safety and user experience.

Driving C-V2X with Network Advancements

An enhancement of the Third Generation Partnership Project (3GPP) long-term evolution (LTE) standard, C-V2X technology enables communication between vehicles (V2V), infrastructure (V2I), pedestrians (V2P), and devices (V2D), equipping cars with reliable connectivity for highly automated driving (HAD).

The latest network technology—5G—critically advances intelligent transportation systems (ITS), enabling efficient mobility and providing solutions to traffic congestion. The integration of 5G in the C-V2X landscape results in higher throughput, lower latency, and increased reliability in ITS.

Artificial intelligence (AI) and machine learning's (ML) assimilation in C-V2X further enhance its decision-making capabilities, making it more intelligent and responsive to potential road hazards.

Upgraded global positioning systems (GPS) have also improved location accuracies, particularly in challenging environments.

Furthermore, C-V2X systems have enhanced application support due to their short, medium, and long-range communication structure. By leveraging the capabilities of existing cellular network infrastructure, cross-functional alerts—such as those received in response to hazardous road conditions, speeding cars, mercurial weather, and traffic congestion—will be supported.

Navigating the Challenges in C-V2X

Despite the transformative potential of C-V2X, its widespread adoption and implementation is yet to be achieved.

Given C-V2X relies heavily on existing network infrastructure, network dependency remains a hurdle, potentially limiting its effectiveness. This dependency could lead to inconsistent vehicle performance, particularly in areas with poor network coverage.

Like any connected technology, C-V2X systems are susceptible to security threats and hacks, including data integrity breaches and authentication attacks. Robust security measures are paramount to ensure user data privacy while maintaining functionality. During the infrastructure panel at the 18th edition of the Telecom Review Leaders' Summit, Tony Geheran, President, Strategic Broadband Consulting, elaborated on this, noting that, "Security isn't a siloed effort; it's about aligning technology stacks and partners with policies that ensure resilience." Thus, standardization and regulatory issues surrounding C-V2X implementation should also be explored as they aid countries in establishing traffic safety laws and policies, ensuring overall safety.

Beyond this, the high cost of C-V2X deployment appears to potentially limit its widespread adoption. According to the U.S. DOT, the average C-V2X infrastructure construction at a single intersection costs USD 6,000 to USD 7,000. This includes the cost of mapping the intersection, purchasing RSUs, and installing them in the field. On the other hand, interoperability among vehicles and infrastructure remains another critical challenge in system integration.

Additionally, sensor malfunctions may lag in relaying real-time communication, resulting in unfavorable incidents. Although the growing demand for C-V2X is fueled by the increasing frequency of road accidents on highways, real-world testing in various scenarios, such as bad weather conditions and interactions with other road users, should be prioritized to ensure safety.

Reshaping the Future of Mobility

China has emerged as the leader in the V2X market, with plans to add 30 million new V2X-enabled vehicles to the road every year by 2032, according to an IDTechEx report. Supporting this allocation is China's launch of the vehicle-road-cloud-integration of intelligent connected vehicles in 2024, ultimately enhancing the connectivity rates of vehicles. The country's public transportation, including existing city buses, official vehicles, and taxis are encouraged to install C-V2X, with 50% of new vehicles integrated already with the new technology.

Additionally, the report projects that over 90% of the C-V2X market is poised to leverage the 5G network by 2034, with the United States and China significantly contributing to this growth.

As technology revolutionizes various industries, the mobility sector will be a critical contributor to the global digital transformation journey, transforming safety and user experience

In the United States, C-V2X is expected to entirely cover national highways and 75% of urban intersections, according to ResearchandMarkets. Countries such as India, Korea, and Japan, are slated to follow the trends set by the U.S. and China in the C-V2X market. Notably, in 2023, South Korea accelerated the adoption of LTE-V2X by abandoning DSRC technology.

In November, 2024, the Federal Communication Commission (FCC) finalized new spectrum rules to advance the adoption of C-V2X technology, utilizing the 5.9 GHz band to do so.

In the same year, leading provider of software-defined vehicle (SDV) solutions, Cubic Telecom, and non-terrestrial network (NTN) communications provider, Skylo Technologies, collaborated to enable satellite capabilities for vehicles. To ensure reliable communication is supported, the satellite network will enable a seamless transition between cellular and satellite networks, particularly in emergency cases.

The integration of Advanced Driver Assistance Systems (ADAS) with C-V2X technology provides another layer of communication, delivering real-time information and enabling more informed decisions.

Furthermore, in 2024, the 5G Automotive Association (5GAA) demonstrated the latest developments in C-V2X to support its goal of achieving 'Vision Zero,' specifically focusing on 5G-V2X Direct technology integration. This latest innovation, enabled by multi-access edge-computing (MEC) and precise positioning, leverages sensors, and camera feeds from other vehicles to deliver safety awareness alerts between drivers, pedestrians, and cyclists, enhancing road safety.

In addition, 5G-V2X is expected to be deployed in commercial vehicle models by 2026 to support the 5GAA's Visionary 2030 Roadmap, delivering the next generation of connected mobility and intelligent transport solutions.

Advancing Sustainability

C-V2X technology is critical in advancing sustainability efforts. For example, by facilitating vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communication, C-V2X reduces traffic congestion and idling, which significantly lowers greenhouse gas (GHG) emissions. Additionally, C-V2X supports the integration of electric vehicles (EVs) and smart charging infrastructure, optimizing energy consumption and promoting the shift to cleaner mobility solutions.

According to telecom vendor giant, Ericsson, shifting to electric vehicles can reduce carbon dioxide emissions of a logistics network by 90%.

Approximately 1.19 million people die each year due to road traffic mishaps, according to the World Health Organization (WHO). Smart vehicle routing will reduce traffic congestion and road mishaps, delivering automated traffic routing and real-time updates on road, bridge, tunnel, and parking availability.

In support of this, the European Commission (EC) introduced its Sustainable and Smart Mobility Strategy and an action plan consisting of 82 initiatives, laying the groundwork for achieving a greener digital transformation. This strategy supports Europe's transport system which aims to deploy automated mobility at a large scale and establish 100 climate-neutral cities, with at least 30 million zero-emission cars operating across the roads by 2030.

Additionally, the continent aims to present zero-emission large aircraft to the market by 2025. These initiatives are expected to contribute significantly to the European Green Deal's desire to reduce emissions by 90% by 2050.

Final Thoughts

The advent of intelligent transport systems, particularly C-V2X technology, marks a significant leap in the evolution of mobility, enabling a safer, more intelligent, and hyper-connected digital future. C-V2X will drive the demand for advanced network infrastructures, including 5G, 5G-Advanced (5G-A), and the upcoming 6G, fundamentally transforming how drivers and vehicles interact with their environment.

The rise of C-V2X is set to accelerate the development and adoption of autonomous mobility. This advancement will redefine global transportation and reshape the future of logistics and urban planning. Furthermore, the global push towards smart cities will accelerate the growth of C-V2X technologies. By integrating this innovation into urban infrastructure, cities can optimize traffic management and safety, reshaping the future of the mobility landscape. TR

The rise of C-V2X is set to accelerate the development and adoption of autonomous mobility

The Scope of AI-Centric, All-Optical Networks

One hundred and eighty-one zettabytes of data is expected to be created, captured, copied, and consumed globally in 2025, according to the World Economic Forum, underscoring the urgent need for faster, more efficient, and intelligent communication networks.

Building on this, the extent to which AI is integrated into daily life was highlighted in a speech by NVIDIA's CEO, Jensen Huang, during an event where he introduced the concept of the "age of AI agentics." Huang was referring to the idea that AI agents could potentially be the new digital workforce, representing a multi-trillion-dollar market.

According to IBM, which first coined the term around 2023, agentic AI refers to an AI tool that is capable of "autonomously performing tasks on behalf of a user or another system by designing its workflow and using available tools." The system is capable of making decisions, taking action, solving complex problems and interacting with external environments beyond the data upon which the system's machine-learning (ML) models were trained. IBM notes that "AI agents draw not only from databases and networks but can also learn from user behavior, improving over time," making them more adaptable and focused than AI tools confined by large language models (LLMs) or small language models (SLMs).

Laying the Foundation

The Middle East is emerging as a leader in advancing all-optical network technologies, driven by the region's push toward smart cities and sustainable growth and the aforementioned AI capabilities within all-optical networks.

In 2023, etisalat by e& achieved a global first by completing an ultra-high-speed 1.6 Tbps optical solution trial, underscoring the capabilities of environmentally sustainable, high-capacity networks.

In 2024, du completed the Gulf region's first 50G PON trial. This breakthrough integrated 10 Gbps all-optical connectivity with existing optical distribution networks, demonstrating the region's ability to harmonize innovation with existing infrastructure seamlessly. In the same year, Rosenberger introduced structured cabling solutions tailored for the Middle East, enabling the construction of robust, all-optical infrastructures critical for smart city development.

In 2025, the focus has shifted to include more AI-centric qualities within all-optical networks. Supporting this transition is Ericsson's recently launched generative AI-based NetCloud Assistant, ANA, which simplifies enterprise 5G network administration. Unlike traditional chatbots, which leverage search functions to provide links to existing resources, Ericsson claims ANA can read, understand, and generate new text and graphical content to deliver personalized responses by correlating information from multiple technical documents and unique insights from the customers' networks.

Syncing with the AI Era

With these advancements in AI, carriers are compelled to evolve into AI-driven, all-service providers. Meanwhile, other carriers may need to collaborate with third-party providers to offer AI computing and application services. As such, building robust infrastructure networks equipped with AI device-cloud synergy will be the key to business success in the AI era.

"In the intelligent era, the optical industry is faced with a new challenge to enable people to utilize intelligence as easily and freely as electricity," identified Bob Chen, President of Huawei Optical Business Product Line in an exclusive thought-leadership Telecom Review article. Huawei has been pioneering all-optical 10 Gbps networks in both China and the MENA region and has identified that the 10 Gbps intelligent access network provides ubiquitous and ultra-broadband 10 Gbps bandwidth, enabling users to experience intelligent services anytime, anywhere. On the other hand, the premium transmission network provides high-quality connections required for computing and distributed data center architectures.

In 2023, Huawei, along with the UAE Telecommunications and Digital Government Regulatory Authority (TDRA), Omdia, etisalat by e&, MTN South Africa, and others, released the 10 Gbps City Initiative as a use case for the 10-gigabit era. The 10 Gbps City Initiative aims to fully connect cities with 10 Gbps speeds, providing a ubiquitous network experience, accelerating the digital-intelligent transformation of industries and new applications, and boosting overall digital productivity.

The Essence of All-Optical Networks

Relatively new technology like optical transport networks (OTNs) is seen as the ideal technology to bridge next-generation IP and legacy time division multiplexing (TDM) networks as it acts as a converged transport layer for newer, packet-based, existing TDM services to meet work-load heavy digital growth demands of the 5G era.

Since the 1980s, synchronous optical networking/synchronous digital hierarchy (SONET/SDH) has met service and bandwidth needs by providing protection and performance monitoring while supporting a flexible and transparent mix of traffic protocols, including internet protocol (IP), fiber channel, Ethernet, and generic frame procedure (GFP). While the deployment of dense wavelength division multiplex (DWDM) networks served to increase existing fiber bandwidth, it lacked the protection and management capabilities inherent in SONET/SDH technology. Optical transport networks combine the benefits of SONET/SDH technology with the bandwidth expandability of DWDM. OTN applies the operations, administration, maintenance, and provisioning (OAM&P) functionality of SONET/SDH to DWDM optical networks.

Interestingly, in the age of AI, vendors and operators alike seek to make the most of intelligent network operations in terms of service monetization and premium customer experience journeys. Supporting this motivation,

Huawei recently launched its AI-centric F5.5G all-optical network, extending optical switching to data centers and metro edges, building exceptional networks for optical access by monetizing coverage, bandwidth, and experience and embedding AI capabilities into the management and control platform. Similarly, Nokia and Ericsson are working closely with operators on AI-driven network management and automation as well as cognitive network solutions.

Future Outlook

A recent report by Statista forecasts that revenues from the technology services market in the UAE will increase by approximately USD 3.8 billion in 2025. The company's report emphasized that this projected growth reflects the UAE's continued progress in developing its AI sector and increasing reliance on network infrastructure. The ubiquity of AI applications will see inevitable growth in terms of automation, making instant data-driven decisions and delivering customer experiences once deemed impossible.

Aligned with this vision, as part of its National Frequency Plan, the TDRA has initiated the allocation of the 600 MHz and 6 GHz frequency bands for International Mobile Telecommunications (IMT) systems, making the UAE one of the first countries in the world to allocate such bands to enable operators to accelerate the adoption of new AI-centric technologies.

Furthermore, the popularity of services such as lab automation highlights the region's increasing reliance on AI-centric all-optical networks to support advanced, data-intensive applications. Lab automation streamlines workflows and improves the reliability of experimental outcomes, driving progress in various research and development fields. Notable examples include the Emirates Health Services (EHS) Foundation, which has become the first regional institution to implement a blood-drawing robot. The innovation has resulted in an

80% reduction in staff time and a 50% decrease in patient delays.

"Global gigabit broadband services subscription will reach 44%+ by 2028, and the industry must work together to address broadband infrastructure development inequality in various regions, while breaking the OTN bottleneck to ensure the gigabit user experience. With the advent of the AI era, the industry should also begin preparing for the 10-gigabit society," predicts Martin Creaner, Director General of the World Broadband Association (WBBA).

In Conclusion

Innovative technologies like AI, 5G, ultra-broadband, and cloud computing are not only driving economic growth but also reinforcing the need for AI-centric, all-optical networks to handle the surge in digital services and support the accelerating pace of digital transformation.

AI-centric innovations like agentic AI and all-optical networks will redefine how the industry creates, shares, and utilizes data. These advancements not only address the challenges posed by data-heavy applications but also present new opportunities for automation and adaptability. TR

> The Middle East is emerging as a leader in advancing all-optical network technologies, driven by the region's push toward smart cities and sustainable growth and the AI capabilities within all-optical networks

The Role of the Antenna Industry in the Mobile AI Era

The digital communications industry supports the highest levels of global internet use, social media interaction, and financial inclusion. At the core of this transformation lies the telecom industry—specifically the mobile sector, as mobile users generate approximately 60% of global internet traffic.

A vital component of data transmission is communication antennas as they are essential for transmitting and receiving electromagnetic signals via wireless communication.

The Birth of the Antenna

The invention of antennas in the 1880s is credited to Heinrich Hertz, a German physicist who first proved the existence of electromagnetic waves. Inspired by his findings, Hertz developed a simple dipole antenna to transmit the first radio waves between the device's twin poles, laying the foundation for the telecommunications revolution. Years later, Italian inventor, Guglielmo Marconi, perfected Hertz's discoveries by designing a device capable of transmitting radio waves up to six kilometers, representing a groundbreaking achievement.

Another significant name in the evolution of mobile communication is Donald Lewis Hings, who, in 1937, created the portable two-way radio, aptly called the 'Walkie-Talkie.' Building on this progress, Martin Cooper, a pioneer in radio spectrum management, made the first-ever cell phone call during a 1973 press conference using a DynaTAC phone developed by his team to engineer, Joel Engel, head of AT&T's rival project.

The evolution of communication standards—3G, 4G/LTE, and now 5G—has necessitated the development of antennas that support higher data rates and increased bandwidth. These advanced antennas handle diverse frequency ranges and modulation schemes, delivering enhanced uplink and downlink performance, increased throughput, and improved coverage and signal quality.

As operators seek to optimize their return on investment (ROI) in 5G, antenna design and performance must evolve for both mast infrastructure and in-device applications to keep pace with innovation. Furthermore, the telecom sector contributes approximately 1.6% of global CO2 emissions, according to BCG findings. To reduce emissions and build greener networks, telcos must focus on reducing base station energy consumption—a major source of the industry's energy usage.

The Impact of Antennas on 5G Monetization

Serving as a collaborative space for innovation, the 2024 Telecom Review Leaders' Summit brought together industry leaders, who emphasized and discussed the importance of strategic infrastructure deployment to balance connectivity advancements with sustainability and 5G monetization. Across the Middle East, telecom companies are leveraging breakthroughs in antennas, AI, and advanced networking to unlock new revenue streams while meeting the growing demands of the digital economy.

For instance, Huawei's Meta AAU (active antenna unit) improves bit-per-watt efficiency by 15–20% using advanced technologies such as Massive MIMO, SDIF (Signal Direct Injection Feeding), and Multi-band RF to lower power consumption without compromising user experience.

Similarly, Nokia's AirScale active antennas enhance beamforming and Massive MIMO optimization. Through beamforming, active antennas dynamically adjust signal phase and amplitude to focus transmissions in specific directions, improving communication links. Massive MIMO enables base stations to communicate simultaneously with multiple users by dynamically adjusting beams for optimal signal transmission. Nokia's FastMile 5G mmWave Receiver is another example of how infrastructure solutions are overcoming traditional barriers, such as signal attenuation and obstructions, during the 5G rollout. Its advanced antenna technology addresses line-of-sight limitations, creating reliable, high-speed connections in densely populated areas.
Zain KSA's trials of transparent glass antennas underscore the potential of blending modern design with reliable performance to meet urban aesthetic needs. In an exclusive interview with Telecom Review, CommScope's Oshiga highlighted the advantages of advanced base station antennas.

"Consider our base station antennas—with this, combined with AI, we can increasingly pinpoint the exact location of a customer. This capability would allow us to customize the user experience."

By tailoring services based on precise user data, companies can introduce premium offerings, location-based advertising, and personalized subscriptions, directly contributing to 5G monetization.

du's 5G-Advanced network enhancements in the MEA region exemplify how performance improvements drive monetization. By boosting uplink performance by 70% using techniques like three transmitter antennas (3Tx) and 2-component Carrier Aggregation (2CC), du has demonstrated the potential of increased network efficiency.

> Antennas are now being designed not just for technical performance but also for usability and environmental harmony, ensuring that the benefits of Mobile AI and 5G reach diverse communities globally

Growth of the Mobile Sector

The 5G antenna market, valued at USD 13.60 billion in 2023, is projected to reach USD 38.41 billion by 2032, growing at a CAGR of 12.3% between 2024 and 2032. The rapid adoption of 5G across industries and regions is driving this growth.

In the Mobile AI era, where intelligent services will become ubiquitous, robust network foundations will foster innovative applications and business models. These advancements will shift carriers from monetizing data traffic to monetizing broader user experiences. Similarly, the industrial sector will adopt intelligent services, creating opportunities for carriers to offer novel services integrated with connectivity.

Challenges in 5G Antenna Design

5G/6G devices are expected to operate across sub-6 GHz bands and higher spectra such as millimeter-wave (mmWave) and terahertz (THz). These higher bands pose challenges for antenna design in smart devices. Compact antennas, including conformal, planar, and linear arrays, must form phased arrays with high gain and directional radiation beams.

To achieve MIMO functionality, mutual coupling between antenna elements must be minimized. A typical approach involves sufficiently separating multiple antennas to ensure signal independence and isolation, though this can lead to bulkier systems and higher assembly costs.

Integration and miniaturization also present challenges for MIMO antennas, necessitating innovative designs to enhance overall system performance.

Designing an 'Antenna-gent' Future

In the Mobile AI era, innovation in antenna design opens new digital possibilities. The integration of network intelligence solutions has enabled telecom providers to deploy 5G networks with fewer antennas while achieving superior download and upload speeds. Emerging technologies like Reconfigurable Intelligent Surfaces (RIS) and High Altitude Platform Stations (HAPS) are further revolutionizing the antenna landscape

while the adoption of IoT smart meters, big data energy management systems, and deep-sleep-mode antennas reflects the industry's commitment to sustainability.

Meanwhile, the development of 2D metamaterials for 6G satellites introduces a new frontier for antenna technology, promising enhanced signal quality and reduced interference for next-generation networks. Antennas are now being designed not just for technical performance but also for usability and environmental harmony, ensuring that the benefits of Mobile AI and 5G reach diverse communities globally. TR

Zain KSA: Bringing an Unprecedented Digital Experience to Pilgrims

Zain KSA, a leading provider of telecoms and digital services, has signed a Memorandum of Understanding (MoU) with the Ministry of Hajj and Umrah. This partnership aims to enhance the experience of visitors, contributing to the Pilgrim Experience Program which serves pilgrims from more than 120 countries worldwide through the single official platform, 'Nusuk Hajj.'

As part of the national strategy to enrich tourist experiences in Saudi Arabia, with a focus on spiritual tourism, Zain KSA provides digital services and solutions that contribute to an integrated, modern Hajj and Umrah experience. This bolsters the Kingdom's reputation as a global hub for ICT innovation and underscores its role as a pilgrimage destination for Muslims worldwide, aligning with the objectives of Saudi Vision 2030.

The collaboration will focus on enhancing the visitors' journey by improving the telecoms service subscription experience and ensuring the best service options and updated information are easily accessible through the official Hajj platform. Zain KSA will also sponsor 'Nusuk Hajj,' providing exclusive features for users from the serviced countries targeted for Hajj on a yearly basis.

Zain KSA's Chief Sales Executive, Eng. Maher bin Mohammed Al-Fawaz, stated, "At Zain KSA, we have a clear strategy to achieve nationwide digital inclusivity and to enable an advanced digital infrastructure that delivers the best customer experience. We align this approach with our national, religious, and social commitment to drive to the national efforts aimed at boosting the digital capabilities of the Pilgrim Experience Program, supporting the program to achieve its targets of welcoming 30 million pilgrims and Umrah performers annually by 2030. We are committed to ensuring that each pilgrim enjoys an unprecedented digital experience that facilitates and complements their spiritual and cultural journey."

Zain KSA was the first telecoms provider to achieve 100% 5G coverage of the holy sites through all its towers, as part of a SAR 1.6 billion investment. The plan will see Zain KSA's 5G network coverage expand from 66 cities to 122 cities and provinces across Saudi Arabia, along with the expansion of its digital services portfolio.

Ooredoo Oman Announces Sheikh Nasser Al-Thani as New Chairman

In a significant step to drive strategic growth and business development in the telecommunications sector, Ooredoo Oman announced the appointment of its new Chairman, Sheikh Nasser Bin Hamad Bin Nasser Jassim Al-Thani.

As a highly accomplished C-level executive, Sheikh Nasser brings over two decades of corporate leadership experience, substantially contributing to Ooredoo Oman's successful initiatives.

Currently serving as the Ooredoo Group Regional Chief Executive Officer for the Middle East, Sheikh Nasser has held several key positions throughout his career including Chief Corporate Affairs Officer at Ooredoo Group, Chief Commercial Officer at Ooredoo Qatar, and Chief Business Officer at Ooredoo Qatar.

Driving Success in the Telecom Industry

During his tenure, Sheikh Nasser has been instrumental in achieving record-breaking revenue targets and leading major initiatives such as the 2022 World Cup operations.

Known for his strategic insight and exceptional diplomatic skills, Sheikh Nasser has represented Ooredoo at global forums and crafted impactful relationships with governments and international stakeholders.

Moreover, the board of directors, executive management, and Ooredoo employees have expressed their appreciation to the outgoing Chairman, Sheikh Mohammed Bin Abdulla Al Thani, for his leadership and contributions to the company's success. Under his leadership, Ooredoo accomplished local, regional, and international achievements.

This leadership transition marks a new chapter for Ooredoo Oman as it positions itself at the forefront of driving innovation in the Middle East's telecommunication industry.

du Surpasses Global Average in Employee Engagement

du, the leading telecom and digital services provider, has announced its performance in the annual Culture & Employee Engagement survey conducted by Microsoft Viva Glint. Alongside a year of several milestones, du has achieved an impressive overall score of 85, and a global ranking of 81%.

In line with its efforts to nurture a collaborative work environment, du's progressive strategies have yielded a significant improvement over the past three years. Today, du ranks in the top 25% of technology sector performers globally and within the top 10% across all industries worldwide.

Fahad Al Hassawi, CEO, du, said, "Surpassing the top 10% worldwide, and confirming du's position as a frontrunner in the MENA region highlights our core values and commitment to creating a vibrant and inclusive workplace culture that contributes to the UAE's national vision.

"Our exceptional positioning across industries, surpassing the Middle East industry average of 79 and setting even higher benchmarks within the UAE is supported by our innovative approach to employee engagement and corporate culture. At the core of our market-leading presence in the UAE telecom sector is our belief that the engagement of employees drives organizational performance. The principle of enhanced employee involvement is important to our success and enables us to add 'life to life' for our customers through our innovative products, technologies, and services."

du's commitment to an open, transparent, and connected working environment has prompted the creation of multiple initiatives and internal activities to promote a sense of belonging and active participation among employees. From career development programs to workshops, du ensures that each team member feels valued and heard and engages with the organization's vision for success.

stc Group Signs USD 8.70 Billion Deal with Government Entity

Saudi Telecom Company (stc Group) has announced that it won a contract worth SAR 32.64 billion (USD 8.70 billion) from a government entity to build, operate, and provide telecommunications infrastructure services.

The contract spans a duration of 18 months solely dedicated to preparation and execution, followed by 15 years of project operations, stc said in a regulatory filing.

[stc did not disclose the identity of the government entity.]

"The financial impact will be positive and the revenue will be recognized in stc's consolidated financial statements after the initial operation of the project, which is expected to be in the fourth quarter of 2026 until the end of the contract period," stc said in the filing.

[stc did not mention any related parties for the project at the time of publication.]

stc Group's Latest Investments

Separately, in a recent development related to its international investment portfolio, stc Group has received formal approval from the Spanish Council of Ministers to increase its voting rights in Telefónica. With this approval, stc's stake in the telecommunications giant will rise to 9.97%, and the company will gain the right to appoint a representative to Telefónica's Board of Directors.

Additionally, to bolster its 5G coverage, stc Group and Huawei have embarked on the commercial launch of SuperLink, a digital solution connecting remote regions with high-speed 5G network connectivity. The launch aligns with stc Group's mission to drive high-speed and reliable network connectivity across Saudi Arabia.

stc Group announced its financial results for the third quarter of 2024, achieving both its highest nine-month revenues and revenues to date. The company's revenue increased by 3.92% YoY, reaching SAR 56.627 billion while net profit for the period reached SAR 11.233 billion, reflecting an increase of 11.9%. Additionally, stc subsidiaries' revenue grew by 11%, contributing to the Group's record-breaking performance that exceeded market analysts' estimates.

Vodafone Qatar Delivers Consistent Growth, Reports QAR 601 Million Profit in 2024

Vodafone Qatar has announced a solid financial and operational performance for the year 2024, showcasing consistent growth and improvements across key areas. The company recorded a net profit of QAR 601 million, marking an 11.2% increase compared to the previous year, primarily driven by a strong EBITDA performance.

Total revenue for the year reached QAR 3.2 billion, demonstrating a 2.5% year-on-year (YoY) growth, fueled by a 2.5% rise in service revenue to QAR 2.8 billion. This increase was attributed to growth across all business segments, including mobility, managed services, fixed broadband services (GigaHome), handsets, and others.

EBITDA also rose by 6.1% to QAR 1.4 billion, benefiting from higher service revenue and the successful implementation of a cost optimization program. As a result, the company's EBITDA margin expanded to 42.8%, up 1.4 percentage points from the previous year.

Notably, Vodafone Qatar is now serving 2.1 million mobile customers.

Executive Insights

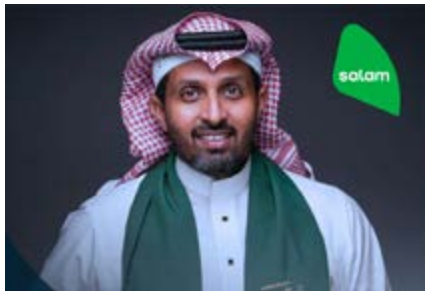
H.E. Mr. Abdulla Nasser Al Misnad, Chairman of the Board of Directors at Vodafone Qatar, commented, "2024 has been another exceptional year where, guided by our ethos, 'Together We Can,' we highlighted our commitment to connecting today's ideas with the technologies of tomorrow. Over the past year, Vodafone Qatar's pioneering efforts in digital innovation have set new benchmarks within the global telecommunications industry, enhancing both product innovation and customer experience."

Rashid Fahad Al-Naimi, Managing Director at Vodafone Qatar, said, "2024 was a year marked by our continued leadership in advancing Qatar's digital infrastructure, fostering sustainable growth, and enhancing the lives of its citizens. We have reinforced our position as a front-runner in connectivity and innovation, delivering unmatched speed, reliability, and seamless connectivity for both our consumer and business clients."

H.E. Sheikh Hamad Abdulla Jassim Al-Thani, Chief Executive Officer at Vodafone Qatar, noted, "Vodafone Qatar has undergone significant transformation over the past five years, evolving from a mobile operator into a fully diversified technology leader. This telco-to-techco evolution continued in 2024, with substantial investments in cloud and AI technologies."

The three company executives emphasized that 2024 was a year of milestone innovations, marked by the world-first launch of Vodafone Qatar's Instant SIM, empowering customers and setting a new benchmark in service innovation. The company also introduced a new portfolio of postpaid plans (which are designed to deliver exceptional benefits) and achieved a breakthrough in 5G technology through a landmark trial of 10+ Gbps speeds on a 5.5G high-band network.

Salam Appoints Abdullah Mohammad Khorami as New Chief Business Officer



Salam announced that it has appointed Abdullah Mohammad Khorami as its new Chief Business Officer.

Khorami brings over 20 years of experience in IT, networking, and telecommunications, aligning with Salam's forward-looking vision.

He has a proven track-record of achieving transformational growth, delivering exceptional results for global leaders, and fostering high-performing teams. His strength in building strategic partnerships and championing innovative strategies aligns perfectly with Salam's mission to lead the way in digital transformation and contribute to Saudi Vision 2030.

Commenting on his appointment, Khorami said, "This opportunity represents both a trust and a responsibility to contribute to Saudi Vision 2030, and I'm confident that, together with my experience and Salam's resources, we will pave the way for excellence.

"Along with the great leadership of Salam, I'm driven by a passion for pushing boundaries, empowering teams, and delivering impactful results. I embrace this new challenge with excitement and a commitment to make a difference every step of the way.

"I look forward to collaborating with Salam's talented team to shape the future of telecommunications, create opportunities, and drive meaningful change for our customers and communities."

Salam prioritizes exceptional talents to foster a culture of innovation and advance its transformation journey.

Vodafone Oman Achieves 70% Surge in 5G Sites in Just One Year

Bader Al Zidi, Vodafone Oman's CEO, announced a historic achievement in the company's journey. Recognized as the fastest 5G network rollout in the Sultanate's history, the operator now boasts 2,572 live sites, indicating a 70%+ increase from the 1,500 sites recorded in March, 2023.

Successfully connecting communities, businesses, and industries across the country, "This milestone is more than just an operational achievment; it's a reflection of what is possible through innovation, collaboration, and an unwavering commitment to excellence," stated Al Zidi.

Vodafone entered the Omani market in early 2022, and until then, the telecom sector in the country had been a duopoly for almost two decades. According to Ookla's latest analysis, Vodafone's expansion lead to a strong position that captured 10% of the market share within two years of launch. Vodafone aims to reach 30% by 2032.

Building upon its successful inaugural year and tremendous growth in year two, Vodafone Oman embarked on its third year of operations, committing to enhancing its core services while extending the reach of its 5G Next network to cater to 90% of the population.

"Together, we are building more than networks; we are creating a legacy of innovation and progress," the Vodafone Oman CEO concluded.

Due to Oman's high mobile penetration, Vodafone experienced significant gains in both 4G and 5G users, as per Speedtest Intelligence's data from September 2022 to June 2024.

Oman's fast-paced ICT growth transformation is being driven by its Vision 2040, which seeks to foster economic growth, empower society, and meet the nation's growing technological needs.

Omantel Accelerates 5G Deployment in MENA with Smart Network Solutions

Omantel has formed a multi-year strategic partnership with Airgain Inc. to redefine 5G connectivity across the Middle East and North Africa (MENA) region.

Omantel's partnership with Airgain addresses 5G infrastructure challenges through Airgain's Lighthouse™, a groundbreaking smart network repeater. This advanced solution amplifies and extends 5G signals, ensuring consistent, high-speed connectivity in areas where coverage is traditionally weak or unavailable. For example, homeowners can enjoy uninterrupted streaming across every corner of their homes, while businesses in sprawling office complexes or remote industrial zones can maintain reliable connections to power operations and applications.

"We look forward to our collaboration with Airgain as part of our commitment to advancing innovation in the telecommunications and technology sectors," said Talal Said Al Mamari, CEO of Omantel. "Airgain's solutions will enhance 5G performance across various environments with scalable, energy-efficient connectivity and unmatched speeds. By complementing our existing infrastructure, the Lighthouse™ solution will ensure comprehensive coverage indoors and outdoors, accelerating 5G deployment and reinforcing Omantel's position as a trusted provider of transformative communication solutions."

Laying the Groundwork for Future Technological Advancements

What makes this partnership unique is that it extends beyond the traditional vendor-operator relationship. Omantel and Airgain are collaborating on research, development, and innovation to create solutions that are specifically designed to meet the needs of the MENA region. This strategic alignment ensures that the partnership delivers both immediate and long-term benefits through scalable and energy-efficient solutions that address local connectivity challenges.

"We are privileged to strengthen our strategic alliance with Omantel as we lead this ambitious 5G expansion," remarked Airgain President and CEO, Jacob Suen. "Together, we aspire to revolutionize network performance with highly scalable and energy-efficient solutions, capitalizing on unprecedented 5G revenue opportunities and laying the groundwork for future technological advancements that will redefine connectivity across the region."

By leveraging cutting-edge technologies and maintaining a steadfast focus on customer satisfaction, this strategic partnership is poised to deliver superior 5G network solutions that address current demands while establishing a sustainable foundation for the future.

Redefining the Future of Autonomous Decision-Making with Agentic AI

In an era where technology is advancing rapidly, agentic artificial intelligence (AI) is emerging as the next leap in the AI revolution. By 2028, this transformative technology will facilitate 15% of daily autonomous decisions, revolutionizing global decision-making processes, according to Gartner.

Agentic AI integrates sophisticated decision-making capabilities with modern technology. Unlike traditional AI systems, agentic AI goes beyond pre-programmed responses and content-generating strategies. The system works independently by interpreting context, evaluating options, and executing actions to accomplish the assigned tasks with minimal human supervision.

As AI continues to evolve, this new approach holds an enormous potential to enhance productivity, ultimately establishing a virtual workforce that will revolutionize various industries.

Navigating AI's Third Wave of Advancement

Poised to become integral to the modern workplace, agentic AI functions as a sophisticated virtual worker capable of decision-making and action.

These AI agents can seamlessly retrieve and analyze information, optimize workflows, and assist with daily tasks. According to PwC, agentic AI displays goal-oriented behavior and can interact with its surroundings to adapt to new information and strategies.

Highly effective in customer service and supply chain management, AI agents are set to transform various industries as well, including healthcare, logistics, and telecommunications.

By deploying AI models, Siemens AG reduced maintenance costs by 20% and increased production uptime by 15%, according to PwC. Moreover, Amazon's recommendation algorithm catalyzed a 35% increase in sales through personalized recommendations and improved loyalty ratings by 20%. Similarly, telecommunications company, AT&T, reduced operational expenses by 15%.

Human resources can also utilize agentic AI to automate and support the recruitment process. Agentic AI is capable of screening resumes, scheduling interviews, and tracking employee performance.

Deloitte predicts that 25% of companies that currently employ

generative AI (GenAI) capabilities will launch agentic AI pilots or proofs of concept (PoCs) in 2025; this number will grow to 50% in 2027. In tandem with this projection, Capgemini foresees that 82% of organizations plan to integrate AI agents into their operations within one to three years.

Furthermore, agentic AI's integration with the Internet of Things (IoT) will enable seamless communication between devices and accelerate the progress of smart environments.

Challenges in Agentic AI

While agentic AI holds immense potential, its deployment comes with complex challenges. Firstly, agentic AI's autonomous decision-making capabilities blur the lines between autonomous trust and human intervention as, like any other AI system, agentic AI can produce errors.

Implementing a robust scaffolding—encompassing foundational models such as machine learning (ML), natural language processing (NLP), multimodality, synthetic data sets, Retrieval Augmented Generated (RAG)-based capabilities—and exposing the agent to real-world scenarios is crucial for improving decision-making. Deployers must reassess if these AI agents can be trusted to make important decisions.

Moreover, it can be challenging to control agentic AI due to its autonomous nature, heightening the risk of errors and unintended actions. These systems may also be vulnerable to security threats and data breaches, potentially compromising data integrity and generating inaccurate information.

The emergence of agentic AI has fueled concerns surrounding job displacement. Its autonomy and decision-making capabilities require little-to-no human involvement, rendering current job roles in this niche obsolete. Companies must upskill their employees and establish new roles to support the balance, ultimately keeping pace with the technological trend.

As AI can make decisions autonomously, it is paramount to ensure agentic AI operates in compliance with legal and ethical standards. According to Gartner, the rise of AI agents will drive the creation of both new technologies and AI governance initiatives to prevent disinformation and misuse.

Addressing these challenges requires a collaborative effort between deployers, governments, and private stakeholders to ensure the responsible and controlled deployment of agentic AI systems.

Advancements in Agentic AI

Despite its early developments, agentic AI has seen remarkable progress, with major technology players laying the groundwork for its widespread deployment.

In 2024, cloud-based software company, Salesforce, introduced two autonomous AI sales agents to accelerate sales growth: Einstein SDR (sales development representative) and Einstein Sales Coach. The Einstein SDR agent can autonomously make decisions and actions that align with its desired outcome while the Einstein Sales Coach agent supports sellers by providing personalized feedback through role-play sessions. Additionally, Salesforce launched its Agentforce 2.0 in December, 2024, utilizing autonomous AI agents to improve workflow. This advanced reasoning engine is set to redefine productivity and customer experience by enabling a limitless digital-labor-driven workforce.

Emerging as a frontrunner in agentic AI deployment, this year, NVIDIA unveiled its agentic AI blueprint (NVIDIA AI Blueprint), enabling developers to deploy custom AI agents that reason, plan, and act on analyzed data. NVIDIA also released its Llama Nemotron family of agentic AI models, which ensure the highest accuracy across a wide range of agentic tasks and exceptional compute efficiency and boast an open license for enterprise use.

Recently, ADNOC and AIQ launched the world's first agentic AI solution dedicated to the energy sector. The PoC trial of ENERGYai incorporated a 70 billion LLM parameter with ADNOC's petabytes of proprietary data, enhancing ADNOC's sustainability efforts.

OpenAI has begun leveraging AI agent capabilities by introducing ChatGPT's 'Tasks'—a feature that schedules reminders and recurring actions. This feature sets the stage for a future in which agentic AI assists users with daily tasks.

Other technology companies are also making strides in agentic AI. Enterprise AI company, Ema, launched its Persona builder platform, which facilitates complex workflows. "With over 200 pre-built connectors, Ema's Personas seamlessly integrate with internal data sources, create knowledge graphs, learn from human feedback, and operate tools to perform effectively in various enterprise roles. This innovation eliminates the need for extensive model training or manual fine-tuning once a Persona is built," explained Ema CEO, Surojit Chatterjee.

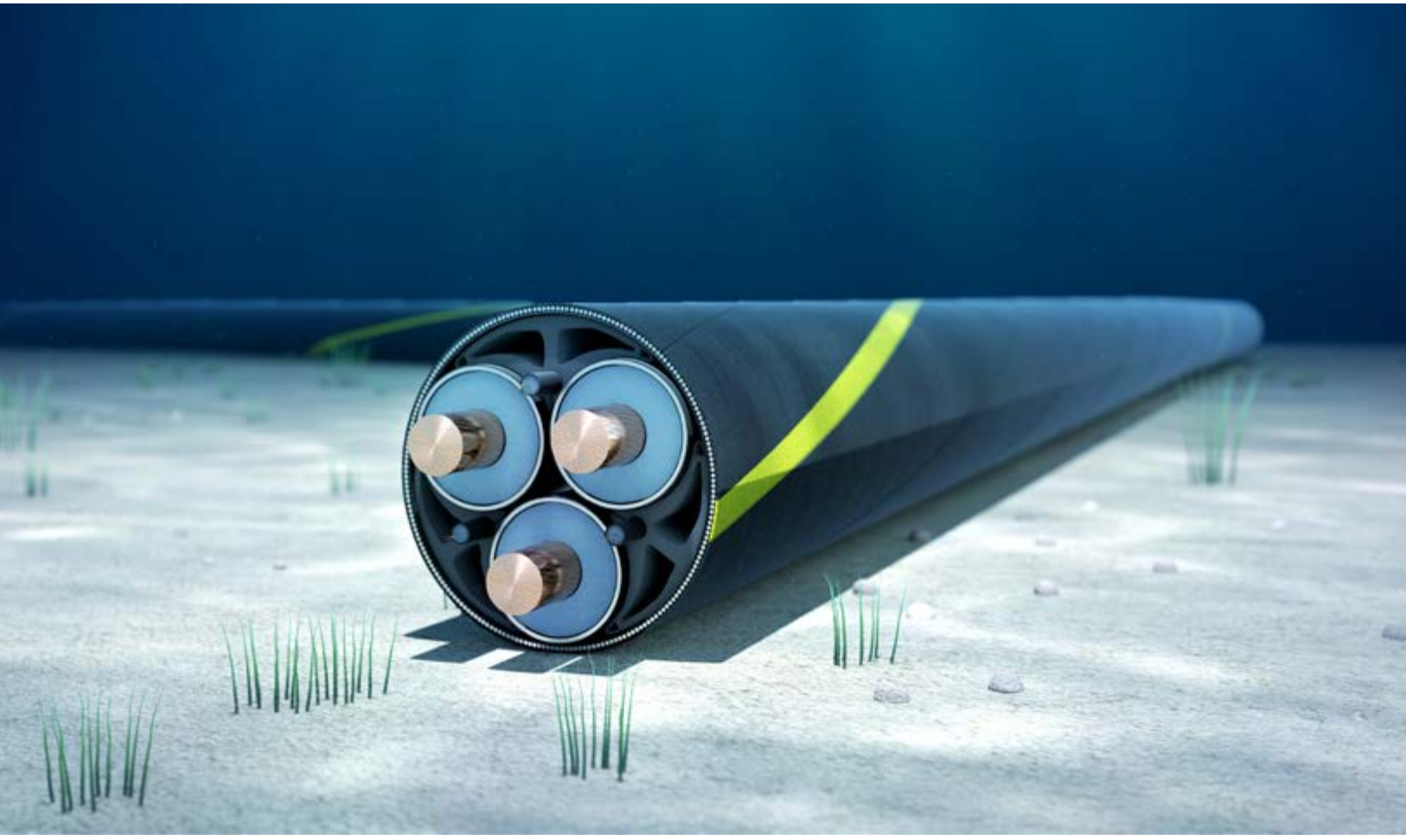
Google also recently launched Agentspace. This service aids enterprise customers in creating and deploying AI agents that answer complex questions, generate suggestions, and execute actions.

Final Thoughts

As we stand on the cusp of AI's transformation, agentic AI is evidently redefining human-machine communication. The rapid development of autonomous systems offers unprecedented opportunities to deliver enhanced decision-making processes, business operations, and solutions to complex challenges.

The goal not only encompasses doing more with less; it also includes redefining possibilities through autonomous systems.

As agentic systems continue to advance, responsible, collaborative innovation will be required to avoid bias and unintended consequences. This new leap in AI represents the manifestation of the long-awaited vision for an intelligent world. TR



Navigating Subsea Cable Development in an AI-Driven Environment

Even though there are currently over 1.4 million kilometers of subsea cables crisscrossing the ocean, the demand for more resilient, high-capacity networks is continuing to surge by a compound annual growth rate (CAGR) of 7.1%. In an era where artificial intelligence (AI)-driven technologies are impacting data usage and storage, subsea cables are more critical now than ever before as they power everything from cloud services to real-time analytics.

This year at the World Economic Forum in Davos, global leaders discussed the evolving complexity of the cyber landscape in the wake of its rapid growth as a result of emerging technologies, geopolitical upheavals, uncertainty in supply chains, and a shortage in cyber skills. Additionally, a new report detailing AI and its responsible adoption at scale across key industries and practical strategies for inclusive AI development was unveiled.

Such timely groundwork is a clear indication of the volume of data that networks will need to support AI-driven operations of the future.

The MENA region is experiencing an unprecedented demand for advanced fiber infrastructure to support AI-driven technologies. Hence, international and regional infrastructure that provides intercontinental connectivity is vital. Given this demand, it's no surprise that the MENA region has become the hub for major international submarine cable infrastructure to achieve a broader reach.

The Growing Need for Connectivity

The total mobile data traffic in the Middle East and North Africa (MENA) region was forecast to increase from 9.1 exabytes per month in 2024 to about 28 exabytes per month by 2030, representing a trifold expansion over the next six years.

In recent news, Jordan's Telecommunications Regulatory Commission (TRC) announced that the number of fiber optic subscriptions in Jordan reached approximately 556,350 by the second quarter of 2024. Additionally, the TRC's report revealed that total fixed broadband subscriptions in Jordan reached 793,740 by the second quarter of 2024. Such developments indicate the growth of consumers in indoor settings.

Despite the increase in internet usage in recent years, 35% of the global population lacks efficient access to the internet. Moreover, this percentage increases to 54% in low- and lower-middle-income countries (LLMICs), primarily due to the absence of necessary infrastructure. To counteract this, the ITU, along with the Digital Infrastructure Investment Initiative (DIII) recommends extending the connectivity backbone in LLMICs by 1.7 million kilometers to match upper-middle-income countries (UMICs).

To make the most of the emerging technologies, operators need to replace their legacy systems with modern, end-to-end solutions to offer unique packages across various customer segments. The efficient data processing of such ever-growing activity will warrant unfailing and ubiquitous connectivity. Hence, robust intercontinental subsea networks are vital for the future of digital services.

Some Notable Deployments Across MENA

Reflecting such trends, one notable development has been the agreement between Gulf Bridge International (GBI) and iQ Networks (iQ), both of which signed Iraq's first Indefeasible Right of Use (IRU) dark fiber framework into effect to establish Iraq as an essential telecommunications hub. With this development, the Silk Route Transit surpasses 1 Tbps of capacity, underscoring the impressive potential and reliability of iQ's infrastructure.

Inaugurated in 2010, the Silk Route Transit consists of over 2,000 kilometers of fiber-optic cable laid across Iraq. Its multilayer fiber-optic network provides the shortest alternative terrestrial route connecting Europe to Asia and will enable users to have high-quality and low-latency-based experiences.

In another instance, the US Trade and Development Agency (USTDA) has awarded a grant to Nigeria's Federal Ministry of Communications, Innovation and Digital Economy (FMCIDE) to conduct a feasibility study that aims to expand internet access to 12 million Nigerians. This initiative involves deploying 90,000 kilometers of new fiber optic backbone infrastructure across Nigeria.

Furthermore, major projects are adding capacity to emerging and high-growth markets such as Africa (2Africa, Equiano), the Middle East (Oman Australia Cable) and India (India-Asia-Xpress and India-Europe-Xpress), representing a major step toward closing the digital divide globally. However, even well-established subsea cable corridors require new construction to keep pace with growing demand.

AI's Influence: New Challenges for Subsea Cables

Telcos stand to benefit from using AI to enhance revenue generation, optimize networks, generate marketing strategies, bolster customer experience, and improve overall operational efficiency. Can those developing subsea cables utilize the same approach?

Sustainability: All future subsea projects must balance the ever-growing demand for capacity with the sustainability targets of the organizations that will use that capacity. This means that all elements of the network—including the subsea cables—need to be built using efficient design principles and powered using renewable energy. For example, Huawei used Ethernet technology to create a simplified, low-latency data center network technology stack, reducing energy usage in subsea cable functionality and catering to sustainability goals.

Reliability: Subsea cables are an extension of original internet infrastructure, which, by nature, share a transmission medium. Given the modern focus on virtual environments, subsea cables will need to offer both high capacity and reliability to support these solutions. To do so, cable operators can use AI-driven smart cable technology to detect outages. They can also leverage generative AI (GenAI) to enhance network operations using a domain-expertise layer consisting of reliable broadband sources. By analyzing the data collected from connected sensors using AI, operators can locate the problem, identify when it occurs, and minimize disruption with quick response times.

Cybersecurity: Subsea cable operators are facing new cybersecurity threats. As the volume of sensitive data being transferred through these cables rises, the potential of cyberattacks in the form of cable tapping or data theft is increasing. To combat this danger, underwater cable operators are collaborating with cybersecurity specialists to create new security measures and increase network resiliency.

For example, Fincantieri and Telecom Italia's Sparkle have partnered to develop surveillance and protection solutions for subsea cables. Meanwhile, NATO's Operation Baltic Sentry employs elite divers, submersible drones, and naval vessels in the Baltic Sea to address sabotage threats to underwater cables. The Quad Partnership for Cable Connectivity and Resilience exemplifies this approach—it demonstrates how international cooperation can bolster submarine cable security in strategically important regions.

Optical Technology Upgrades: Optical technology usage in the undersea cable market is not uncommon; however, advances in optical modulation and multiplexing techniques are allowing more data to be sent across these fibers, enabling greater capacity and quicker transmission rates. For instance, advanced, submersible, reconfigurable optical add/drop multiplexers (OADMs) equipped with wavelength-selective switch technology enable gridless and flexible bandwidth configurations. Based on space-division multiplexing design, this innovation allows the cable to optimize bandwidth use and scalability efficiently.

Landing Stations: The growing requirement for connectivity is necessitating the creation of new landing stations. In recent years, there have been efforts to construct additional landing sites in underserved areas such as isolated islands, coastal cities, and rural areas, linking them to the global communication network with high-speed internet services. The Middle East has seen significant subsea landing developments, with stc Bahrain and center3 landing the 2Africa Pearls cable in Bahrain, Zain KSA and Emaar collaborating on the J2M cable landing in KAEC, and Mobily and Telecom Egypt completing the first Saudi-owned subsea cable through the Red Sea, contributing to 2Africa becoming the world's longest subsea cable system. However, these locations sometimes experience geopolitical tension and getting permission to build landing hubs can be extremely difficult.

In Conclusion

A robust communication infrastructure lies at the core of today's digital transformation. Submarine cable systems are responsible for carrying almost 97% of the world's internet traffic. The connectivity provided by subsea cables, along with terrestrial fiber networks and satellite communication, is linking people and businesses across the globe.

In this ever-growing hyperconnected world, new challenges will keep emerging as the industry evolves. As such, subsea cables must constantly adapt to keep pace with growing consumer needs. TR

> In an era where artificial intelligence (AI)-driven technologies are impacting data usage and storage, subsea cables are more critical now than ever before as they power everything from cloud services to real-time analytics

Nokia Reports Strong Q4 2024 Performance, 2025 Outlook

Nokia Corporation has released its financial report for Q4 and 2024, revealing 9% net sales growth year-over-year (YoY), driven by strong performances across all business segments.

The telecom giant saw notable improvements in its financial metrics during the fourth quarter, with comparable gross margin rising by 250 basis points to 47.2%.

The comparable operating margin increased by 380 basis points to 19.1%, driven by higher gross margin, continued cost control, and amplified contributions from Nokia Technologies.

2024 Financial Results

Nokia's business groups delivered significant operational performance with the network infrastructure segment's net sales growth accelerating to 17%. The IP networks segment grew by 24%, while the fixed network and optical network segments increased by 16% and 7% respectively. This growth reflects a strong recovery demand from communication service providers (CSPs), particularly in North America.

The mobile networks segment stabilized its net sales while maintaining gross margin. Nokia secured substantial deals, winning 18,000 additional base station sites since the start of 2024.

Despite a 4 percentage-point headwind from a prior business disposal, the net sales of the cloud and network services segment grew by 7% in Q4.

The report also outlined the robust growth of the telecom giant's core network and enterprise campus edge segments. Moreover, Nokia's acquisition of Rapid's technology assets has boosted its research and development (R&D) capacity in its Network as Code segment and increased developer access.

Reporting an exceptionally active quarter, Nokia Technologies signed deals with Transsion, HP, and Samsung, among others. The annual net sales run-rate grew to approximately between EUR 1.3 and 1.4 billion in Q4, continuing towards its mid-term target of EUR 1.4-1.5 billion.

Nokia's 2025 Outlook

Looking ahead, Nokia expects a comparable operating profit between EUR 1.9 billion and 2.4 billion in 2025, with a free cash flow conversion from comparable operating profit of 50% to 80%.

Telecom Egypt and Cisco Enhance 2Africa Cable's Performance

Telecom Egypt, the total telecom operator in Egypt and one of the largest subsea cable opera-tors in the region, announced the activation of a Mediterranean subsea link on the 2Africa sub-sea cable system. The project is in collaboration with Cisco, the worldwide leader in networking and security technologies.

Mohamed Nasr, Managing Director and Chief Executive Officer of Telecom Egypt, commented, "Collaboration is the cornerstone of innovation, and we are pleased to be supported by Cisco on this important project. By enhancing the capacity of our well-established subsea infrastructure, we are meeting the surging demand for bandwidth-intensive services such as cloud computing and AI across the Mediterranean and beyond.

"Today, we reiterate our unwavering commitment to investing in advanced network technolo-gies and solutions to address growing demand while enabling international connectivity through strategic telecommunication highways.

Using Cisco's cutting-edge Network Convergence System (NCS), the link creates a high-capacity connection between Port Said, Egypt, and Marseille, France, via Genoa, Italy.

The Impact of Advanced Coherent Transmission on 2Africa

The exponential growth of capacity-intensive applications such as cloud and AI services in the region is fueling the demand for expanded subsea network capacity, which requires advanced, high performance, coherent transmission systems. This project enables Telecom Egypt to max-imize the potential of its subsea assets on the 2Africa subsea cable, enhancing the efficiency of its cable operations and boosting international traffic capacity.

Gordon Thomson, Vice President, EMEA Service Provider at Cisco, added, "In the AI era, reliable and fast network connections are more critical than ever. Our collaboration with Telecom Egypt on the 2Africa cable exemplifies the potential for enhancing network capacity over very long distances.

Enabled by Cisco's cutting-edge NCS, the system offers data transmission powered by Acacia's multi-haul coherent module, delivering high performance with less power per bit. It allows network operators to enhance capacity across any cable, enabling precise adjustments to opti-cal transmission signal bandwidth, modulation format, and spectral efficiency.

MYCOM OSI Enhances Network Intelligence with AI, GenAI, & Next-Gen Telemetry

MYCOM OSI's latest capabilities are designed to support Chief Experience Officer (CXO)-level business use cases and enhance Fiber-to-the-x (FTTx) and 5G networks with artificial intelligence (AI) and generative artificial intelligence (GenAI)-driven advancements.

The company's AInsights-on-SaaS (including its Data Fabric layer) is now available with automated activation for new customers while its generative AI application, GenAie, is available as GenAie-on-SaaS (as a beta version).

MycomEye App
The MycomEye mobile app provides communication service provider (CSP) executives with instant access to networks, services, and business data at any time, from any location. The beta app is designed to empower business users with real-time visibility and management of the network and its services through key performance metrics, customer-impacting critical alerts, and team collaboration to take swift business decisions.

New CNO Use Case in GenAie
The GenAie application will be able to support the Chief Network Officer (CNO), although this functionality is currently in the beta stage. This application provides the CNO with a natural language-based interface to discover the most utilized parts of the network, identify unused capacity, and calculate potential revenue areas that are currently dormant in the network.

New Capabilities in AInsights
AInsights has been enhanced with two new capabilities to help CSPs revolutionize network monitoring and streamline issue detection.

1. Transport/IP SLA Monitoring
With thousands of interfaces in modern networks, setting manual rules to extract delay metrics can be a challenge. The new AInsights capability empowers network operations center (NOC)/ service operations center (SOC) teams to detect delays in response times between different nodes across data centers effortlessly. AInsights' advanced forecasting and anomaly detection capabilities enable precise issue detection for each interface, ensuring proactive problem resolution.
2. Fixed Broadband Access Monitoring
To help CSPs stay ahead of potential network issues, the new feature helps to monitor interfaces, packet errors, and unavailable gigabit passive optical network (GPON) interfaces. Leveraging forecasting and anomaly detection capabilities, this feature identifies traffic abnormalities and correlates them with interface utilization and packet error patterns, providing valuable insights for network optimization at the city level.

Ericsson's Strong 2024 Finish Highlights Growth in the 'Network' and 'Enterprise' Markets

Ericsson concluded 2024 on a robust note, achieving significant milestones across its operational and financial metrics under the leadership of President and CEO, Börje Ekholm.

Q4 Results
Börje Ekholm, reflecting on the fourth quarter performance, stated, "Q4 marks a strong end to 2024 for Ericsson. We progressed well against our strategic plan and generated strong free cash flow."
The company reported sales of SEK 72.9 billion, with a reported gross income of SEK 32.7 billion and a gross margin of 44.9%. Net income for the quarter stood at SEK 4.9 billion.

According to Ekholm, a notable achievement was the signing of an open programmable network deal with MASORANGE, marking a significant milestone for Ericsson in Europe.

Ekholm highlighted, "We see further signs that the overall RAN market is now stabilizing, with strong growth in North America supporting a return to 'networks' sales growth in Q4." Operational excellence initiatives contributed to a robust adjusted Group gross margin of 46.3% in the quarter, underscoring Ericsson's disciplined commercial approach and supply chain efficiency efforts.

Full-Year 2024 Results
For the full year 2024, Ericsson reported sales of SEK 247.9 billion, reflecting strong growth in North America, where reported Q4 2024 sales increased by 53% (SEK 22 billion). This growth was driven by contract wins, increased network investments by major customers, and strong year-end software demand. Reported gross income for the whole year reached SEK 109.4 billion, while adjusted gross income increased to SEK 111.4 billion, with contributions from all segments supporting financial resilience despite challenges in certain market areas.

However, the Middle East and Africa (MEA) market areas faced declines, with MEA networks sales from January to December 2024 decreasing by -13% year-over-year (SEK 20.8 billion). Economic headwinds and currency devaluations in Africa impacted investment levels, while in the Middle East, reduced investments followed an accelerated 5G rollout in 2023.

Notably, Ericsson's net cash stands at SEK 37.8 billion at year-end 2024.

Beyond Bandwidth: How Wholesale is Revolutionizing Digital Services

The wholesale telecommunications sector is undergoing a dynamic transformation, reshaping its role in the broader digital ecosystem.

Traditionally focused on offering basic connectivity solutions to customers such as internet service providers (ISPs), mobile virtual network operators (MVNOs), and fixed telephony providers, wholesale carriers are now pivoting towards platform-based solutions and next-generation service models.

This evolution is being driven by the growing demands of hyperscalers, content delivery networks (CDNs), and gaming platforms, coupled with the need for the seamless integration of physical and virtual infrastructure. The shift from manual procedures to automated processes powered by APIs and blockchain technologies further underscores this industry-wide transformation.

A Global and Digital Enabler

Nowadays, wholesale providers are no longer confined to delivering static connectivity; they now play a pivotal role in enabling global digital operations. They support increasingly virtualized infrastructure, offer managed data center services, co-location spaces, and global internet connectivity. These capabilities are bolstered by cloud integration, network function virtualization (NFV), and software-defined networking (SDN).

The wholesale market is projected to grow significantly, driven by hyperscaler demand, which is expected to increase by ~20% annually through 2026, according to industry reports. Additionally, the global data center market is projected to grow at a compound annual growth rate (CAGR) of 8.37% through 2029, reflecting the sector's critical role in supporting digital ecosystems.

The flexibility and agility demanded by customers—including on-demand scaling, online service management, and pay-as-you-go models—are driving wholesale providers to adopt platform-centric approaches enhanced by artificial intelligence (AI). Recent surveys indicate that enterprise customers highly value the seamless integration of Communications Platform as a Service (CPaaS) and AI-driven automation, citing improvements

in service customization, efficiency, and reliability.

Strategic Evolution for Future Ecosystems

To thrive in this evolving landscape, wholesale divisions within telcos must align their strategies with cloud-focused ecosystems that integrate enterprise and wholesale business units. Opportunities include shared customer ownership, expanding security capabilities, and standardizing technology frameworks through unified service platforms and centralized APIs. This strategic evolution positions wholesale providers to not only meet but also anticipate the demands of future ecosystems.

The 2024 Telecom Review Leaders' Summit's wholesale panel echoed these themes, emphasizing innovation and collaboration. Panelists highlighted the importance of advanced infrastructure, strategic partnerships, and market-focused initiatives to address emerging connectivity needs. From improving internet speeds and hosting capacity to fostering digital ecosystems, the wholesale sector is redefining its role as a key enabler of global digital transformation.

Wholesale Service Expansion Driven by Partnerships

During Telecom Review's 2024 wholesale webinar, it was highlighted that, as hyperscalers, large enterprises, content providers, and governments increasingly require lower latency, higher bandwidth, optimized costs, scalability, resilience, and redundancy, the sector is rapidly adapting to meet these demands.

du noted a seismic shift in customer and partner relationships, moving towards enhanced Ethernet and IP transit services while Salam emphasized its expansion offerings, including wholesale voice services in Saudi Arabia and an A2P SMS business, as well as new border links with Kuwait and Oman.

Mobily also pointed out the growing importance of software in supporting hyperscalers and content providers, highlighting the role data center internet exchanges and orchestration plays in ensuring industry flexibility. Hence, collaboration between data center providers and tower companies is also enhancing edge data center capabilities.

Technological advancements, such as 5G and AI, are also heavily transforming the industry. AI's potential in optimizing costs, routing, cooling efficiency, resource allocation, predictive maintenance, and cybersecurity has been observed in the wholesale sector. AI integrated with software-defined networks (SDN) promises self-optimizing, self-provisioning, and self-healing networks, significantly enhancing efficiency and cost-effectiveness.

Sustainability is another critical focal area. By harnessing green energy and building robust, efficient networks, sustainability initiatives can cascade benefits across the wholesale value chain, emphasizing the need for partnerships with technology vendors to optimize infrastructure.

Fostering new interactions and traffic management, the wholesale sector is leveraging CPaaS to engage with OTTs and voice operators. Collaborative models between wholesale providers, network operators, and content companies enable end-to-end service delivery, redefining the perception of wholesale capabilities.

Regional and Global Approaches

For 2025, GCC-based operators e&, du, and stc forecast an increase in prioritizing digital transformation to enhance customer experiences through comprehensive coverage, automation, and zero-touch requirements.

According to Georges Jaber, VP Wholesale and Business Development, Salam, Saudi Arabia is witnessing a surge in demand from cloud providers, hyperscalers, and gaming platforms, driving investments in high-quality infrastructure to catalyze digital transformation. Employing an ICT-focused approach, Oracle will help Salam increase operational efficiencies, proactively identify and address potential issues, and enable seamless service delivery to its end customers.

Additionally, Ooredoo Oman's wholesale services continue to focus on capacity, managed services, telepresence, CDNs, data centers, subsea cables, and co-location. Leveraging its international reach, Ooredoo provides innovative solutions to operators and hyperscalers such as Microsoft, Google, and Facebook.

Another example is Zain Omantel International's agreement with du which guaranteed exceptional 5G-powered voice, messaging, and data roaming services.

Globally, wholesale advancements include Telekom Malaysia's partnership with Radian Arc to expand cloud gaming and Deutsche Telekom's unified T Wholesale division, prioritizing AI, 5G Standalone technology, edge cloud computing, and strategic partnerships.

To achieve a successful wholesale business model, tools such as the Nokia WaveSuite Service Enablement (WS-SE) application—which creates the hierarchical tenancy needed to support the value chain for transport service inventory advertisement, service fulfillment, and assurance reporting—can be helpful. Moreover, DC Gateway's SDN-based portal also offers Network-as-a-Service (NaaS) solutions, enabling automation and secure interconnection for data centers and cloud providers.

Telecom Review Predictions

The wholesale telecommunications industry is evolving beyond basic connectivity to become a cornerstone of global digital transformation. Telecom Review anticipates that, in 2025, wholesale providers will accelerate their efforts in addressing the growing demands of hyperscalers, content providers, and emerging markets by adopting advanced technologies, fostering partnerships, and focusing on sustainability.

As the wholesale sector continues to innovate, its role in enabling seamless, scalable, and efficient connectivity will remain pivotal in shaping the future of digital ecosystems. TR

China, Myanmar, and Thailand Unite to Dismantle Telecom Fraud Centers

China, Myanmar, and Thailand officials have reached an agreement to eliminate telecommunication fraud centers operating in Myanmar, according to China's state broadcaster.

During the same meeting, representatives from Myanmar, China, Laos, Cambodia, Thailand, and Vietnam committed to intensifying efforts to dismantle telecom fraud operations.

China has intensified its calls to combat online scams after several high-profile incidents, including the disappearance of a Chinese actor near the Thai-Myanmar border.

Recently, Chinese Foreign Minister Wang Yi urged Southeast Asian nations to implement stricter measures against online gambling and telecom fraud during a rare meeting with regional envoys in Beijing.

According to Myanmar's embassy in Beijing, the country has deported 53,388 Chinese nationals involved in online fraud since 2023 without pursuing legal action, citing "existing friendly relations and humanitarian grounds."

The Myanmar government is focusing on cracking down on online gambling businesses rather than supporting them, the embassy stated, urging neighboring countries to work together to dismantle scam groups.

Myanmar and China have been collaborating to apprehend the fraudsters responsible for stealing significant amounts of money from Chinese citizens. Among the 31,000 suspects detained were 63 key figures, including financiers and leaders of criminal syndicates.

Philippines and Korea Strengthen Digital Transformation Ties

The Philippines has partnered with the Korean government to advance digital transformation and innovation, according to an announcement from the National Economic and Development Authority (NEDA).

Three-Fold Infrastructure Development
At the meeting, NEDA unveiled plans for three pivotal digital infrastructure projects under the EIPP. These initiatives aim to bolster the Philippines' information and communications technol-ogy (ICT) sector, laying the groundwork for sustained innovation and technological growth.

One major initiative is the creation of a National Communications Satellite Roadmap. This pro-ject seeks to establish a strategic framework for developing the country's telecommunications satellite industry. By strengthening the telecommunications ecosystem, the roadmap will im-prove communication networks, expand digital access, and enhance connectivity in underserved areas across the nation.

The partnership also focuses on the Philippine E-Government Master Plan, which has been de-signed to modernize government systems and promote technology exchanges between the Phil-ippines and Korea. This initiative aims to streamline public services, improve government effi-ciency, and foster collaboration on e-government best practices. The plan emphasizes data se-curity and privacy, ensuring the safe delivery of digital services.

The third component involves building an Integrated Data Center for the Philippine government. Leveraging Korea's expertise in data center operations, this project aims to enhance the coun-try's capacity to manage, store, and process large volumes of digital information securely.

U.S. Sanctions Myanmar's Mytel Telecom

The United States Bureau of Industry and Security announced that Mytel, a telecommunications company partly owned by Myanmar's military junta, has been added to its 'sanctioned' list.

In a statement, the agency sanctioned Mytel—formally known as Telecom International Myanmar Co., Ltd.—for engaging in activities deemed contrary to U.S. national security and foreign policy interests.

The U.S. government accused the company of providing surveillance services and financial backing to Myanmar's military regime, facilitating human rights violations by enabling the tracking and identification of individuals and groups, according to the statement.

Since the military seized power in February, 2021, Myanmar's junta has maintained control over the nation's telecom providers, leveraging the infrastructure to block internet and phone services and monitor users through SIM card data, reported the Myanmar Internet Project, a digital rights advocacy group.

A representative of the group told media outlets that while other operators are not entirely owned by the regime, they still operate under its control. Companies like Mytel, which are fully controlled by the junta, reportedly pose a greater risk as they enable significant digital rights violations.

Myanmar's telecommunications sector is led by four main operators: MPT, a joint venture between Myanma Posts and Telecommunications and Japanese firms; Ooredoo, recently acquired by Ayeyar Hinthar Holdings Co., Ltd; ATOM, previously known as Telenor Myanmar and now owned by junta ally, Thein Win Zaw; and Mytel.

Netherlands Advances Plans for National AI Facility

The Dutch government is making significant strides towards establishing a national artificial intelligence (AI) facility to position the Netherlands as a leader in AI research and development (R&D).

This initiative is part of a larger European Union strategy to enhance Europe's digital economy and foster technological innovation within the region. To support this vision, the Netherlands allocated EUR 204.5 million (approximately USD 210 million) in January, 2024, to AI investments, demonstrating its commitment to developing AI technologies.

Strategic Partnerships to Fuel AI Research

As part of this ambitious project, the Dutch government has engaged in discussions with some of the world's leading technology companies, including NVIDIA and Advanced Micro Devices (AMD), to secure the hardware and technological expertise needed for the proposed AI facility.

This facility is expected to feature a cutting-edge supercomputer that will form the backbone of AI research, driving advancements across several key sectors such as healthcare, finance, and manufacturing. These sectors, among others, are poised to benefit from AI's ability to optimize operations, enhance decision making, and introduce new solutions to complex challenges.

Fostering Global AI Innovation

The planned AI facility will serve as a technological hub and is expected to play a central role in attracting international research collaborations.

FCC Authorizes Apricot Submarine Cable, Offering 211 Tbps Capacity

The Federal Communications Commission (FCC) has granted GU Holdings, Edge Cable Holdings USA, and PLDT Inc. a Cable Landing License to build and operate the Apricot fiber-optic submarine cable system.

Spanning 12,000-kilometers, the Apricot subsea cable will connect Guam with Singapore, Indonesia, the Philippines, Taiwan, and Japan. It is designed to improve capacity and reliability as well as enhance competition by competing vigorously with other intra-Asia and Asia-Guam submarine cable systems.

The FCC issued the license with specific regulatory conditions and national security commitments to ensure the system's safe operation.

Cable Design and Capacity

The Apricot cable system will incorporate an advanced submersible reconfigurable optical add-drop multiplexer equipped with wavelength-selective switch technology, enabling gridless and flexible bandwidth configurations. Based on space-division multiplexing design, this innovation allows the cable to optimize bandwidth use and scalability efficiently.

With this in mind, the Apricot cable system will connect Singapore to Japan along a main trunk, with branches extending to Indonesia, the Philippines, Guam, and Taiwan. It also includes five unused branching units, which could eventually extend to additional locations such as Australia and Indonesia.

The main trunk of the Apricot cable system stretches 8,232 kilometers with 12 fiber pairs, and connects to various branches, including the Tanjung Pakis (242 km, 10 fiber pairs), Batam (8 km, 14 fiber pairs), Davao (181 km, 4 fiber pairs), Baler (479 km, 15 fiber pairs), Agat (2,198 km, 13 fiber pairs), and Taiwan (632 km, 16 fiber pairs). Each fiber pair supports approximately 17.6 Tbps, offering a total design capacity of 211 Tbps.

Collaboration in Chile Ushers in a Sustainable Future for Data Centers

Atlas Renewable Energy, an international provider of renewable energy sources, has finalized an agreement with ODATA, an Aligned Data Centers company and leader in Latin American data center construction and operations to power Chilean data centers with 100% renewable energy.

This landmark agreement for the Chile and data center sector demonstrates Atlas' commitment to driving innovation in sustainable energy solutions for the rapidly growing Chilean data center sector and supports ODATA's strategic objectives and sustainability initiatives in the country.

The partnership leverages diverse renewable energy sources, including solar power, to deliver 100% I-REC certifiable renewable energy to ODATA, empowering the organization with the flexibility to pursue sustainable growth and expansion in the region. "We are proud to partner with Atlas Renewable Energy to support the proliferation of new technologies in this dynamic market while further advancing our sustainability goals," says Ricardo Alário, CEO of ODATA. "As a leader in data center infrastructure for Latin America, we recognize Chile's potential as a key technology hub. With its strategic location and AI growth potential, the country provides an ideal environment for sustainable data center growth."

This collaboration also encourages innovation and a sustainable energy transition in Chile to pave the way for an emerging and expanding data center industry. Driven by the surge of cloud and AI, the data center industry has emerged as one of Latin America's fastest-growing industries. This rapid growth is expected to continue as demand for new technologies accelerates.

Kenya Reports Increased Mobile and Broadband Subscriptions

Kenya's telecommunications sector experienced significant growth in the first quarter of financial year 2024/2025, with an increase in broadband subscriptions, mobile SIM, smartphone use, and mobile money, indicating continued industry responsiveness to customer needs.

The Communications Authority of Kenya (CA)'s quarterly Sector Statistics report covering July-September 2024 highlighted a slight decline in 3G broadband subscriptions and data consumption but showed an in-crease in 4G and 5G technology adoption.

Mobile data subscriptions surged to a record 53.7 million by the end of the quarter, with 4G constituting 58.1 percent. The adoption of 4G and 5G technologies has continued to grow, mainly influenced by the growing demand for high-speed internet for activities such as streaming, online learning, remote work, and e-commerce.

Active mobile (SIM) subscriptions increased by 1.6 percent to 70.0 million by the end of September 2024, up from 68.9 million recorded in the previous quarter, representing a penetration rate of 135.8 percent.

Subscriptions to mobile money services increased from 39.8 million to 40.6 million, translating to a pene-tration rate of 78.9 percent during the reference period.

The total number of mobile phone devices connected to mobile networks was 68.1 million, yielding a pen-etration rate of 131.5 percent. At 37.4 million devices, smartphones take the lead with a penetration rate of 72.6 percent, while the 30.7 million feature phones account for 59.6 per cent penetration rate.

The volume of outgoing domestic voice traffic grew by 5.5 percent, from 24.9 billion to 26.2 billion. Ac-cording to the report, "This growth is attributed to service providers' special offers and promotions during the review period, where consumers could pay as low as KES 20 for 10 minutes of all-net calls, 20 SMS, and 50 MB of data. Similarly, domestic SMS traffic grew to 13.7 billion messages, from 13.5 billion re-ported last quarter."

The total average minutes per on-net call remained unchanged at 1.8 minutes, whereas off-net calls grew to 1.3 minutes from 1.2 minutes recorded last quarter.

Togo's Regulator Slashes Wholesale Telecom Prices by 60%

The Regulatory Authority has established wholesale price ceilings for the 2025 financial year, based on cost audits of Togocom and MOOV Africa Togo. This includes a significant 60% reduction in the monthly rental ceiling for dark optical fiber, now set at 30 CFA francs per linear meter, down from 75 CFA francs.

The initiative promotes affordable, fair access to transmission infrastructure, accelerating broadband deployment in underserved areas, improving service availability, and increasing competition to lower retail prices.

This measure, combined with regulations on infrastructure sharing, strengthens market openness, transparency, and supports the government's high-speed connectivity initiatives. The Regulatory Authority urges operators to comply and expedite broadband coverage nationwide.

Protecting Canada's Internet: CNOC's Campaign for Fair Access

Local internet service providers warn Canadians that their access to competitive and affordable services may diminish unless federal government regulators take immediate action.

As a critical decision deadline approaches in February 2025, the Competitive Network Operators of Canada (CNOC) has initiated a digital and social media campaign aimed at mobilizing Canadians to advocate against the entry of the Big Three—TELUS, Bell and Rogers—into the internet resale market.

In August 2024, the Canadian Radio-television and Telecommunications Commission (CRTC) made a significant ruling that mandated TELUS and Bell to provide wholesale fiber access to smaller providers. However, the ruling also permitted these major companies to participate in the resale market, raising concerns among independent internet service providers and two of the three large carriers.

The current interim regime allows the Big Three and their subsidiaries to resell fiber internet outside their established networks, which the CRTC justified by suggesting that the advantages of this arrangement would likely surpass the associated risks.

Critics, including CNOC, argue that the CRTC's decision contradicts its own objectives of promoting competition. They caution that the Big Three will initially attract customers with bundled wireless and internet services at competitive prices, effectively sidelining smaller regional and independent providers.

— 2025 —

MWC Barcelona

From keynotes and summits to roundtables, MWC Barcelona 2025 stands out as the premier platform where renowned leaders and emerging voices converge to shape the future of technology, industry, policy, and ethics.

Place: Fira Gran Via, Barcelona, Spain

3 - 6 MARCH

Artificial Intelligence: Asia's Engine for Growth

Telecom Review Asia will be hosting a webinar titled 'Artificial Intelligence: Asia's Engine for Growth.' This event will bring together industry experts to examine the forces driving AI adoption in the telecom sector and its long-term impact.

https://us06web.zoom.us/webinar/register/WN_eT6yEzQbT8CleixmQ0Owlg#/registration

Place: Virtual

26 MARCH

CABSAT

Celebrating its 30th anniversary this year, CABSAT will showcase new exhibitors and diverse media tech at Chinese, French, and German pavilions, drawing more industry professionals and media markets.

Place: Dubai World Trade Center, UAE

13 - 15 MAY

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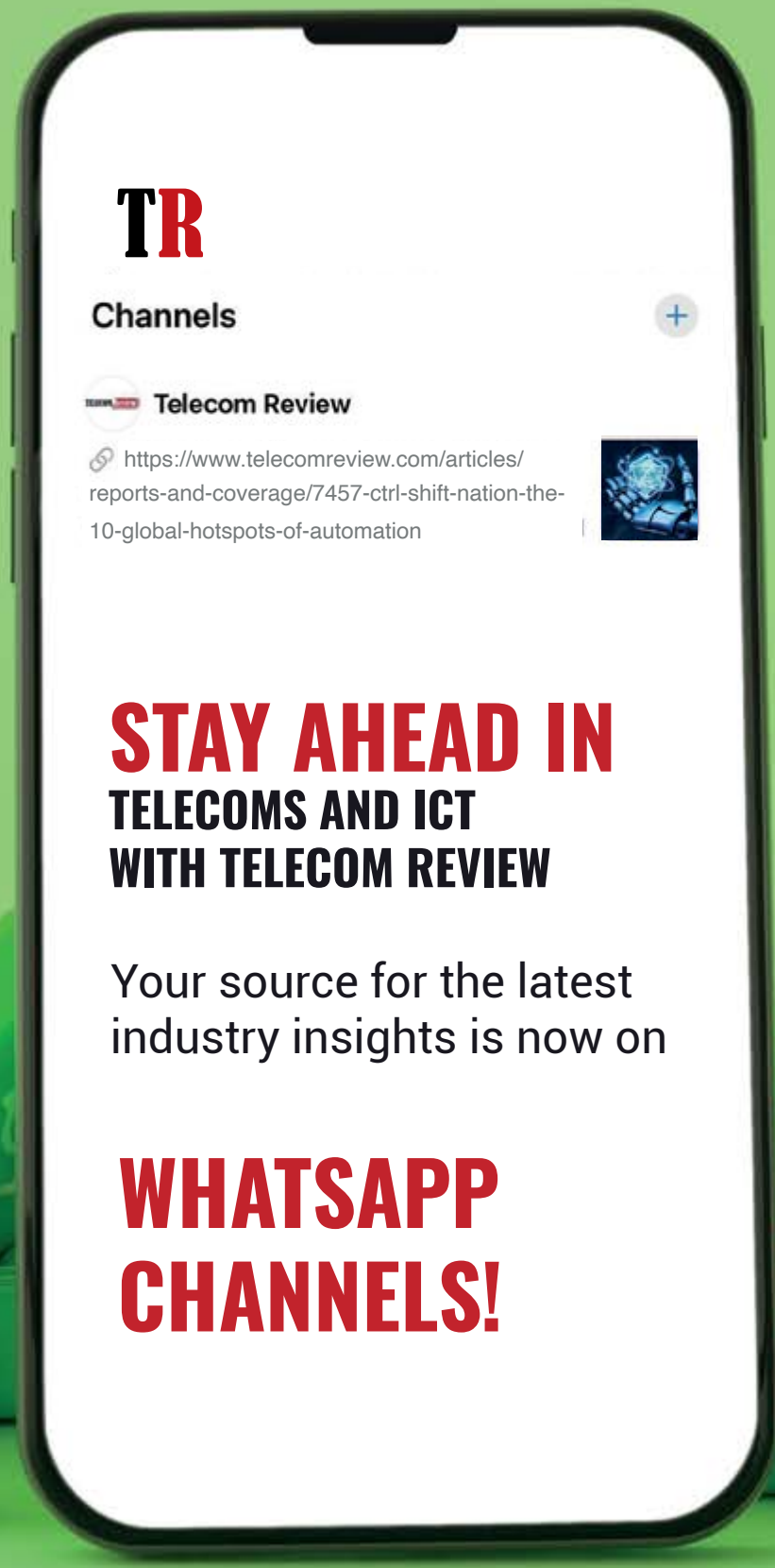

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